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THE

ARCHITECT

AND

Contract Reporter.

A WEEKLY

ILLUSTRATED JOURNAL

OF

ART,

CIVIL ENGINEERING,

AND

BUILDING.

When we build, let us think that we build for ever. Let it not be for present delight, nor for present use alone; let it be such work as our descendants will thank us for, and let us think, as we lay stone on stone, that a time is to come when those stones will be held sacred because our hands have touched them, and that men will say as they look upon the labour and wrought substance of them, "See! this our fathers did for us."—J. RUSKIN.

VOL. LXX.

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THE ARCHITECT AND CONTRACT REPORTER.

A JOURNAL OF ART, CIVIL ENGINEERING & BUILDING.

THE WEEK.

It is much to be regretted that in the sudden realisation of the need of technical education there is a likelihood of fostering schemes which are not efficient. Lord ROSEBURY, for example, appears this week as the representative of trustees who have a large sum of money at their disposal for founding a London "Charlottenburg." He advocates the project by saying, "it is little short of a scandal that our own able and ambitious young men, eager to equip themselves with the most perfect technical training, should be compelled to resort to the universities of Germany or the United States." It has been pointed out by the British Consul in Stuttgart that English students do not utilise the advantages offered to them in Germany. Their numbers form only a small percentage of the foreigners. It is the same in America. To assign the principal part in the creation and maintenance of the new institution to the London County Council is not warranted by any experience of that body's manner of dealing with technical affairs. The Works Department might, in fact, be taken as evidence of the mismanagement which in ordinary businesses is driving people to German and American markets. When the Council has shown fitness to have contracts carried out in a systematic and economical manner it will be time enough to make it an authority for the highest class of industrial education. Nor is it easy to understand why Lord ROSEBURY should become an adviser for the purpose. He has never displayed any special interest in technical education, and, indeed, he may be instanced as the type of those gentlemen who have managed to succeed by luck rather than by labour or technical knowledge, and whose connection with manufactures has been one of the causes of the present condition of affairs. The only body that hitherto can claim to be successful in the promotion of technical education is the Council of the City and Guilds of London Institute. Their two colleges in London have, if all things are taken into account, turned out a surprising number of captains of industry. The amount received in fees from students is not one-third of the expenditure, and the general administration amounts to only 1,264*l.* per annum. Here we have the nucleus of an excellent system as well as experience. With an executive including among the members Sir J. WOLFE BARRY, Sir FREDERICK BRAMWELL, the Presidents of the Royal Society, the Institution of Civil Engineers and the Chemical Society, and the Chairman of the Society of Arts, Lord KELVIN, Mr. MATTHEY, &c., and various representatives of industrialism, there is a body of directors available with which the politicians of the London County Council are not to be compared.

THE collapse of the bridge across the river Ouse at Uckfield on Saturday last should be enough to move county councils to have similar structures closely examined. People are so accustomed to the duration of bridges under ordinary traffic, they are supposed to have faith in their endurance under all circumstances. The bridge which succumbed was erected in 1858, and took the place of an old masonry bridge dating from 1617. The bridge connected one side of Uckfield with the other and was constructed of brickwork and cast-iron. The cause of the accident was the passing of a traction-engine, which fell into the river. The gas-pipes, water-mains and sewers were all broken and

much inconvenience resulted. Fortunately there is a station of the London, Brighton and South Coast Railway near the bridge. The company's workmen gave their assistance and a temporary bridge was put up during the night. At the next meeting of the Council it will be decided what kind of bridge is to be adopted. The traction engine, which was the proximate cause of the collapse, was exceeded in weight by another, which safely crossed the bridge earlier on Saturday. It is not improbable that traffic of that kind exercised some influence on the cast-iron girders and weakened their power to resist a strain. We cannot, however, obtain precise information on the subject, for the County Council have taken no steps to make a thorough investigation of the state of the bridge. All over the country there are examples of old-fashioned bridges which are subjected to a class of traffic unknown when they were constructed, and they are being gradually weakened by it without any measures being taken to add to their strength.

WHEN EBENEZER ELLIOTT, the Corn Law rhymer, was writing about mechanics, his ideal was to see a man of that class throned in an elbow chair, or reading LOCKE while reclining on a sofa, and the visitor was not expected to show surprise when he saw a carpet on the floor. So much luxury was not supposed to be ostentation. ELLIOTT looked on it as partly arising from taste, which he said was "the link which binds us to the skies—a bridge of rainbows thrown across the gulf of tears and sighs." The English mechanic has advanced since those days, and it is his own fault if he does not possess such a home as ELLIOTT saw in poetic vision. The claim for what would then be regarded as luxury, but happily is now only convenience, was brought before the London County Council on Tuesday. The housing of the working classes committee recommended "That, without in any way diminishing the quality of the constructional work in the Council's cottages or curtailing the area of the living space provided, the housing of the working classes committee be permitted to rearrange the rooms so as to allow of the provision of the same number of rooms or cubicles of varying sizes in lieu of all rooms being of a compulsory minimum size." The tenants of the new cottages erected by the Council wish to have a room in each tenement which should be used as a parlour or ceremonial-room. The committee thought that the space wasted in a room of the kind might be partially thrown into the living room. The committee are, however, bound by certain regulations. There are at present four classes of cottages at Totterdown Fields. For one containing three bedrooms, a parlour, a living-room and scullery, the rent is 11*s.* 6*d.* per week, but there is a demand for the cottages. The second class is 8*s.* 6*d.* a week, the third 7*s.* 6*d.* The fourth class, which the committee expected would be most popular, seems to be avoided, for the accommodation of a bedroom, a living room, and a scullery with a kitchen range, is considered to be insufficient. The committee, therefore, sought powers to deviate from the normal type and this was granted. The desire of the working-classes for superior and increased accommodation is a satisfactory sign of increased self-respect, and is one which architects will be glad to foster in preparing plans of such dwellings.

EXETER CATHEDRAL.*

"HAPPY are the people who have no history" is a familiar saying. It might have originated with some ancient philosopher of Exeter, and if so it would have been heartily appreciated in the settlement. Exeter, as we know, was important in the historical sense. But the inhabitants at all times have shown small anxiety about recording events for the benefit of posterity. The city is now somewhat of an easy-going place, with little of the exhausting excitement which we see elsewhere. The climate must have always disposed men to lassitude, and the Romans perhaps looked upon the district as if it were a fit residence for lotus-eaters. To them it was Isca Damnoniorum. Why did they select it, or did they gain it by conquest? There is no telling. VESPASIAN is supposed to have gone there in order to recover possession of it, but some coins are seemingly the only palpable evidence of Roman occupation.

After the Romans departed from Britain, Exeter may have had some share in the troubles which followed. The Saxon flood swept the British race westward. But, as well as can be made out, Saxons and Britons appear to have yielded to the influence of the district, and to have considered it was better to enjoy life at Isca while elsewhere there was fighting for superiority. The Danes presumably heard of so happy a region and tried to gain a footing there, but it was only for a brief period. The people were willing to fight bravely when invaded, but on condition they were allowed to revert to their quiescent life. We have an indication of the spirit, or want of spirit, which prevailed. The river Exe was an open way which was free to rovers, and the Saxon king EDWARD laid it as an injunction on his Council that they should investigate the means necessary to make the river less of a danger. Not even the fear of Northmen was sufficient to rouse the inhabitants to take precautions. But in all these centuries we find merely allusions to occasional incidents, and it is absolutely impossible to make out any abstract of the annals of Exeter, even at the rate of one entry in a century.

We are now concerned only with the ecclesiastical history of Exeter. There seems to have been some sort of connection between Chichester and Exeter. As in other things, it is unwise to seek any precision on the subject. But as the ancient seat of the Sussex bishopric was Selsea, so in Devonshire the bishopric was in Crediton. A church dedicated to St. PETER existed at Exeter, which, from the name, was possibly founded by some Roman Christians. There was, however, no ambition to impart to it higher ecclesiastical rank. The Exeter people would have been no doubt quite satisfied if the cathedral at Crediton and its bishop were at a more remote distance from them. Reformers, however, are always springing up who are wishful to disturb established customs, and one of them arose in the middle of the eleventh century in LEOFRIC, the chancellor of EDWARD THE CONFESSOR, who was appointed bishop of Crediton. At the time most parts of Devonshire and Cornwall were in a disturbed state and constantly liable to invasions. LEOFRIC wished to gain security, and he sought an amalgamation of the Cornish and Devon dioceses. It was a novel proposal, and required some diplomacy to realise. The king agreed, and in his grant he declares, "I, EDWARD, place this privilege, or charter, with my own hand upon the altar of St. Peter, and, leading the prelate LEOFRIC by the right arm and my Queen EADITHA leading him by the left, do place him in the episcopal chair, my dukes and noble cousins, with my chaplains, being present." The importance attached to the queen was due to the circumstance that Exeter was then a part of the property settled upon her. Prior to the murder of BRIANTRIC, king of Wessex, the consort of the king, or Cyning, was recognised as a queen, but afterwards she was termed "the lady." By courtesy, especially in documents written in Latin, she was called "regina."

In any other place there would be some document to demonstrate whether LEOFRIC built a cathedral, but in Exeter, as we have said, there was indifference towards the most important events. The monastery of St. PETER was supposed to have been founded for Benedictine monks.

There were eight monks in residence at the time of change. They were sent to Westminster and canons or prebendaries took their place. LEOFRIC was installed in 1050, and he was allowed to retain possession of the see after the Norman Conquest. He died in 1072. From his will it is evident that he recovered some of the monastic possessions for the benefit of the see. All his property he left for church purposes. He was succeeded by OSBERN, a Norman, who ruled from 1072 until 1103. Exeter then contained about 360 houses, of which forty-seven belonged to the bishop. The property in land was extensive.

The first of the building bishops was WILLIAM WARELWAST, who presided from 1107 to 1136. The interim of four years was caused by some differences which had arisen between HENRY I. and the Pope over episcopal appointments. A compromise was effected, and WILLIAM, who had been chaplain to RUFUS as well as HENRY, and who showed himself to be a partisan of the King rather than of the Pope, obtained the see of Exeter. One of the obscure problems connected with the history of the cathedral relates to the constructional operations by the bishop and his successors. The cathedral has the peculiarity of a tower on the north and one on the south side. They now form the transepts, but it has been suggested that originally they were detached from the main body of the church. They are both Norman, but the northern tower exhibits details which almost belong to the Transition period. At Châlons-sur-Marne, Lyons, Angoulême, and Geneva there are similar towers. The towers served no use that can now be ascertained. It has been declared they were intended as castles, which were a fetish with the Normans, and supposed to be invaluable in scaring the conquered natives.

It is thought that the Norman church coincided with the present nave and aisles and with the three western bays of the choir. If we wish to appear better informed we must trust to speculation or imagination. In 1194 HENRY MARSHALL, or MARISCALL, brother of the Earl of PEMBROKE, was consecrated bishop, and he is said "to have finished the building of his church according to the plat and foundation which his predecessors had leide." It is inferred that he extended the choir, erected several chapels, a north porch and other works. WALTER BRONSCOMBE restored chapels, but his love of building was more markedly expressed in other parts of the diocese. The death of BRONSCOMBE brings the history of this cathedral to 1280. At such a time not only was Norman work superseded, but the Pointed style had developed. It was not to be expected that if money were at command much reverence should be shown to the work of predecessors, part of which was nearly 200 years old. It was therefore decided to make a clean sweep of the early work, with the exception of the towers. Some of the walling was utilised, for we presume the services were continued. But care was taken to conceal all old masonry. When so much is said about restoration in all forms, we ought for the sake of consistency to condemn the men who showed such little regard for antiquity. We cannot suppose that the Norman church of Exeter was superior to the Norman church of Chichester. Would visitors from all lands who enjoy the sight of every part of Exeter Cathedral wish to see it brought back to a state corresponding to that of Chichester, which makes so many strangers shiver as if they had unexpectedly entered a tomb? Masonry for its own sake is not long admired. There needs some extraordinary circumstance, as the murder in Canterbury Cathedral, to make people take an interest in forms which have ceased to correspond with their accepted theories of beauty. It has been asserted there is a duty on us to conserve everything that is ancient as evidence of continuity. Posterity is not always grateful for the legacy.

It is to PETER QUIVIL, who was elected in 1280, that we owe the great transformation. He died eleven years afterwards from too hastily swallowing a syrup. As he was archdeacon of St. Davids and a canon of Exeter he may have long meditated on the work demanded. There is a tendency in narrating the history of English cathedrals to give the whole credit for improvements to one man. If we possessed such information as is found in monastic chronicles, we might discover that for many years the modernising of the cathedral was debated by the bishop

* See Illustration.

and canons, and the capital had been acquired to enable the works, when once started, to be carried on without intermission. There must have been a matured plan in the Exeter case, for at first sight the interior appears to be almost as uniform as that of Salisbury. Yet the main works occupied nearly a century, and indeed, if all details are taken into account, the operations lasted for about two centuries and a half. There are changes in detail, for there is a difference between the work of the Decorated period and that of the Perpendicular, but to a general observer the unity of the building is one of its striking qualities.

It is remarkable what a succession of lovers of building was enjoyed by Exeter, who were loyal to the ideas of Bishop QUIVIL. THOMAS BITTON, his successor, devoted himself mainly to work in the choir. As a rule that part always was allowed priority. He lived until 1307. Then came WALTER STAPELDON. He had been Lord Treasurer to EDWARD II., but he was most enthusiastic about his new duties. His end was tragic. He was entrusted with the government of London, but as he was reputed to be an enemy of Queen ISABELLA, and to have interfered with the arrangements for hearing lawsuits in London, he incurred the enmity of the citizens. He was killed at Cheapside, and his head fixed on a pole. His first undertaking seems to have been the painting of the choir. He also completed the arcading above the arches or triforium. There was a great amount of glazing executed during his episcopacy. It was also his privilege to provide the high altar, which, if not of silver, had a silver slab, probably the part carrying the altar stone. He is also credited with a screen which no longer exists, and of which the object is doubtful. The organ in the fourteenth century was simpler than ours, and it may have been employed for the Mediæval instruments as well as other purposes. Exeter also possessed a minstrels' gallery. STAPELDON must always occupy a large part in every history of the cathedral. This arises partly from the variety of his undertakings, although they may not have been in one sense as important as the masonry. Another reason is that the fabric rolls record with some fulness the expenses for which he was responsible.

JAMES BERKELEY held the office for only a few months, and although he was famous as being godly and wise he had no opportunity to perpetuate his name in masonry. JOHN GRANDISSON was another politician; he had discovered the art of acquiring wealth, and it amazed people that a prelate who was responsible for such heavy building expenses should have been able to leave legacies not only to churches, colleges and prelates, but to the Pope, the Emperor, the King and the Queen. One of his first acts was to clear off the debt due to WILLIAM CANON, of Corfe, for marbles. He had also to grapple with the great task of altering the nave. From an arrangement made with the mason, it is evident that marble had been provided, but somehow had suffered injury, and it was necessary the defects should be remedied and columns which had been lying about set in their proper places. The operations are supposed to have occupied nine years. Some of the stone may have been ordered by Bishop QUIVIL nearly forty years before the time of the arrangement. It should here be mentioned that the diocese supplied the greater part of the stone required in the building. The stones in the foundations were brought from Whipton, in Heavitree parish, and from Berlegh, or Barley. The outer walls are built of stone from quarries in Salcombe and Branscombe. The vaulting is of Beer stone and the keystones from Silvertown. According to Archdeacon FREEMAN, "the coarser red sandstones of Wonford and Whipton were used for the sub-bases under the pillars; the delicate and creamy tinted variety from Salcombe and Branscombe (midway, locally and geologically, between our reds and whites) for the interior walls; the semi-volcanic or trap of Silvertown and Thorverton for outward facings or for the infillings of the vault; the slabs of Hamhill for steps, like those of the altar; and the pocombe from Barley, good for paving, and used with happy effect, alternately, with Ipplepen and other marbles in the restored lady chapel; finally, the soft-grained products of Beer and Caen for every kind of sculpture." Caen stone was imported in QUIVIL's time.

GRANDISSON is stated to have achieved the completion of the buildings in 1350, but work still remained to be done

in the windows, and there was the sculpture in the west front. The towers were also altered, a chapter-house was erected and a cloister, although the latter is a novelty in a cathedral.

It is a misfortune at Exeter that the first impression of the cathedral which the visitor receives on approaching the west front is unfavourable. The site is not elevated, and the treatment of that part makes the building appear squat. The soaring spirit which designers and masons were so competent to express has to be sought elsewhere. The west front possesses, indeed, little right to be considered as architectural. All through the history of the building, amidst the mass of details given concerning payments to contractors and workmen we do not learn anything about an architect or a designer. The screen might have been the outcome of a contract with carvers who were prepared to bring it to completion without any supervision. There is no sense of measure, no composition, for on looking at it we feel that the rows of statues could be extended on the northern and southern sides to an unlimited extent. The screen has also the disadvantage that there is no dominant figure. Patriarchs, apostles, kings, saints, all appear in order, and for no other purpose except to show themselves to the spectator. That is the reason, no doubt, why FLAXMAN, who speaks so warmly about Mediæval sculpture, does not, if we remember rightly, condescend to notice Exeter Cathedral. He had no hesitation in comparing the sculpture at Wells to that by the great Italian artists. But at Wells all the figures are subservient to the Almighty JUDGE. In fact, it would be an advantage if the visitor could be blindfolded before he enters Exeter Cathedral and to postpone seeing the west front until the interior had been exhausted.

As we have said, it is not unlikely that while the works of the building bishops were in progress it was necessary to use the Norman building. In our time, with improved aids and appliances, the difficulties of the builder are increased when there has to be an arrangement of that kind. In the fourteenth century it was more of a task to overcome the obstacles. The regularity with which the entire length of the cathedral is carried out becomes then more remarkable. Although there was an abundance of stone, those used in the piers are not very large. But the mouldings could not be more true if they were executed by machinery. The vaulting is comparatively simple, for there was no desire to make a congregation wonder why the stones did not fall on their heads. The triforium may be considered as wanting in depth, and therefore in dignity. But there must have been some difficulties with regard to height with which we are unacquainted. The efforts to surprise and to display the fancies of particular sculptors which were allowable in Mediæval times are not to be seen at Exeter. When we consider all the circumstances and remember that for a long period between the erection of the Norman building and the coming of Bishop QUIVIL there could have been little training for masons in Exeter, the satisfactory character of the work is enough to make us wonder. We can also see the most beautiful episcopal throne to be found in England, miserably devoid of objectionable features, unrivalled sedilia, fanciful vaulting shafts, and if to these be added the colouring and gilding as well as the stained glass in some of the windows, we may be able to form for ourselves some idea of the splendid appearance which the building must have presented to the eyes of all classes of people.

The Reformation does not appear to have brought much danger to the cathedral, at least while HENRY VIII. was on the throne. Under the reign of EDWARD VI. some of the treasures were confiscated, but we believe the money derived from them was utilised for public works. With ELIZABETH the chapter was deprived of some of its landed property, but on the whole Exeter fared better than most cathedrals. At the time of the Civil War it fell into the hands of the Parliamentary troops, but it is doubtful whether all the havoc was committed which we find described by Royalist writers. One curious arrangement which was carried out was that the cathedral was divided by a brick wall in order that there might be separate services for Independents and Presbyterians. After the Restoration the see was given to JOHN GAUDEN, to whom the authorship of the *Eikon Basilike* is ascribed. The

cathedral fared no better than the other buildings of its class during the later period of indifference to Mediæval art.

BUILDING SUPERINTENDENCE.*

THE late Professor HAYTER LEWIS used to say that no class of information relating to buildings was more desirable than what could be derived from accounts of failures. Man is not always perfect, as physicians and surgeons can testify, and his work corresponds with his weakness. Building is a complex operation in which many have to co-operate, and the possibility of a variety of errors is never absent. The causes may sometimes be traced to the initial stages, for errors are due to building-owners possessing only the vaguest ideas of what they require. But who would have the courage to afford the particulars which are needed? No one objects to the accounts of failures in the human mechanism announced every week in the medical journals, nor is a doctor likely to suffer when he records changes in a patient's treatment, although they are acknowledgments that originally he was wrong in his diagnosis. But it would be hazardous to describe errors in plans or superintendence, although the Courts make allowance for the fallibility of architects. By-laws and municipal regulations may be considered as precautions to limit a builder's liability to err, and a man who complies with them is sure to have no misgivings about doing his duty. Then we have workmen who are thoughtless, and indifferent whether they are charged with other mistakes besides those they have committed. There is no doubt that money is wasted through failures every year in all parts of the world where buildings are erected, and those best acquainted with the circumstance are not always able to point out a remedy.

Failures in building did not originate in our time, although from what is sometimes said it might be imagined they were unknown in the past. The Mediæval masons were supposed to go through their daily tasks as if they were performing religious duties. Much used to be said about "the elder days of art, when builders wrought with greatest care each minute and unseen part." But the discoveries made during the restoration of cathedrals and churches have cast much doubt on the honesty of the Mediæval builders. They also were disposed to scamp whatever was not visible, and were acquainted with as many tricks as their successors. In such instances the prices probably were low. The hurry which is a characteristic of our age, and which demands expedition in all things, has increased the tendency to failure. In the United States, where there is still more haste than in England, it is inevitable that imperfect work should be executed unless where machinery has superseded hand-labour. The reports of the Mosely Industrial Commission, to which we lately referred, are by themselves sufficient proof of the carelessness with which American buildings are executed. The bricklayer states there is no pretext and no attempt to properly bond the brickwork. The plasterer says his work is far and away behind that executed in England. There is much else to the same effect, but, as we have already commented on the reports, we need not go further into the subject.

The book by Mr. T. M. CLARK may be regarded as a warning to young architects about what will be foisted upon them by builders and workmen unless they are always wide-awake and keep their eyes open for detection of defects. Judged by the pages, it would appear that the building superintendent is the only man to whom the American people must look if they desire buildings which will endure and will not require an excessive outlay on repairs. He is told that he must not blindly trust to the accuracy of the plans. If, for instance, "the drawings show stone and brickwork bonded together in elevation, it should be his duty at once to procure bricks of the kind to be used in the facing, and lay them up with mortar joints of the usual or specified width, in order to ascertain with certainty the

height which a given number of courses of brick will lay." The words are alone sufficient to explain why American architects are not always favourable to quantity-taking, for how could brickwork be taken off with accuracy from plans when there is no respect for standard sizes?

Mr. CLARK is not satisfied with generalities which may become vague. He takes three classes of buildings—a stone church, a wooden house and a steel-framed structure—and he goes systematically through all parts from the foundations to the summit. In some points we find a correspondence with English work and read of faults which are familiar. They are made more explicit by the aid of numerous woodcuts. The author does not always adopt the professional manner. He endeavours to render his descriptions clear by turning them into incidents which have occurred. For example, when speaking of laying concrete he supposes the wary superintendent is struck by the spick-and-span appearance of the piers and the presence of a few stray pebbles about the pit. The following dialogue ensues:—

Superintendent: Mr. Foreman, how did you get this pier done so soon?

Foreman: Well, sir, we hurried a little on this pier because we wanted it to get set before it rained, and—

Superintendent: I left word to put in only 12 inches of concrete at a time in each pier.

Foreman: O law, sir! that ain't no way to build a pier. There ain't no one can tell me nothin' about concrete. That's as nice a job of concrete as ever—

Superintendent (remembering the scattered pebbles): You didn't put the stones in dry and then grout them, did you?

Foreman (slightly taken aback): Well, sir, perhaps—yes, we did; you see that is the best way to do where you have such coarse sand, and then—

Superintendent: Get some one here and take that all out. It is impossible to tell now how much cement there is in it, but it has not begun to set, so if you take it back to the pen and add a shovelful of cement to every two shovelfuls of this, and mix it well, I will let it pass into all the piers 12 inches thick.

Foreman (deferentially): Yes, sir; anything you say, sir.

In England if a similar scene occurred the language heard would be somewhat stronger. But the Americans have more control of temper, and it is necessary to be respectful even to a foreman. Another suggestion of American methods is given in what is said about mortar being one-half cement. Mr. CLARK remarks, "Let the contractor and his men understand that this means one cask of cement to each cask of lime, not one-half barrel of cement to one of lime as some masons pretend to interpret it." It is strange that there should be trickery in materials, although by American law and custom only the best is presumed to be intended where nothing is stated to the contrary in specifications. Everything must, however, be scrutinised. From the chapters in the book we might suppose that deception is as much due to the nature of particular workmen as to any implied desire of the contractor. Indeed, it is advised that the superintendent should be rigorous as much for the sake of the contractor as for his own. Fires are so common in America it is recommended that the ends of beams which are built into a wall should be bevelled at the ends, that is, forming an acute angle instead of a right angle. The reason is, "that they drop out quietly when their outer ends are consumed, but if left square the portion in the wall acts as the short arm of a powerful lever whose outer end being depressed as the floor falls, prises the wall outward with immense force." We gave above an instance of the manner of dealing with concrete piers which is sometimes practised. A companion is the description of brick piers which we now extract:—

We will inspect the brick piers which support the girders in the main cellar. Of these there are rather more than is necessary, the plan showing them spaced but 6 feet apart from centres. A few only have been built, of well-formed hard brick, 12 inches square, as the plan shows, but with joints of a suspicious grey-blue colour instead of brown. They have been completed some three days, but we find that a knife-blade easily penetrates the mortar after the outer crust is pierced. Calling the mason, we ask him if the piers were laid in sand and cement only, without lime, as the specification required. He answers with considerable hesitation that "A little lime might perhaps have been put in, but it is mostly cement."

* *Building Superintendence: a Manual for Young Architects, Students and others interested in Building Operations as carried on at the Present Day.* By T. M. Clark. New edition. (New York: The Macmillan Company.)

Our suspicions are not allayed, and we ask to see the cask from which the cement was taken, and to have the mortar mixer brought before us. The former is about to disappear in search of these witnesses, but we detain him and send a boy in his stead, who does not return; and after a good deal of writhing our captive confesses, being confronted with the soft mortar, that there was no cement on the ground at the time, and he had had the piers built with the best mortar he could possibly make with the materials at hand.

"What did you colour the mortar with to make it so dark?" we ask; and the foreman replies, "Well, we didn't suppose you would know the difference, so we sent over to the grocery store, and got some lampblack and mixed it in."

We impress upon his mind our objection to such tricks by ordering all the piers to be demolished in our presence, and dismiss him with an admonition.

In the society-room of the church, which is of large size, there is one girder 40 feet long, supported by a column in the middle. The superintendent finds the girder is less than a third as strong as it should be. He notifies the architect, who in reply informs him that in his haste he erased two other columns from the plan, and intended to make another arrangement about the girder, but it had "slipped his mind." He did not wish to dictate how the error was to be remedied, but left the matter wholly to the superintendent, in whom he expresses confidence. Mr. CLARK apologises for representing his architect as liable to make mistakes. But how is his hero the superintendent to display his ability unless occasions are offered him?

The chapter on steel-framed buildings reveals that this essentially American development occasionally retains the defects which are common in an earlier class of construction. The concrete employed is likely to be without strength, for "workmen rarely have any conception of the requisites for good concrete, and do not hesitate to smuggle in portions reduced to mere mud by the forgetfulness of the men whose duty it is to turn off the water, without knowing or caring that a streak of this sort may form a dangerous seam in the mass." At the rolling mills experts are employed to make tests, and the owners conscientiously endeavour to produce efficient material. But the workmanship is of a different kind. There is sometimes irregular punching, and the holes have to be widened by a driftpin, by which the metal is weakened.

We have said enough to suggest the character of the volume. As in some of VIOLLET-LE-DUC's books, an effort is made to impart animation to the instructions, and in that way the young superintendent is better able to realise the forces with whom he will have to contend. We have pictures, as it were, of American methods, and it often happens they bear a resemblance to our own. The use of the volume is not therefore confined to American cities, for the warnings might well be hearkened to by those who take charge of building operations in this country.

THE PROPOSED LIBRARY, STRATFORD-ON-AVON.

THE following statement has been issued by Mr. Sidney Lee:—At the beginning of this year I was elected a trustee of Shakespeare's birthplace, an honour which I highly appreciated. Within a few days of my election as trustee of the birthplace I had to leave England to fulfil a series of long-standing engagements in America, whence I am just returned. Rumours reached me in America that my fellow-trustees proposed to remove or alter various buildings adjoining Shakespeare's birthplace, and that public opinion was, on literary and artistic grounds, strongly excited by this course of action.

As soon as I arrived home I made careful inquiry into the origin of these rumours, and after due investigation of the circumstances I have now assured myself that the public has been misled on almost all the essential points. Spasmodic endeavours have been made to remove the misconceptions from the public mind, but they persist in many quarters. I believe it to be to the public advantage and in the interests of truth to set forth clearly the full facts of the case. The public may then be in a position to form a judgment on the subject which shall be final. But it should be understood that I take this step on my sole personal responsibility.

Put briefly and stripped of flowers of speech, the charges alleged against the trustees were two. First, it was stated that they were wantonly bent on destroying the historic aspect of Henley Street, in which Shakespeare's birthplace stands, by

arranging for the demolition of houses of historic interest, which had lately come into their possession, in the immediate neighbourhood of the birthplace. Secondly, the trustees were accused of conspiring with the Corporation of Stratford-on-Avon to apply to the purposes of a free public library another building of ancient date which was situated in the same street in close proximity to the birthplace.

Two separate issues have been raised in the strife and have not always been kept adequately distinct. The trustees of the birthplace, as constituted by the Act of Parliament of 1891, form a body that is quite independent of the Corporation of Stratford. The Act gives the Corporation a large representation on the board of trustees, but each body has its own statutory functions. In regard to the present issues, the trustees are solely concerned with the fate of the cottages in immediate proximity to the birthplace garden, which were purchased by Mr. Carnegie for presentation to them. The second issue touches the fate of another building, which, although it adjoins this newly acquired property of the trustees, belongs to the Corporation, and has, in the exercise of that body's exclusive discretion, been appropriated by it to the projected free library.

The trustees are charged by Miss Corelli with neglecting to preserve "the present irregular beauty of historic Henley Street." As recently as last month she wrote that "if the proposed alterations are carried out, not a scrap of the original side of Henley Street as thousands of pilgrims have known and seen it will remain." One critic described the street as "a thing of peculiar value," which "once changed . . . will be lost for ever." "Let Shakespeare's street alone," cried another. "Leave the sacred side of Henley Street uncontaminated by modern bricks and mortar." These adjurations may be admirable in sentiment. But the remorseless hand of time robbed them of practical significance or of relevance to the present issue more than a hundred years ago. Henley Street is undoubtedly one of the oldest in the town. Its records date from the Middle Ages. But no part of Stratford underwent more frequent and more complete renovation between the date of Shakespeare's death and the end of the last century. As the little Elizabethan or Jacobean houses of timber and rough-cast fell in the course of ages into decay they were from time to time replaced by new structures, usually wholly of brick. More than sixty houses form the street. The owners (of all but two or three, belonging to the Corporation) were private persons in humble circumstances, who naturally carried out the needful renovations with a sole regard to economy, and with no consciousness of sentimental considerations. As a result the street, with the exception of one short strip, has long been lined by low, featureless brick-fronted tenements, ranging in date through all the decades of the nineteenth century. One large section, on the side of the street almost directly opposite to Shakespeare's birthplace, is barely four years old. Its architecture is of obtrusively suburban type. In some instances when the buildings fell to ruin and reconstruction became inevitable, the interior timber supports were retained in order to save expense, and relics of ancient workmanship of no very romantic character were by economic accident and by no archaeological design incorporated in the reconstructed edifices. But even here new flat brick fronts, fashioned entirely of modern material, invariably displaced the old timber façades with their overhanging storeys.

It is common knowledge that Shakespeare's birthplace, with the adjoining house, which was also his father's property, is now distinguished (among other things) from the rest of the street by enjoying permanent protection from the vicissitudes to which its neighbours have always been liable. Last year Mr. Carnegie purchased for presentation to the trustees a row of four cottages on the east side of the birthplace, where the risk of fire was chiefly imminent.

Mr. Carnegie reserved to the Corporation the right of appropriating to its own purposes a small portion of the site of these four cottages, of which the precise extent was to be defined by mutual arrangement between the trustees and the Corporation. The transaction was only carried through at the expenditure of much time and money. Mr. Carnegie's intervention was, indeed, peculiarly opportune on more grounds than were foreseen. The owner of the three cottages furthest from the birthplace had been a refreshment caterer on a modest scale. It now proved that she intended to convert her three tenements into a single restaurant or tea-shop of an orthodox modern pattern. It was only on payment of a very large sum (2,000*l.*) that she relinquished her resolve of establishing a restaurant on what (she argued) was, from its proximity to the birthplace, with its annual army of visitors, the best site for such a purpose in the town. Thus, by a happy coincidence, Mr. Carnegie's purchase protected the birthplace not only from peril of fire but from peril of proximity to a most incongruous innovation.

No conspicuous historic nor archaeological interest attached to any of the four houses. The two furthest removed from the birthplace were little better than hovels. They had been

crudely built of cheap modern brick within living memory, were innocent of all architectural features and were at the back in ruinous condition. These two tenements have been recently demolished, and the site is to be converted into a garden. The other two cottages nearest the birthplace boast a more reputable record. About 1810 the old timber front with an overhanging storey was removed, and a new flat brick front with projecting windows was set up in its stead. But despite other repairs of later date, the ancient timber of the side walls, the timber-beams of the roof and an open fireplace with inglenook and chimney-corner seats were suffered to survive. A thorough survey led the trustees to the conclusion that the old work inside these cottages rendered their preservation desirable. The expert advice of Mr. J. A. Cossins, the architect who represents at Birmingham the Society for the Protection of Ancient Buildings, showed that it would be easy to renew the ancient shape of the interior. The harmless nineteenth-century brick façade has neither architectural nor archaeological value, but I believe that the trustees propose to leave it standing for the present. The garden, formed of the unoccupied land whence the two adjacent hovels have been removed, will now bound these cottages on their eastern side. Thus the object of isolating the birthplace, which the purchase of the four cottages was intended by Mr. Carnegie to secure, will be fully attained.

I now turn to the action of the Corporation in the matter of the free library. Here, too, I find that the censorious clamour rests on everything except accurate knowledge. The need or desire of a public library in Stratford has been impugned. Undoubtedly there are in the town two good Shakespearean collections of books, each devoted to a particular department of the subject; one of these special collections is in the birthplace museum, the other is in the Shakespeare Memorial. But the existence of these collections—admirable as they are in their own way—has little bearing on the present question. These Shakespearean collections have nothing in common with a library destined to serve the general purposes of the Stratford public. At present the numerous readers and students among the rank-and-file of the Stratford townfolk are without free access to any general literature apart from Shakespeare—to works of reference, to standard treatises of science or art, to newspapers and periodicals.

Mr. Carnegie's gift did not originate the library movement there. Before that was in question efforts were made to establish a free library, and it was understood at Stratford that Miss Corelli, who now attacks both trustees and Corporation on the ground that the town "has never sought a free library at all," generously proposed to provide a site for a free library or reading-room, in furtherance of the townfolk's wishes. "Before any mention was made of the proposed gift of a free library to Stratford-on-Avon by Mr. Carnegie," wrote Mr. Fred Winter, an active citizen of Stratford, to the *Stratford-upon-Avon Herald* on June 12, "I was asked to obtain for Miss Corelli a price for the piece of land (then belonging to Mr. John Wright) adjoining the Technical School in Henley Street, for the purpose of a free library." It would therefore seem that Miss Corelli thought to locate her library or reading-room in "historic Henley Street." [This has been denied.]

The circumstances of the case excluded from the Corporation's consideration an elaborate architectural design. The cost of maintaining the new library was to fall on the rates, and the rateable value of a little town like Stratford was quite small. The selection of the Henley Street site was induced by like imperative practical considerations, and despite all the bold assertions to the contrary, no rational archaeological interests are jeopardised thereby. The Corporation already owned in Henley Street premises which, though they were long occupied as a china shop, could be turned to municipal uses with the smallest possible burden to the ratepayers. This arrangement was at once sanctioned by the Local Government Board. On one side these premises were bounded by the row of cottages which were to be transferred by Mr. Carnegie to the birthplace trustees. On the other side stood the vacant land of which Miss Corelli would appear to have contemplated the purchase. To unite that still vacant plot with the adjacent site of the Corporation's premises was eminently desirable on grounds alike economical and archaeological. It was well known that were the vacant land not soon secured for public purposes, it was destined for a new shop of unattractive modern type, and Mr. Edgar Flower, whose liberality and zeal for the welfare of Stratford are as conspicuous as his artistic skill and knowledge, rendered the town the best of services, from every point of view, by purchasing the vacant land at the price asked by its owner, and by handing it over to the Corporation to form part of the site of the new library.

Of all the censure passed on the Corporation or trustees in the course of the controversy probably the least justifiable is the adverse criticism levelled at the Corporation on account of the policy that it adopted in regard to its Henley Street premises (now used as a china shop). All manner of erroneous information has been put into circulation on the subject. The present condition and the historical associations of the building

have been recklessly misrepresented. It has been christened, quite erroneously, "the house of Shakespeare's cousin," and that misnomer has even defaced a resolution passed by the British Archaeological Association. The fact that the Corporation was patiently taking the best advice with a view to preserving in the building whatever was of ancient value was ignored. It was stated over and over again that the Corporation had obstinately resolved to destroy it root and branch. The authentic history of the premises is extant in the Corporation archives.

The house is now in a very bad state. The greater part of the parapet of the modern brick front has fallen down. In the ordinary course of events the Corporation would be obliged to provide for the house's entire reconstruction. The assignment of the premises to a public object renders possible renovation less drastic and in fuller harmony with archaeological sentiment. At the invitation of the library committee of the Corporation, Mr. Thackeray Turner, the secretary of the Society for the Protection of Public Buildings, in company with another member, inspected the china shop premises on May 29. The Society's report is in full accord with all that the Stratford authorities have done or intended doing.

Thus it will be recognised that, so far from destroying "historic Henley Street," the trustees and the Corporation, through the generous aid of Mr. Carnegie, are doing precisely the opposite. They are permanently preserving all structural work in houses under their control there which has proved on accurate examination to possess any kind of archaeological interest. The process of modernising Henley Street had in past years progressed very far, and of late, but for Mr. Carnegie's interposition, threatened a conspicuous advance. That process has now, at an interesting point in the thoroughfare, been arrested, and some careful and scholarly restoration has been made practicable.

THE OLD MARKET HALL AT WINSTER.

THE limestone districts of the Peak are dotted with small ancient towns and villages, but not many of them, says Mr. W. Smithard, can boast of a building older than their parish church, and secular structures of Mediæval date are exceedingly rare everywhere in the county. The upland town of Winster, therefore, is doubly exceptional in that its church is quite modern, whilst it possesses a thirteenth-century market hall. This quaint little structure is situated at the southern side of the main road, which runs from east to west, and is of unusually liberal width. Winster was formerly a township of considerable importance amongst its neighbours, and until about forty years ago a well-attended general market was held there every Saturday, at which farmers sold their produce and bought manufactured goods, while the miners and other work-folk obtained there all the necessities of life, as well as some luxuries. Then the hall was the nucleus of a scene of active business and gaiety, which overflowed and spread itself into the spacious street; but after the railway was laid up the Derwent and Wye valleys, the equilibrium of local relationships was disturbed, and Winster was left in the cold, with the result that the market declined and eventually died out.

The market hall, which is rectangular in plan, is a two-storeyed building about 8 yards long, 5 yards wide and 30 feet high. The lower part consists of plain stone-pointed arches on very thick circular piers with round capitals, somewhat battered. In like manner to churches, the sides of the hall are built to face the cardinal points of the compass. Formerly the arches were open, but for some time past they have been filled up by a stone wall. The upper part of the building, dating from the seventeenth century, is of good red brick pierced with oblong stone-mullioned windows. It is roofed with thin sandstone slabs from adjacent rocks, which are very picturesque but excessively heavy. The roof lately has shown signs of collapse, and this is supposed to be due chiefly to the weight of the slabs, a portion of which have now been removed.

Since the hall has not been required for its original purpose it has served a number of baser uses in the character of stable, store-room or cart-shed, &c. It is now in possession of a Winster grocer. For many years the hall belonged to the Staley family at Winster, and it passed to its present owner for a small sum as lien on a lapsed mortgage. Formerly the tolls must have been valuable, but the ownership now carries no privilege, except right of usage as with ordinary buildings, though it involves the expense of maintaining the high road and pavements between the hall and the post-office. The interior woodwork—that is, floor, stairs, manger, &c.—is dilapidated and dirty, and the roof is in dangerous condition. The owner, therefore, is about to have the place thoroughly renovated and converted into a store-room for his shop goods. Its external appearance afterwards should not be much changed, for the walls are good. The owner talked of reroofing it with common slates, but it was pointed out to him this would quite

spoil the look of the hall, and he has now agreed to use again the original stone slabs or similar ones.

One cannot help regretting, however, that the Parish Council have not acquired the hall, knocked down the walls between the arches, and turned the upper room into a museum for specimens of local rocks, fossils, ores, &c. This unpretentious structure is, perhaps, the humblest of market halls, yet one admires it for its very humility as well as for its mellow tints on brick and stone, its softened lines and its historic associations. Small though it be it still tells us of the great principle of the Middle Ages—that every privilege carried a well-defined duty along with it. The hall is truly a unique relic of bygone Derbyshire, and it should be guarded with religious care.

In spite of apparent decadence, the inhabitants boast that Winster is still the richest village in the Peak. An unusual number of country craftsmen, such as saddlers, &c., find a home there. Near the market hall are several large stone houses, with handsome Classical fronts. The bulk of the working inhabitants find employment at the Mill Close lead mine,

NEW PREMISES, GLASGOW.

(See Illustration.)

THE new buildings for Messrs. STEWART & McDONALD's headquarters are in Glasgow. The frontages to Buchanan, Argyle and Mitchell Streets are 572 feet long and eight storeys high. The chief public entrance is at 146 Argyle Street, inside which is the principal staircase, which is 21 feet by 21 feet, and its traffic is relieved by two passenger hoists. The goods inlets and outlets are chiefly in Mitchell Street. There are two cart entrances and five other entrances. When the whole of the rebuilding is completed, the premises will contain 235,000 square feet of floorage. The whole is divided into six buildings by fireproof divisions, and the two last blocks are of fireproof construction. The prominent features and balconies are granite, the rest of the façades being of white sandstone. The archi-



DOORWAY, NEW PREMISES, GLASGOW.

the only one of importance now worked in Derbyshire, and from which several huge fortunes have been made. If ever that should come to grief it will be, indeed, a black day for Winster.

Satisfactory Progress is being made with the extensions to the Central station of the Caledonian Railway Company, Glasgow. The scheme includes the roofing-in of that portion of Argyll Street between Jamaica Street and Hope Street, and with the object of showing the height of the new structure the company, at the instance of the law and parliamentary bills committee of Glasgow Corporation, have fixed up ropes at various points in the street, which gives a fair idea of the size of the new station buildings. The ropes are 63 feet in length, and in order to carry them to the extreme point, a scaffolding of two storeys had to be erected on the top of the buildings.

tect is Mr. HORATIO K. BROMHEAD, F.R.I.B.A., Glasgow. The contractors are Messrs. P. & W. ANDERSON, masons; W. VICKERS, carver; JAMES GRANT, joiner; P. & W. McLELLAN, steel beams; M. McCULLOCH, cast-iron; M. SPEIRS & SON, plumbers; G. ROME & Co., plasterers; C. & J. MALLOCH, glaziers; Mr. JOHN BAXTER, measurer. Messrs. STEWART & McDONALD have branches in London, Edinburgh, Liverpool, Birmingham, Rochdale, Dublin, Leeds, Preston, Hull, Belfast, Newcastle, Sydney, Wellington, N.Z., Port Elizabeth, Toronto, Montreal and Melbourne. There are thirty-five departments in the business. Mr. ROBERT KEDIE is the senior partner, and the other partners are Mr. NINIAN B. STEWART and Mr. R. B. STEWART.

NOTES AND COMMENTS.

As the congress of the Sanitary Institute which is to open on Tuesday next, at Bradford, will be the twenty-first of the series, we may conclude that the experiment has been successful. The period of majority has been attained, and everyone who has watched the efforts of the Institute must desire that the progress henceforth will compensate for the labours required in earlier days. If we consider the number of attempts made by other societies to hold annual congresses during the last quarter of a century, and which have ended in failure, the success of the Institute becomes the more remarkable. There is no doubt that this result has been gained by the devotion of the Council, who were inspired by public rather than by personal interests. As far as possible local representatives are always secured for the various sections, and in that manner a general interest has been excited throughout the country. In Bradford the same course will be followed. The president is the Earl of STAMFORD. The local committee will have the mayor of Bradford (Alderman WADE) as chairman, with Dr. EVANS, the medical officer of health to the city, as secretary. Mr. MAURICE FITZMAURICE, C.M.G., the chief engineer to the London County Council, and whose name was connected with the Forth Bridge and the great dam at Assouan, will preside over Section II, in which the relations of architecture and engineering to sanitation will be discussed. At all the congresses the exhibition of sanitary appliances has formed the most popular feature. Visitors who might be puzzled by technical terms and scientific investigations find in the new inventions object-lessons which cannot be misunderstood. At Bradford the exhibition will be held at the Belle Vue Barracks. From the arrangements it is anticipated that the collection of objects will represent the most advanced applications of ingenuity in the service of sanitary science. Around Bradford there is much to be seen, and the principal manufacturing will be open to the inspection of members of the Institute. For those who believe that health is promoted by occasional relaxation, visits to fine scenery and to interesting buildings have been settled.

ARCHITECTS have good reason to be satisfied with the decision of Mr. Justice BUCKLEY in the case brought by the Commissioners of Woods and Forests against the Playhouse, Ltd., the lessees of His Majesty's Theatre. There are countless cases in London and in English towns which demonstrate that the owners and occupiers of buildings are indifferent to architectural lines, no matter what care may have been taken in devising them. They are sacrificed to painted announcements or to those in gas or electric lamps. Generally the architectural value of a building is minimised by the lettering, but that is not of much account if profit is believed to be increased by the sacrifice. It would hardly be considered necessary that so effective a building as the larger of the two theatres in the Haymarket should require any indication of its purpose by means of electric light. But a frame some 30 feet long with letters 1 foot 9 inches high was set up for that purpose. A crown was above. There was a covenant in the lease against such a desecration, and it was necessary to apply for an injunction to prevent the exhibition of the advertisement. There could be no defence for such conduct and the injunction was granted for the removal of the disfigurement. The defendants were ordered to pay costs. London would present a different appearance if a similar course could be adopted in the principal streets.

A LEGAL definition of a house which will be applicable to all cases has yet to be formulated. Nowhere is one so desirable as in the Law Courts. It is no use to say a certain space covered by one roof is a house, for there are structures of that kind, such as blocks of offices and flats, which may contain a large number of houses. As good a test as any would be the fees received by the district surveyor. The question can arise in connection with very simple houses. An injunction was applied for a few days ago, before Mr. Justice SWINFEN EADY, which related to a class of house which could be erected for 300*l*. The company owning land called the Ilford Park Estate granted a conveyance of three plots. Not more than one house was to be erected on each of them, and the elevation was to be

approved by the company's surveyor. The design sent in by the defendant was not approved, and the injunction sought was to prevent the erection of such a building as was represented. It was alleged that the defendant was endeavouring to erect two houses on each plot instead of one. The planning was certainly ingenious. As his Lordship said, there was no internal communication between the ground floor and the first floor; there was no common staircase, as the ground floor did not require a staircase; and there was no common front door, but separate front doors for each of the two tenements. In order to pass from one house to another it was necessary to go out of the front door of one tenement to a space which opened upon the street, and to enter the front door of the other. There was no question here of one house being built and being intended to be used as two. In substance there were here two houses structurally separated in every respect, with separate doorways into the street and with no internal communication. It was different from the case where a building was erected and intended to be used for flats. In that case there was internal communication. Here there was none. His Lordship came to the conclusion that what was intended by the defendant was merely one house superposed upon another, and each building therefore constituted two separate houses. The injunction followed.

THE managers of the Poplar and Stepney Asylum lately applied to the London County Council to allow one of the members of the Fire Brigade to advise them, as a large expenditure was about to be incurred in devising means of protection against fire. The Council have prudently declined. Their responsibilities are too numerous without voluntarily accepting an addition to them. There are enough architects and engineers who would be competent to give the advice desired. The application, however, is evidence of the uncertainty prevailing on the subject. Seemingly it has not got into the public mind that architects and engineers are sufficiently competent to deal with the subject. In the United States the gravity of having instruction is recognised by the provision of courses in fire-protection engineering in the Armour Institute of Technology, Chicago. The new section will be in charge of Professor FITZ HUGH TAYLOR, formerly engineer to the Underwriters' Laboratories. The course will be one of four years. The special instruction seems to be three hours a week during the second year in the chemistry of fire protection, eight hours during the third and fourth years in fire-protection engineering and eight hours during the autumn and winter terms of the fourth year in scheduling, special hazards, underwriters' requirements and insurance practice.

IF the late JULES SIMON is cognisant of what takes place in this lower world, he would probably say that his good-humoured philosophy was doomed to further trials. In the course of his chequered career, for he was a poor teacher and a journalist before he became Prime Minister of France, and in his closing years he continued to live by his pen, he met with many crosses which he bore as if he did not feel their weight. His admirers thought they would make compensation for former neglect by erecting a statue in the square of the Madeleine near the house in which he lived at the topmost storey. But for two years the pedestal has been awaiting its burden. It is now announced that the statue will be revealed to the public on July 12. One of the reasons for the delay has been that beneath the square there are several cellars, and precautions had to be taken to prevent a collapse of the arches. As the memorial of King WILLIAM IV. in the City of London was an obstacle to the progress of the works on the District Railway, we can understand why a bronze statue and pedestal should excite some alarm about the ability of the pavement in a retired part of Paris to support the weight.

ILLUSTRATIONS.

CATHEDRAL SERIES: EXETER.—THE WEST FRONT.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.:
GENERAL OFFICE.

PREMISES: ARGYLE STREET AND BUCHANAN STREET, GLASGOW.

ST. JAMES'S COURT: DETAIL OF ONE ENTRANCE.

ST. MICHAEL'S COLLEGE, TENBURY.

By J. S. BUMPUS.

TENBURY, a quiet little market-town of 1,730 inhabitants, is pleasantly situated on the banks of the Teme, in the extreme north-west corner of Worcestershire, the river dividing that county from Shropshire just at that point.

Cyclists and pedestrians, fond of a beautiful and comparatively unexplored country, would do well to make Tenbury their headquarters for a few days. The Swan, an excellent hostelry, replete with comfort, stands picturesquely at the foot of the Teme bridge.

A mineral spring was discovered here in 1839, by workmen sinking a well. The water sprang up suddenly from a bed of limestone, lying under a massive stratum of old red sandstone 32 feet below the surface. It contains chloride of calcium (calc), of sodium (soda), magnesium and bromine, with a trace of iodine. "Horrid stuff," we have heard it designated. Nevertheless, it has proved highly beneficial in scorbutic, cutaneous and rheumatic disorders. There are a pump-room and baths, and walks laid out on the bank of the small river Kyre (a tributary of the Teme), forming a spa.

Of the parish church of St. Mary, the tower and chancel are the only parts of the ancient church erected in the eleventh century. The nave was destroyed in November 1770 by the overflowing of the Teme, which surrounds the churchyard. This injury was occasioned by digging a grave near the foot of a pillar supporting the roof, between the nave and south aisle, when the water, percolating through, undermined the column and threw down that portion of the building. Careful restorations were carried out by the late Mr. Henry Woodyer some years ago, but it is hard to think he could have sanctioned such an atrocity as the beetling western gallery. The chancel and sanctuary are well appointed and cared for, and there is daily prayer. The church contains some monuments of interest, one of which is ascribed to Sir John Sturme, who joined the Crusades under Richard I. The town boasts several picturesque houses, and a red brick "butter cross" of striking originality. The Teme is famed for its trout and grayling fishing, and in the season there is much attraction for the disciples of Izaak Walton. From Tenbury, Ludlow, with its romantic environs, ruined castle and noble parish church; Leominster with its Norman priory church, and Hereford with its cathedral may easily be visited. The county round is studded with village churches, which, if not exactly grandiose



ST. MICHAEL'S, TENBURY, WEST FRONT OF THE CHURCH.

are full, many of them, of interesting detail, and well merit examination by the student of ecclesiology—especially Burford and Little Hereford.

But the main attraction at Tenbury, and the spot with which the place seems to be now inseparably associated, is the beautiful church and group of buildings known as St. Michael's College, founded by the Rev. Sir Frederick A. Gore Ouseley in 1856. The church, of which he was the first vicar, was erected at his own expense. The college, of which he was the first Warden, and partially endowed by him, was intended, not only as a means of promoting the choral service of the Church, but also to give, at a moderate cost, a liberal and classical education to the sons of clergymen and gentlemen of moderate means, combined with sound Church teaching and the maintenance of a daily choral service of the highest devotional type.

The comparative isolation of this interesting foundation has, we fear, caused it to be left unvisited by many who would otherwise gladly avail themselves of the privilege. The distance from London is certainly great, but the journey is very easy. The 9.50 A.M. train from Paddington is a good one. It runs to Oxford without a stop, and even as far as Worcester is fairly fast. By getting into a through carriage for Kidderminster all change, as far as that place, may be avoided. Here a train departs for Tenbury, Woofferton and Hereford branch soon after the arrival of the London one. Returning, it is a good plan to take the midday train from Tenbury to Birmingham. From the latter place, a fast train leaves for London at 2.40, stopping only at Leamington. The scenery on the Tenbury branch is highly novel and interesting. At Bewdley there are delightful peeps of the Severn, and as far as Cleobury Mortimer the rail threads the Wyre Forest, a district of 7,000 acres planted with ash and underwood. It seems that a periodical fallage has been adopted from very early times; hence the complaint of Drayton in his "Polyolbion"—

When soone the goodlie Wyre, that wonted was so hie
Her statelie top to reare, ashamed to behold
Her straight and goodlie woods unto the furnace sold;
And looking on herself, by her decay doth see
The miserie wherein her sister forests bee.

Arrived at the quiet little station of Tenbury, it is a walk of two good miles up to the college. Conveyances may be chartered at the Swan, but a guest at St. Michael's, not overburdened with impedimenta, will find this walk (supposing he has arrived on a fine, bright afternoon in early September) a delightful one.

Leaving the town behind us, the road (which is the high one to Leominster) ascends gently for a considerable distance. Orchards, hop-gardens, cornfields and rich pasturelands meet the eye on all sides. Charming peeps of the distant scenery present themselves at various points, and an occasional black-and-white timbered house, a local feature, stands out picturesquely against the deep blue sky and green foliage, still in all its summer freshness. At length we arrive on the rough, open, breezy Old Wood Common. In the distance, to the north, are the great Titterstone Cleve and the Ludlow Vinhalls, while on the other side are the lovely scenery and peaceful quiet of a typical Worcestershire parish, embosomed in the richest foliage. At the termination of the Common we see, on our right, St. Michael's Vicarage, the residence of the Warden, the Rev. John Hampton, separated from the road by a hedge and surrounded by one of the most charming gardens imaginable, all "very snug and parsonic," as Sydney Smith would have said. Another minute's walk brings us to the college.

In his "Life of Sir Frederick Ouseley" *—one of the most able pieces of ecclesiastical biography produced in modern times—the Rev. F. W. Joyce remarks that "had St. Michael's been built near some large town with all the advantages of railway accommodation, it is quite likely that the school, at all events, might have more materially prospered. But," he continues, "one thing is very certain, and that is the whole place would have lost one of its chief charms, and that which no man more thoroughly appreciated than its founder from the beginning to the end of his work, viz. the simplicity of its rural surroundings." And, again, "There, before your eyes, as you pass through this scene of primitive English life springs, as it were, out of the very ground, a lofty church with a noble

pile of buildings by its side." St. Michael's was characterised by a writer in the *St. Stephen's Review* of October 1883, as "the one real development of the æsthetic principle that England is yet able to boast . . . emphatically one of the loveliest architectural efforts of the century—the *chef-d'œuvre* of an architect pre-eminently capable of grasping the spirit of the Middle Ages." This description may be somewhat overdrawn, but few could pass St. Michael's for the first time, springing up suddenly as it does in this sequestered spot, without surprise and admiration.

Pausing awhile at the college gates, it may be well to sum up briefly the history of the foundation of the college. Sir Frederick Ouseley in 1849 took deacon's orders, and was licensed to the curacy of St. Paul's, Knightsbridge, under the Rev. W. J. E. Bennett (*clarum et venerabile nomen*). When, in the following year, St. Barnabas, Pimlico, was consecrated as a chapelry to St. Paul's, Sir Frederick principally served that church, his fellow curates being the Revs. Henry Fyffe and G. F. de Gex. The success of Mr. Bennett's work at St. Paul's, Knightsbridge, to which St. Barnabas stood in the relation of a chapel of ease, the *éclat* of the consecration of St. Barnabas itself, the novelty of its construction with collegiate buildings for clergy and choir, its multiplied services, the free and open access to the church for rich and poor alike, the beauty of the architecture and the dignity of the ritual, combined to make it an object of wide attraction. All this, however, was not done without opposition and dislike on the part of the Puritan section in the Church. The year 1850 was a memorable one in the annals of the English Church; indeed, it was a time of intense politico-religious excitement in the whole country. It was a year in which the Prime Minister, himself, heretofore, the leading champion of religious toleration, thought fit to dictate to the bishops of the land what should be their course in the government of the Church; and thereby, in exciting the passions of the multitude, provoked a scene of strife and controversy, the end of which he was unable himself to foresee.* Bishop Blomfield's "histrionic" charge had been delivered in St. Paul's Cathedral, and, to crown all, the Pope had parcelled out England into dioceses. No wonder, then, that the popular mind was exercised, and in November, 1850, five months after the consecration of St. Barnabas, there ensued, for a long series of Sundays, riots at that church unparalleled only by those at St. George's-in-the-East ten years later. Indeed, had it not been for the determined attitude of the congregation and the intrepidity of the officiating clergy, the right to undisturbed worship would have been entirely set aside and the beautiful church wrecked by a misled and ignorant mob. Affairs culminated in the resignation of Mr. Bennett† and the assistant clergy. During the tenure of his curacy at St. Barnabas, Sir Frederick Ouseley generously bore the whole expense of the choral services, which were celebrated (Sundays and weekdays alike) in a stalled and richly-appointed chancel, and in the full cathedral manner. When the break up came, the chorister-boys who had been educated and boarded in the adjacent collegiate buildings, were sent under the charge of the Rev. Henry Fyffe to Lovehill House, Langley Marish, a few miles from London on the Great Western Railway, and in order that the traditions of St. Barnabas might not be broken, a private chapel was attached to the house in which choral service was held twice daily until Michaelmas, 1856, when Ouseley's scheme culminated in the erection of St. Michael's.

From 1851 to 1852 Ouseley travelled abroad, and, on his return in June of the latter year, bought some ground on a high tableland adjoining the Old Wood Common previously noticed. He had made his acquaintance with the neighbourhood some years before, through the frequent visits he paid to his old friend and tutor, the Rev. J. Wayland Joyce at Burford Rectory. Before the end of 1852 he had fixed on the site, not only for the church, but also for the college. Throughout 1853

* See Lord John Russell's famous "Durham Letter."

† In 1852 Mr. Bennett accepted the living of Frome Selwood, in Somersetshire, which he held until his death, in 1886, at the age of eighty-four. The restoration and rebuilding of the church of St. John Baptist will ever be a memorial of him, and the services and work of the parish were in accord with the splendid church known far and wide for costly magnificence; on it he had expended his own private fortune.

the plans were being prepared by the architect, Mr. Henry Woodyer, of Guildford,* and on May 3, 1854, the foundation-stone of the church was laid. A little more than two years later, viz. on Monday, September 29, 1856, the Feast of St. Michael and All Angels, the church and buildings were consecrated with a magnificent ceremonial by Dr. Hampden, the Bishop of Hereford, who had all along been most kind and cordial, and who approved of the scheme in every way. He assigned a parochial district, which included portions of the parishes of Leysters, Tenbury and Middleton-on-the-Hill. By the then vicar of Tenbury (Rev. John Churton) Ouseley was considered as a "Puseyite." Events at St. Barnabas were fresh in the minds of many.

Sir Frederick Ouseley dearly loved his picturesque estate—and well he might—so tranquil and so beautiful, and with such a rich, smiling country spread around it. To stay for a few days at this place is a distinct privilege, and going back to town and business is like entering another world.

On entering the college gates one cannot fail to take note of the "hallowed acre" surrounding the church on its northern and eastern sides, and the scrupulously neat manner in which the turf and graves are kept and tended. No hideous urns or meaningless piles of Euston Road cemetery masonry offend the eye. All is in good taste; several of the stones being of the coped form, as approved by the Ecclesiological Society in the *Instrumenta Ecclesiastica*. The graves of the poor are marked by small fleuriated crosses of iron with brief inscriptions. Thus the turf is not disfigured by heaps of nameless mounds. Beneath the east window of the church we observe the tomb of the founder, whose sudden death, on April 6, 1889, caused such profound regret. It consists of a block of polished red granite, on which lies a cross of white marble, supported at the ends by four small pillars cut out of the granite. It was subscribed for by fifty of Ouseley's friends, and the design was furnished by Mr. Aston Webb.

(To be continued.)

HOLMBURY ST. MARY.†

UPON the present occasion I have endeavoured to provide a ramble rather in accordance with the intentions of the Society when first established, than one possessing any very archaeological or architectural features. My meaning is, that the Council having been kind enough to appoint me a long summer day, I have tried to utilise it by arranging somewhat of a picnic, which, having been held in some of the most beautiful parts of our home county, and within easy reach, may send us all home refreshed after the week's work.

Nevertheless, I have consulted, I think, all the records available in order to make my paper interesting and instructive, as well as our walk agreeable.

I have not been able, after considerable research, to establish definitely whether the camp which we have seen this afternoon is of Roman origin or not, but I propose to give you the result of my investigations.

From a very early authority I learn on the confines of Shire, Ewhurst, Abinger and Ockley (on the common called the Churt or East Churt), and on a considerable eminence which shoots out between Leith Hill and Conyhurst Hill, is a large camp called Holmbury. It is situated on the eastern declivity near the top of the hill to which it gives its name, and toward the southern extremity of it.

It is a work of an extremely irregular form, having an entrance near the north-west angle and another near the south-east, and is fortified with a double trench, except on the east, south and south-west, where the precipice rendered it unnecessary, and where, therefore, it has only a single one.

The area within is 8 acres 2 roods 13 perches; it is supposed to be of Roman construction. It is about two miles from the Stane Street Road, and about as far in a straight line west of the camp called Anstie.

Aubrey, in his "Natural History and Antiquities of Surrey," 1718, says:—"Within this parish is a mountain called Holmbury Hill, near to which (adjoining to the road from Dorking to Arundel) is a very great camp, double trenched and deep, containing by estimation about 10 acres at the least. The

inhabitants hereabout have no name for it. From this camp is a noble prospect over the wyld to Kent and Sussex, and quite over Sussex (in a clear day) to the sea; as also to Hindhead (a hill in Hampshire). Contiguous to this hill is Boare Hill, where the tradition is that heretofore were wild boars; and Hether Hill, denominated (they say) from a yeoman family of that name, which hath continued in this parish from before the Conquest, and are still here. Full east from this camp, in the wyld, is a large pond called Eaglewood Pond, in the parish of Newdigate, of about twenty or thirty acres. From Dorking to North-down Hills in Sussex is a large prospect of several miles off, over a spacious vale, very broad, full of enclosed pastures; the fore-shortening of the prospect makes it like a wood."

Brayley, in his "Topographical History of Surrey," says:—"In the Saxon Chronicle occurs a notice of a battle which took place at Aclea, in which the Danes, who had invaded England, were defeated by the Saxons, under their king, Ethelwulf, in 851."

Leland, in his "Collectanea," mentions the victory over the Danes as having happened at Okeley, and it has been generally admitted that Ockley, in Surrey, was the scene of that conflict.

On Holmbury Hill, in this parish, is an ancient camp of an oblong form, but with a considerable angular projection at one end; at the opposite extremity are distinct remains of a double ditch and vallum, which are continued along the side that was distinguished by the main entrance.

It is probable that this was the position occupied by the invading host. Aubrey states that "the mote and mob of the keepe of a castle, indifferent large," were remaining in his time near the church.

H. E. Malden, in his "History of Surrey," says:—"This exactly bears out the idea of a camp of refuge fortified by banks, ditches and abattis." (Cæsar: "De Bello Gallico.")

Holmbury and Hascombe both show traces of Roman science. They are rectangular on three sides, only in each case the south side, crowning a steep slope, follows the contour of the hill.

Just as the later Roman engineers sometimes adopted the style of fortification of the barbarians who filled their armies, so barbarians who had seen Roman warfare copied the Roman science. Apparently some late Roman and some barbarian camps are indistinguishable in form. But these fortifications perched upon the tops of hills, away from water, are quite unlike the works of the Legions. Such works, perhaps, belong to the time when the Romans had departed, and when the Welsh of Surrey were alarmed by the progress of English invaders from the north, east and west. Few, if any, of these camps have been systematically explored for remains, but they have yielded a few coins and flints.

The age of a fortification is not to be decisively determined by the remains found in it. For instance, in an undoubted British camp near the South Downs, the first investigations of an eminent antiquary led to the discovery of two old-fashioned tobacco pipes and a halfpenny of King William III.

Many of them may have been occupied by different people at different times, long after the first builder had disappeared. Three of the most considerable Surrey camps, St. George's Hill, Anstiebury and Hascombe, are completely overgrown by woods. As Surrey was not the scene of Roman warfare after, perhaps, the first year of the invasion under Claudius, Roman military remains are few. There was apparently a *tête du pont* covering the foot of London Bridge. But its existence is rather a matter of conjectural probability than evidence. There is a rectangular, or nearly rectangular, camp on Puttenham Heath, south of the Hog's Back, called Hillbury, which with a single bank and ditch close to a stream which is within missile reach of the western vallum has all the appearance of Roman work.

(The Hillbury camp is not exactly rectangular; the north side is shorter than the south. But Roman engineers did not always observe the rules of Polybius or Hyginus exactly.)

It is a very possible halting-place of a detachment of Vespasian's army. There are three small square enclosures on Walton Heath. There is a very small square camp near the Mole, above Stoke d'Abernon, near Randall's Park, and there used to be three small square works near Chertsey, nearly opposite Laleham. On Farley Heath, near Albury, is a large nearly rectangular fortification, with remains of brick buildings, which is clearly a Roman station. It was a camp, possibly, converted into a permanent settlement or garrison. A systematic excavation of it would probably yield very interesting results, for a great quantity of coins have been found there by merely random digging.

We may picture Roman Surrey to ourselves as a pleasant rural country, ungarrisoned, secure from enemies, during the greater part of the Imperial rule. The Legions were quartered far away in the north and the west. Neither was Surrey a great centre of trade or population. The towns must have been few and small. In what is now Southwark there were villas with tessellated pavement and other marks of wealthy inhabitants. Sufficient remains have been discovered at

* Woodyer was a pupil of the late William Butterfield. Specimens of his work may be seen in the exquisite groups of buildings and chapels of the Convalescent Home, Eastbourne, and the House of Mercy at Clewer; in the Church of the Holy Innocents, Highnam, near Gloucester; and in the restoration (1873) of the church of St. Helen, Abingdon.

† A paper read by Mr. T. H. Alexander before the members of the Upper Norwood Athenæum.

Kingston-on-Thames to lead us to suppose that there was a small town. The Thames valley was no doubt as attractive to a Roman, or Romanised Briton, as to ourselves.

Albury—in Domesday, Eldeberrie, the Old Bury—was named apparently from these ruins. In Aubrey's time the remains of buildings were evidently much more considerable here. The bases of two of the pillars of old Albury Church have been thought, perhaps wrongly, to be Roman, taken from this place. At Woodcote, near Croydon, there used, according to Camden and Aubrey, to be very extensive remains. There was the small town on Farley Heath.

It is impossible to say from remains, or from the names in the Itineraries, that there were any other towns.

High up on Walton Heath, between Reigate and Epsom, there are remains of a few Roman houses, and a brass image of Æsculapius has been found there. One wonders what took a fairly rich man to such a spot, unless he wished to test the speed of his British horses over the turf made famous by subsequent struggles.

Near Gatton various Roman relics have been found, including parts of the ornamental trappings of horses. At Pendill, in Bletchingley, a Roman hypocaust and foundations were discovered in 1813. A Roman villa was discovered at Pitsey, near the Pilgrims' Way, in 1864. There was another near Guildford, another near Chiddingfold, and remains, in Stukeley's time, at Tongham. At Abinger there was a small Roman villa, pleasantly situated, with a hill between it and the north, standing among the sandy heaths, and close to the great forest. It was the hunting-box, perhaps, of an official from London. It is in the grounds belonging to Lord Farrer. The remains here have well-nigh disappeared now—not without fame in their decay. It was here that the late Charles Darwin scientifically observed and recorded the ravages of the earthworms upon the exposed and once admired tesserae of the atrium.



HOLMBURY CHURCH.

Roman Surrey, without a name of its own, was merely an agricultural, residential and sporting district then as now. But the neighbourhood of the Anderida Silva, where the boar, the red deer and the wolf haroured, must have afforded more stirring sport than can be obtained with the Royal Buckhounds, the Surrey Union or round the pheasant preserves. On the chalk downs the bustards wandered in troops; on the heaths the still not extinct blackcock mocked the skill of the archer. In the streams the otter fished as he still fishes, and perhaps the beaver engineered. It must have been a pleasant place when the north-east wind brought up no cloud of smoke from London, when nature had still as a rule the upper hand of man, and when from the brow of Leith Hill the hunter could gaze over an unbroken sea of oak boughs tossing between him and the distant South Downs.

In conclusion, Capt. E. James, R.E., who some time since commanded the Ordnance district in which the line of country between Sand Hills and Farley is situated, wrote to Mr. J. P. Harrison, who contributed a paper on the subject of Roman roads to the Surrey Archaeological Society:—"The Weald of Sussex was the Andred's Weald, and (with the adjoining clay district in Surrey) was probably never thoroughly settled by the Romans. It remained forest, and was occupied by the aboriginal inhabitants. The Romans having advanced by the Thames occupied with their outposts the line of old British works, facing southwards, on the sandstone hills, overlooking the Weald. The works were probably Crooksbury, Hillbury (Puttenham), Hascombe, Chinthurst (called also Somersbury) (Wonersh), Holmsbury, Leith Hill and Anstiebury. On the south of the Weald the Romans had established colonies at

Chichester, Arundel, Shoreham, &c., and occupied the northern end of the South Downs with their outposts."

Thus, although we cannot decisively ascertain the origin of these earthworks, so lost is it in the obscurity of the past, yet there stand the "everlasting hills" with these records of what our ancestors have done clearly delineated upon them, notwithstanding the ages which have since past; and they still afford objects of interest for our study and provide food for our imagination, whether we picture to ourselves the "aboriginal inhabitants," stained with woad, working upon them, or the stalwart figures of the Roman soldiers.

The following notes were kindly furnished by the Rev. A. C. Hayes, rector of Holmbury:—

The church of St. Mary the Virgin, Holmbury St. Mary.—The church was designed and given to the newly-formed district parish by the late George Edmund Street, R.A., and was consecrated on November 6, 1879. It is in the Early English style. The walls are built of Holmbury Hill stone (Hythe beds), and the dressings of windows and doors are of Bath stone. The rapid slope of the site enabled the vestries, by a slight raising of the north aisle, to be placed under the church. Over the western bay of the nave rises a bell-turret with shingled spire. It contained originally five bells arranged for chiming, and cast by the eminent organ-builder, Mr. Lewis, with religious inscriptions after the old fashion, instead of the modern custom of giving the names of the maker and churchwardens. A sixth bell was added in June 1887, when a chiming clock made by Messrs. Gillett, of Croydon, was presented by the parishioners, in celebration of the fiftieth year of the reign of Her Majesty Queen Victoria. The following inscriptions on the five bells were composed by Mr. Arthur Edmund Street, the founder's son:—

- (1) Patrem nostrum celebramus.
- (2) Christum Filium salutamus.
- (3) Sanctum Spiritum laudamus.
- (4) Caros mortuos ploramus.
- (5) Vivos ad preces vocamus.

And may be roughly translated:—

- (1) The Eternal Father's Name we praise.
- (2) Salute we Christ the Son.
- (3) To laud the Holy Ghost we raise
Our voices clear and strong.
- (4) The dear departed lady we deplore.
- (5) The living call to worship and adore.

The points in the exterior of the church that chiefly call for notice are the considerable height of the east end, and the recessed and canopied tomb of the founder's wife in the south wall of the church. Entering the nave through the western screen, the arches on each side are carried on pillars of blue Pennant stone, with smaller shafts of Belgian marble. The reredos is of Purbeck marble, and in the centre is a fourteenth-century triptych—the Blessed Virgin and the Infant Saviour surrounded by saints and angels—attributed to Spirello Aretino. The altar cross is of old Limoges enamel, dating probably from the twelfth century. The altar cloths and banner were works by the sisters of St. Margaret's, East Grinstead, and the dossal and sedilia hangings by ladies in the parish.

The stained-glass windows were all executed by Messrs. Clayton & Bell, from Mr. Street's designs. In the east window he has introduced the kneeling figures of his patron saints, St. George and the Martyr King St. Edmund, and in a small window over the west door are his arms, with the motto of his family, "Fidelis inter perfidos." His crest, a St. Catherine's wheel, will also be noticed in the pattern border of the side windows in the chancel, as well as in the church banner. Under the west window is a beautiful old terra-cotta of the Blessed Virgin and Child, by Lucca della Robbia, given to the church by Mr. J. P. Clayton. The organ was built by Messrs. Lewis. The handsome oak lych gate at the entrance to the churchyard was erected by the late Sir William Dowman, Bart., of Toldwynds, in the parish of Holmbury St. Mary. The churchyard cross, designed by Mr. A. E. Street, was erected by the parishioners and others in grateful and loving memory of the great architect, who, surviving the consecration of the church little more than two years, was laid to rest in the abbey of Westminster, December 29, 1881.

Round the base of the cross is the text, Psalm cxxii. 4-5:—"I will not suffer mine eyes to sleep," &c.

The illustration of St. Mary the Virgin, Holmbury, is from a photograph by Mr. Henry Virgoe.

The Bishop of London consecrated on Tuesday the church of St. Cyprian, Marylebone. The total cost of the new building will be about 13,000*l.* of which 3,000*l.* is still required. The architect is Mr. J. N. Comper, and the interior of the church is an example of fifteenth-century architecture. The church will seat 600 persons. The interior is of Bath stone, the roof being of pine with fibrous plaster panels.

VALUATION OF CHRIST'S HOSPITAL.

ON Thursday in last week at the West Sussex Quarter Sessions the appeal of the Council of Almoners of Christ's Hospital against the assessment committee of the Horsham Union, in respect to two poor rates, was heard before his Honour Judge Lumley Smith and other magistrates.

Mr. Bray, K.C., for the appellants, in his opening explained, says the *Sussex Daily News*, that the two districts concerned were Horsham Rural and Itchingfield. In regard to Horsham Rural the sum was 14,745*l.* gross and 11,150*l.* net, while in respect of Itchingfield the sum was 450*l.* gross and 350*l.* net. Christ's Hospital was a charity and was not founded on a commercial basis in any way. It was only children of parents who could not afford to pay for education who were educated in this school, and the highest payment of money that could be made under the scheme was 20*l.* In a great many cases there were no fees at all; essentially it was a charitable institution. The actual cost per boy was something under 60*l.* per year. The buildings were to a great extent obviously of an ornamental and monumental nature. It was a very old-established institution, and not unnaturally the Council of Almoners were of opinion that it was an opportunity to erect something which could be a monument for ever to the founders of the hospital. In consequence buildings had been erected on what some people might call an extravagant basis, certainly an extravagant basis if anything in the commercial line had been intended. The Court had to consider what would be the rent which could reasonably be obtained from a yearly tenant. Of course, there was no tenant or competing body. The schools probably contained more accommodation for boys than any other school in the kingdom, greater than Eton, Harrow, Winchester, or other schools. He explained that a valuation was made by the overseers, who included Mr. S. Smith, a valuer, at Horsham. They put the gross rateable value at a little over 11,000*l.*, and the net rateable value at 8,817*l.* The Council of Almoners, thinking that this was excessive, objected. The assessment committee called in Mr. Ryde, who raised the figures from 8,817*l.* to 11,150*l.* Taking it at about 6*l.* per boy, the rateable value would work out roughly at some 6,000*l.* Mr. Ryde took 3 per cent. upon the actual cost of the buildings. The Council of Almoners complained that he had assessed the school in one lump sum, and no details were given. In the Oxford case it was held that they must disregard everything of an ornamental or monumental character; in fact, they must take what was described as the utility value of the buildings. Three per cent. ought to be applied if they were to take it on the structural value.

In reply to Mr. Boxall, K.C., for the respondents, his Honour said they were not going to view the buildings, because most of the justices were conversant with them.

Mr. Bray next compared Mr. Ryde's assessment of the various buildings with that of the overseers. Mr. Hedley, who was called in by the Almoners, assessed the buildings from the point of view of their utilitarian value, looking upon them as of quite unnecessary size.

His Honour: He does not cube all the buildings.

Mr. Bray: No, he takes another building that will do as well. This was done to a great extent in the Oxford case.

Mr. Hedley was then called. He stated that he had nearly twenty-five years' experience in valuing large works, hospitals, infirmaries, asylums and schools. He gave evidence bearing out points in the opening, submitting that 6*l.* per boy was a fair value for this description of building.

In cross-examination by Mr. Boxall witness contended that many of the buildings were too high for the length and breadth. Lower buildings would have been sufficient to accommodate the boys. For the dining-hall the height was 56 feet, and he had deducted 30 feet.

His Honour: He has valued the lower half and not the upper half.

Witness said the roof was very expensive, being handsomely decorated. He described the water tower, the most costly work of the buildings. This was of no value, and he had taken it off. In regard to the dormitories the accommodation was enormous, the floor space being too large, and they were too lofty. He had never seen such accommodation. Good accommodation could have been provided at much less expense. He had taken a third off here and also in the preparatory school. The infirmary was one of the finest in the country, far in excess of any requirements in a place like that. "I wonder," he added, "whether you could get anybody to pay a rate for an infirmary based upon the capital of this place." In the sanatorium there was too much accommodation, too many bedrooms for infectious disorders. A half would have been sufficient. The five courts were too large.

Re-examined: Over other schools he had never seen buildings so large as those for the accommodation.

His Honour: You have gone on the principle of taking the costs on percentage of value?—Witness: Yes.

His Honour: Then your view is that the place is unnecessarily large and unnecessarily ornamental, and you have

reduced the dimensions of the place to what you think sufficient Witness: I have.

His Honour: Then you reduced it to a style of building you think good enough for the purpose and valued that?—Witness: Yes.

His Honour: The result is you have not valued the building now assessed, but what you think would be good enough for the Almoners to build had they been humble-minded gentlemen to erect buildings for this purpose?—Witness: Yes.

Mr. Bray: Is this a common thing?—Witness: Yes, to take the utility value.

The Judge: Utility valuing is right.

Mr. Alexander A. Stenning, of thirty-five years' experience, said the buildings were constructed upon a too liberal plan for the purpose of letting or utilisation, and he had deducted 25 per cent. He estimated 5*l.* 7*s.* per head, and this was rather above the average. He did not think any public institution was rated up to this.

In reply to Mr. Boxall, witness said he was surveyor to Christ's Hospital, and was designing a new building at the schools in Hertfordshire. He was not architect for the schools at Horsham. A great deal had been spent on the buildings, which were not rateable. The chapel and dining-hall were far too costly. The master's house was very costly—3,200*l.* for accommodation which they would not let for more than 60*l.* net.

Mr. Boxall: Was it suited for the purpose?—Witness: I think not; there is not the accommodation.

Mr. Boxall: Then this is too small?—Witness: It ought to be differently arranged. Personally, I don't approve of the plan, and could have built better houses than that. He added that there was an excess in every department, and parts were lavishly done.

While the witness was being questioned in regard to the cubic feet, his Honour caused some amusement by asking how many cubic feet were the boys to have in the playground.

Mr. William Lempriere, who was educated at Christ's Hospital, and is at present senior assistant clerk at the schools, gave some interesting figures in regard to the hospital buildings. He stated that accommodation was provided for 820 boys, and at the present time there were 747. The site of the schools was purchased from the Aylesbury Dairy Company, and 53,000*l.* was the price of the original purchase. Afterwards other property was purchased for 100*l.* and 1,225*l.*, making a total acreage of 1,167. The contract price for subways and foundations was 23,207*l.*; fees to architects, surveyors, clerk of works and law charges, 29,000*l.*; pipes and outfall, 5,228*l.*; road making, asphalted paths, tree planting, laying-out and levelling, 34,274*l.*; well, 2,131*l.*; reservoir and machinery, 13,027*l.*; furniture and equipment and laying of foundation-stone, 12,491*l.*; electric supply, 11,385*l.*; contracts for the buildings, 383,471*l.*; total, 566,500*l.*

Mr. Bray: Do you find your own police?—Witness: Yes. He added that they acted subject to the approval of the Charity Commissioners. The erection of old portions of Christ's Hospital was exceedingly expensive—about six times as much as if new portions were erected. About 150,000*l.* more was spent than anticipated.

Mr. James Green (Messrs. Wetherall & Green), consulting surveyor to the Treasury, War Office and Board of Trade, acting for the London County Council, and chairman of the assessment committee for the borough of Kensington, was also called. He had assessed Charterhouse, King's College Hospital, King's College, and was also concerned in the new colleges for Oxford University. He based his estimate on the same lines as Mr. Stenning, and, in giving particulars, remarked, in regard to the infirmary, that this was a very extravagant building—one that was carried out to the doctors' fads. He had deducted 50 per cent. of the cost. He assessed the rateable value 5,903*l.* and the gross 7,870*l.*

This was the case for the appellants, and Mr. Boxall, on behalf of the respondents, submitted that they desired to deal with the assessment in a reasonable spirit, being well aware that it was a large charitable undertaking, and that there was a very great expenditure of capital on what must stand by annual value at very high rent. They desired to avoid all litigation. He contended that in the evidence of the witnesses who had been called the cost of construction had been entirely left out of their calculations. He drew attention to the fact that the Council of Almoners acted with the approval of the Charity Commissioners, and ridiculed the suggestion put forward that there had been an extravagant expenditure of a quarter of a million. He submitted that the money had been judiciously expended. They might have expended more than they anticipated, but anyone who saw the appropriateness of every bit of the buildings and their usefulness could not say that there was injudicious expenditure as alleged.

Mr. A. L. Ryde (Messrs. Ryde & Sons), Westminster, of twenty-five years' experience, was then called, and, alluding to the suggestion of waste, said he had seen Mr. Aston Webb and had come to the conclusion that there was no extravagant

expenditure. If 30 feet were taken off the dining-hall Mr. Aston Webb would be horrified, because the building would be ill-proportioned. The buildings were well-proportioned and the architecture was very plain, except here and there, where it broke out in stone relief. He gave detailed particulars of how he arrived at his valuation, and was being cross-examined by Mr. Bray when the Court rose.

The further hearing of the appeal will take place on Saturday, July 4.

A NEW PORTRAIT OF SHAKESPEARE.

IN a letter to the *Standard* Mr. C. L. Eastlake writes:—The publication of a booklet under this title, by Mr. John Corbin, an American author, has revived a question on which a few years ago much controversy took place, viz. as to whether the portrait presented to the Shakespeare Memorial Museum at Stratford-on-Avon by Mr. Edgar Flower is from life, and the original picture from which Martin Droeshout executed his well-known engraving prefixed to the first folio edition of Shakespeare's plays. A recent visit to Stratford has enabled me to examine the picture carefully, and, without pretending to more than ordinary experience in such matters, I venture to think that a solution of this problem is less likely to be attained by the aid of antiquarian research than by the light of common sense. If it is part of Mr. Corbin's theory to suggest that the engraving was based on what is known as the "Ely Palace Portrait" (now in the Shakespeare Birthplace Museum) I fear that I cannot agree with him. That picture, in its original state, may or may not have been a contemporary likeness, but its relation to the engraving is extremely doubtful.

In declining to believe that the so-called Droeshout picture was the original of the print, Mr. Corbin is on safer ground. The issue in this case is a very narrow one. There is so much resemblance in detail between the two that we must choose whether the print is to be regarded as a copy from the picture or the picture from the print. I have come, almost regretfully, to the latter conclusion, and for the following reasons:—

In the first place, bust-length portraits at the period to which this picture is assigned were, as a rule, somewhat smaller than life. The so-called Droeshout picture is larger. Anyone who takes the trouble to measure Elizabethan or Jacobean portraits in our National Collection will find that they average 8½ inches in length from the top of the head to the underside of the chin. But the head in the "Droeshout" measures quite 10 inches. This is an abnormal length in portraits of the alleged date (1609), but is not inconsistent with the character of some works executed at a later period.

Secondly, the head in the print is slightly inclined on one side, so that the right eyebrow is rather higher than the left and the lobe of the left ear is sloped. In the painted picture the eyebrows are on precisely the same level. The head is as perpendicular in pose as if its axis had been defined by a plumb-line. Now, this is just such an alteration as a late painter might have designedly made in copying from the print, but hardly one on which an engraver would have dared to venture in reproducing a portrait.

Thirdly, the print clearly indicates, with actual lines, the stubble of a beard on the chin and lower part of the face. In the picture the corresponding portions are as smooth as a billiard-ball. What engraver would take the trouble to improvise and introduce such additional minutiae? On the other hand, it is more than likely that a clumsy painter translating a print into an oil-picture would shirk the trouble of representing in detail the appearance of an unshaven chin.

Again, there is considerable difference between the print and the picture in the delineation of a braided ornament which runs down the front of the doublet on each side of its buttons. In the picture it is a chain-like pattern, each link of which is identical in size and symmetrically disposed. But in the engraving the same ornament is most irregularly drawn—in fact, hardly recognisable as a chain pattern at all. Now, this is a detail which an engraver could have reproduced with mechanical accuracy, if he had chosen to do so, when copying the picture. But it is not so rendered, and the inference is obvious. That the so-called Droeshout picture, if ever tolerable in execution, has been unskilfully retouched there can be no doubt. Even inferior English portraits of the late sixteenth or early seventeenth century, however archaic in style or rudely drawn, are seldom "messy" in their handling. This one bears signs of over-daubing in more than one place, especially above the right eyelid. The high lights on the tip of the nose and in one corner of the mouth have evidently been superadded, while the hair and portions of the background appear to have been repainted with some bituminous medium.

I pass over the presumed anachronism presented by the "cursive" letters of the inscription, because inscriptions on pictures afford, at best, but dubious evidence of authenticity. It is not necessary to regard the Droeshout picture as a forgery. Indeed, if it had been one, we might have expected better

work. Much more probably it was produced by some inexperienced painter or amateur who, perhaps two centuries ago, amused himself by trying to copy the well-known print in oil-colours. It is quite possible that more than one of the numerous portraits of Shakespeare now extant may have been painted from life. But it does not follow that Martin Droeshout based his engraving on either of them. The print may have been executed from a drawing which has long since perished. The "counterfeit presentment" which it recorded survives in a traditional form, but it shares the fate of other traditions in having been from time to time modified, idealised and sometimes perverted by posterity.

ST. PETER, STANTONBURY.

THE old church of St. Peter, Stantonbury, Bucks, stands in the fields overlooking the river Ouse, remote from human habitation, and it is now seldom used. The building escaped the fate of the Manor House, to which it was no doubt a chapel. The site of the house is still visible, with its terraces and bowling-green, though the house has been razed to the ground. The church is very small, and now consists of a nave, chancel and north porch only. The nave is Norman. On the north there are two large Norman arches, ornamented with zigzag moulding, which apparently separated the nave from the north aisle. These arches have been built up, and the north aisle, if it ever existed, has disappeared. The northern doorway is Norman, and is probably not in its original position. The southern doorway is also Norman, but has been blocked up, and the lower part is concealed by the raising of the soil of the graveyard. At the west end of the church the old stone bench still remains. This is an interesting and somewhat uncommon feature in a parish church. In the gable there is a single sanctus bell behind a curious little doorway; there is no bell-cote. Close to the chancel arch there is a niche with an early arch. This might have been a window or the resting-place of a saint. In the south wall is a piscina. The chancel arch is of richly decorated Norman workmanship of two orders, with detached shafts, well carved capitals and beak-head moulding round the arch. Within the circular arch is a pointed arch of rude execution, ornamented with a band of late Norman work. The pulpit is of the Jacobean period, with well carved panels. It is very small, pentagonal in shape and set close in to the angle of the south aisle. The chancel is Early English, and is rather long in proportion to the nave; there is no window now on the south side. On the north side there are two ambries and one on the south side; there is also a sedilia on the same side. The altar rails are probably Jacobean; they are very slight. Outside it will be noticed that the buttresses on the west are set back some little distance from the angles of the northern and southern aisle walls.

SOUTH LONDON TECHNICAL ART SCHOOL.

THE following reports are published by the Council of the City and Guilds of London Institute:—

"Mr. Tyrrell has reported the details of some of the works executed, and the successes gained by past and present students during the year, and I venture to think his list is a remarkable one as showing how the school has fulfilled its purpose, and the wide field over which its influence extends. Taking one instance—The new 'Lloyd's Registry' in Fenchurch Street, probably the most notable building recently erected in London. The external sculpture was designed and modelled by G. Frampton, R.A., and the carving was mainly the work of students of the school, Messrs. Tyrrell, Allen, Mills and Rutland being engaged in its execution. The ornamental carving was executed by Mr. Taylerson and the internal metal frieze by Mr. Lynn Jenkins, both past students. On another notable building, 'Electra House,' the work of Mr. G. Frampton, R.A., Mr. Goscombe John, A.R.A., F. W. Pomeroy, H. Hampton, T. Tyrrell, C. Rutland and C. Gunthorpe occupy positions of the first importance. The works in the Royal Academy Exhibition, numbering about one-quarter of the total sculpture exhibits, and the works contributed to the various competitions for memorials to the late Queen Victoria, as well as for other competitions, all bear witness to the artistic capacity and activity of the students who have passed through the school. This, no doubt, will be gratifying to the Council of the City and Guilds of London Technical Institute, to whose generous support these results are due, and should give them the satisfaction arising from the knowledge of having done a good work. I believe this is thoroughly appreciated by all those connected with the art of sculpture and carving. Indeed, at a recent meeting of an artistic society which includes the great majority of art-workers, and those of the highest attainments, I had the great gratification of hearing a most eloquent and appreciative tribute by Mr. G. Frampton, R.A., to the work that has been

performed in the school. Those students who were present (and subsequently those absent who heard of what was said) took opportunity to say they wished cordially to associate themselves with all the remarks that had fallen from Mr. Frampton. Whether our school holds the distinguished position there claimed may be open to some question; but that this school has largely contributed to that revival in sculpture which is an acknowledged fact, and has been an important factor, indeed, doing all that was practicable towards placing our country in a position of equality in all branches of the art of sculpture with the other countries of Europe is, I submit, beyond dispute. "W. S. FRITH."

"The Royal Academy for the past year exhibited 130 pieces of sculpture, twenty-five of which were by men who have passed through the schools. The Liverpool Victoria Memorial competition, which was in uncertainty at the time of my last report, was eventually won by Mr. C. Allen, and is being executed by him. Mr. A. Turner obtained the Sheffield competition for the execution of a statue of Her late Majesty Queen Victoria. He (Mr. Turner) also was commissioned to execute a Victoria memorial for Delhi. A replica of this work he produced for the town of Shields. Mr. Hampton has no less than five statues of the Queen to execute in bronze and marble. Mr. Price is in the final three for the Armstrong Memorial for Newcastle-upon-Tyne. Mr. Poole is engaged on some important work for the new town hall in Cardiff. Mr. Broadbent is also modelling and carving a memorial building for Bradford. There are at present six of our students studying in the Royal Academy schools. Mr. Ransom last year won 20% for modelling from the life, and Mr. Crisfield gained the Armitage competition of the value of 30% for figure design, the subject being 'The Expulsion.' The London County Council have awarded five of our students exhibitions in sums varying from 20% a year for three years down to 5% for two years. Mr. M. Morahan, our last year's silver medallist, has been appointed teacher of modelling and carving to the Borough Polytechnic. Mr. Brock, R.A., judged the scholarship and the travelling studentship. The scholarship, the subject was a sundial, was won by Mr. Cecil Fabian; a good second was by Mr. E. G. Payne. Mr. Payne's work afterwards took a County Council scholarship of 20% for three years. The travelling studentship, the subject was a shield, was taken by Mr. F. Roselieb. The second place, carrying honourable mention, was given to Mr. Harold Parker. Some horses in Mr. Parker's shield were so able that Mr. Brock asked him to assist him in his studio. Mr. Colton awarded the drapery study competition. Mr. J. Gordon was first and Mr. P. Allen the second. Mr. Frampton, R.A., awarded the best place in the section of design to Mr. Ernest Smith, Mr. P. G. Bentham being second. Mr. Frampton spoke very highly of the figure-work and the design, which he said was very creditable, several of the works showing great promise. "T. TYRRELL."

"Since writing my last report concerning the life classes under my charge, I can again assure you of the excellent work and endeavour on the part of my students. The attendances have been most regular and satisfactory, and the number of students averaging as in previous years, the day classes in this respect being particularly gratifying. Of the many old students I have mentioned in previous reports, whose names it is perhaps unnecessary to recapitulate, all I hear are doing well. The last two students to join their ranks are Mr. R. H. Smith, who is getting plenty of work as an illustrator of marine subjects, and Mr. Edwin Noble, who has lately been publishing some excellent sporting prints. Of those teaching, in addition to their ordinary illustrating work, are Mr. H. Cole, who holds a post at the Camberwell School of Arts and Crafts, and Mr. H. Watson under the Technical Education Board. Mr. Oliver Dawney has gained a London County Council scholarship of 20% per annum for two years, having previously held an exhibitionership of 10% under the same body. Mr. W. C. Penn gained the Armitage scholarship of 30% at the last Royal Academy school competition, and in addition to these very recent events I find that thirteen of our past and present students exhibited twenty-four works in the last exhibition of the Royal Academy. Of many of our students engaged in commercial artwork it is exceedingly difficult to trace their performances, the majority of whom become absorbed by the firms for whom they work, where it is most unusual to individualise the efforts of their employés. There is an enormous amount of work executed at the present day in show cards, posters and artistic advertisement of all kinds, the designers of which must necessarily be skilled artists, and those men who do such work practically form the bulk of our students. Frequently some are able to work independently, and one I may mention, Mr. H. Dobson, has now twelve to fifteen men assisting him, several of whom, I am glad to say, are at present attending the schools in the evenings. It is difficult for those not actually engaged in the work to appreciate the benefit of such an institution as this to the great mass of men who are not able to work entirely on their own account. Their study here forms a stepping-stone to

higher positions and better remuneration for their work, and raises the artistic standard of those who have the energy to take advantage of the privileges of study we are able to give them here. "INNES FRIPP."

Mr. Stevens writes :—

"In making my report of the past year's work, I am glad to be able to say that the class goes steadily and successfully forward. Ours is a class that provides men that are a very great help to employers, as we are practical workers, and it is very difficult to obtain English workmen that can be entrusted to perform the work in the higher branches of house decoration, and it would be a great assistance, both to the employers and the employed, if the class could be brought under their notice more thoroughly. The attendance of students is greatly improving, and the standard of work is also much more advanced. Two students have obtained good situations, one, Mr. Waterman, with the P. and O. Company, and Mr. Bishonden with Messrs. Mowlem & Co. The others that have used the class I hear excellent accounts of. One student, Mr. P. Stevens, has been awarded an artisan scholarship, by the London County Council of 30%. This makes the fourth; one for 60%, one for 30%, one for 15%, and one for 5%. More students have joined this session than ever before, as the class is becoming more widely known and appreciated."

ST. MAGNUS'S CATHEDRAL.

THE following statement has been issued by the Society for the Protection of Ancient Buildings:—

A local correspondent, writing to the *Orkney Herald* on the 13th of last month, calls attention to the destructive restorations at present going on under the patronage of the Magistrates and Town Council of Kirkwall. He says:—

"I have contested, point by point, almost every part of the work privately with those in power, and have been defeated all along the line, and I am forced in self-exoneration to give the matter more publicity. I am the more encouraged to do it now, since the operations executed upon the west gable last week seem to have aroused more sympathy with my views." And at the end of the letter—"I do hope that what remains of Taylor's legacy may be diverted from its injurious mission and applied so far as it will go to undoing the mischief it has caused. Let the inhabitants rise to the occasion and insist upon the removal of the new work, and relaying of the old skews and cross, and checkmating the contemplated work upon the windows and porch beneath them."

The spoiling of St. Magnus's Cathedral is a tragedy that must appeal to a far wider audience than the inhabitants of the islands.

The Society first had its attention called to the subject by the letters that appeared in the *Scotsman* of August 1893, but it was not until the spring of 1900 that the matter became acute. The Town Council had by then called in an architect to advise them, and his report had been published in the local Press. The Society at once addressed the Council. The following passages are quoted from the letter:—

"The principles for the proper repair and maintenance of our ancient buildings have been matured by the Society during twenty-three years of existence, in considering thousands of cases in detail and in acting in a wholly voluntary and disinterested way.

"From the beginning it had the active advice and support of such men as John Ruskin, Thomas Carlyle, William Morris and others. The problem, as they understood it, was to maintain our ancient historical buildings in good constant repair, while resisting to the utmost a passing fashion for smartening, scraping and renewing, which in England has largely destroyed the historical authenticity and the beauty of our cathedrals.

"We hold that every penny of money called for absolute repairs should be spent in doing these repairs as perfectly as possible, but that every penny spent beyond that sum in alterations, renewals or supposed improvements by addition will be a certain percentage written off the value of the building.

"It is with very great pleasure that we note that the architect's report recommends that the marvellously beautiful west porches should be left untouched, and that no alteration should be made to the central tower. Only a few years since the most eminent architects would probably have advised that the thirteenth-century west doors should all be cleared away and replaced by a copy and conjecture. A doorway not inferior to these in beauty was destroyed in this way at Lichfield Cathedral some years ago. The same principle, however, should apply to the whole of the ancient work inside as well as out, and not an inch of imitative work should on any account be allowed in the building. Where new stones must be added for reasons of safety, they should in every case be square and unmoulded, even if coming against moulded work,

for the object is not to puzzle but to proclaim, 'This is repair, not a sham.' No merely ornamental parts like the little shafts to the windows should be replaced."

To this letter a sympathetic reply was received, but as facts now prove, the recommendations of the Society were entirely ignored.

In the following spring (March 1901), as the result of a visit made to the cathedral by two professional members of the Society, a letter was again addressed to the Town Council calling their attention to the destructive work then going on. It was pointed out:—"That instead of the old pointing being repaired where repair was most needed, nearly the whole has been gone over, the filling of the old joints being raked out and the new pointing filled in in a uniform and commonplace way—and, worse than all, the new pointing has been 'lined out' in a way entirely unsympathetic with the character of ancient work and terribly injurious to the scale and beauty of the ancient masonry."

The following passage is also quoted from the same letter:—"In speaking of the work already done, we have in view to ask you once again to consider the results of a general scheme of 'going over' ancient work in a uniform way, instead of careful detailed repair of any portions worst decayed, leaving the rest to be dealt with in the future as the occasion may arise. We also specially invite your attention to the noble west front, as yet untouched by a modern hand. This front does not require large pointing repairs, and if the masonry of this front is treated like the adjoining bays on the north side an irreparable injury will be done."

The letter concluded with some technical advice on pointing and the composition of the mortar.

The Council requested the architect under whose direction the work was being executed to reply to the above letter, and expressed themselves perfectly satisfied with his reply.

In 1902 in reply to further inquiries addressed to the Council, the Society was referred to the architect, "by whose advice and according to whose directions the repairs were being carried out." The correspondence with the architect proved entirely one-sided, and the Council took up the position that it was not in their province to make the architect reply to the Society's letters if he did not think proper to do so.

In August last a member of the Society visited the cathedral and reported that the south aisle was being scraped, and that the traces of ornament on the ribs of the arches were to be destroyed. And last month in the *Orkney Herald* there appeared the letter referred to above calling attention to the fact that, in spite of the many protests, the recent money legacy for the preservation of the fabric is being spent on the destruction of one of the most romantic buildings in Great Britain.

THE RELATION OF WINDOW-AREA TO FLOOR-SPACE.

DURING the last few weeks, says the *American Architect*, a somewhat informal, though careful, effort has been made in the halls of Cornell University to determine a general statement of the relative proportion between window-openings and their position, and the floor-area and the depth of the rooms to be lighted.

The data were intended to apply to the problem of securing an adequate supply of natural light in the lecture-rooms on all ordinary days between 8 A.M. and 5 P.M., under the climatic conditions which prevail in Ithaca, N.Y., conditions in no way differing from those usually found in this latitude.

Information was secured which was based on actual experience in six buildings on the Cornell Campus, and referred to rooms lighted from one side only. From the statements submitted by the professors in charge of the work in the several buildings the following data have been compiled regarding sixteen rooms adequately lighted, and nine rooms in which the light is "nearly sufficient."

Number of Rooms.	Total Area of the		Ratio.	Average Height of		Ratio.
	Floors.	Windows.		Room.	Window-tops.	
Sufficient 16	10,466	2,000	1,000:191	22 1	11 9	1,000:538
Nearly so 9	5,392	799	1,000:146	20 6	10 2	1,000:495

All these rooms are alike in having unobstructed light; no buildings stand before the windows.

A peculiar relation which should be observed is that the well-lighted rooms have an average of 654 square feet of floor-area and average 22 feet 1 inch deep, while those whose light is "nearly sufficient" are smaller and shallower, being of 599 square feet area and 20 feet 6 inches deep.

One explanation of this unexpected result is found in the figures relative to the positions of the windows. In the well-lighted rooms the window-tops average 11 feet 9 inches above the floor and 1 foot 6 inches below the ceiling; in the other rooms they are 1 foot 7 inches nearer the floor and 11 inches further from the ceilings.

The conclusions to which this local experience leads are these:—

1. There should be at least 150 feet of window-space for each 1,000 square feet of floor-space in rooms which, in use and location, are similar to those here described, and are lighted only from one side.

Therefore an office 15 feet by 25 feet should have at least 56 square feet of window-space, and a classroom 30 feet by 40 feet should have at least 180 square feet of unobstructed lighting surface.

2. The proportion between the height of the window tops and the depth of the room lighted should be at least 500 to 1,000, or, in other words, the distance from the floor to the window tops should be one-half the depth of the room to be lighted.

These figures support the old principle that "top light" is the best; the nearer the window tops come to the ceiling the more efficient will be the lighting to be secured from a given surface. Care should be taken that overhanging lintels be not allowed to obstruct the light.

GENERAL.

The Completion of the public buildings now in progress in London has been officially announced for the following dates:—New War Office, June 26, 1906; new Public Offices in Parliament Street, June 1, 1907; Royal College of Science, June 1, 1905; Victoria and Albert Museum, February 23, 1907; Admiralty (Block III.) (say) June 30, 1906. (Contract about to be made for superstructure.) Such progress is being made with the above works as to justify an assumption that they will be completed by the specified dates. In some cases it is possible that the fittings will not all be finished, but every effort will be made to avoid delay.

Herr Andrae, who has been engaged as one of the principal explorers for the past four years in Babylon, is compelled to return to Germany in order to follow his service in the army. Archaeology has to succumb to the military spirit of the empire.

The Committee appointed to consider the proposed restoration and renovation of certain parts of the Temple Church, including the rebuilding of the turret and steeple and the restoration of the doorways and arches, have adjourned the consideration of the matter until after the Long Vacation in November next. In the meantime, it may be stated that the reports as to the dangerous condition of the ancient structure are without foundation, as the building is perfectly sound, and will, it is said, remain safe for many years.

A New Museum, which if possible will unite the characters of the Victoria and Albert Museum and the Museum of Arts and Manufactures in Paris, is about to be established in Munich. In it will be placed the Pettenkofer collection of physical and mechanical apparatus. The architect is Herr Oscar Miller.

The Court of Common Council have resolved not to hold another loan collection in the art gallery of the Guildhall until 1905.

M. Osiris has had a bronze casting made of the *Moses* of Michel Angelo, which is to be placed on the tomb of his family in Montmartre. A copy in marble, which was in the same position, will be presented to the Orientalists' School at Auteuil.

The Sub-Committee on Building of the Lord Mayor's Committee of Inquiry into the affairs of St. Bartholomew's Hospital met on Friday at the Mansion House. Alternative plans for the proposed improvements at the hospital were submitted by the architect (Mr. P'Anson) and considered together with reports upon them by the Medical Council. A new out-patients' department being imperatively necessary, it was decided by the committee that that work ought first to be proceeded with. The estimated cost of the work is about 100,000/.

The Government of Peru have organised an international competition for the purpose of obtaining designs for the reconstruction of the Executive Palace at Lima. The first premium will be of 3,000/., and the second of 1,000/.. The competition will be closed December 31, 1903. Full particulars may be obtained from the official representatives of Peru.

The Eighth Annual General Meeting of the British Association of Waterworks Engineers will be held at Bolton, on Tuesday, Wednesday, Thursday and Friday, July 21, 22, 23 and 24; under the presidency of Mr. Robert H. Swindlehurst, waterworks engineer to the Corporation of Bolton.

The Committee of Management of the City Orthopaedic Hospital are carrying out considerable improvements and additions to the premises in Hatton Garden, consisting of new isolation ward, registration and consulting-rooms and nurses' cubicles. The architect is Mr. F. T. W. Goldsmith, A.R.I.B.A.

Mr. Frank H. Gorst, of the firm of Richard Gorst & Son architects and surveyors, of 7 Birley Street, Blackpool, has been selected as the architect for the new church to be built for All Saints parish, Blackpool.

The Architect, July 3rd 1903.

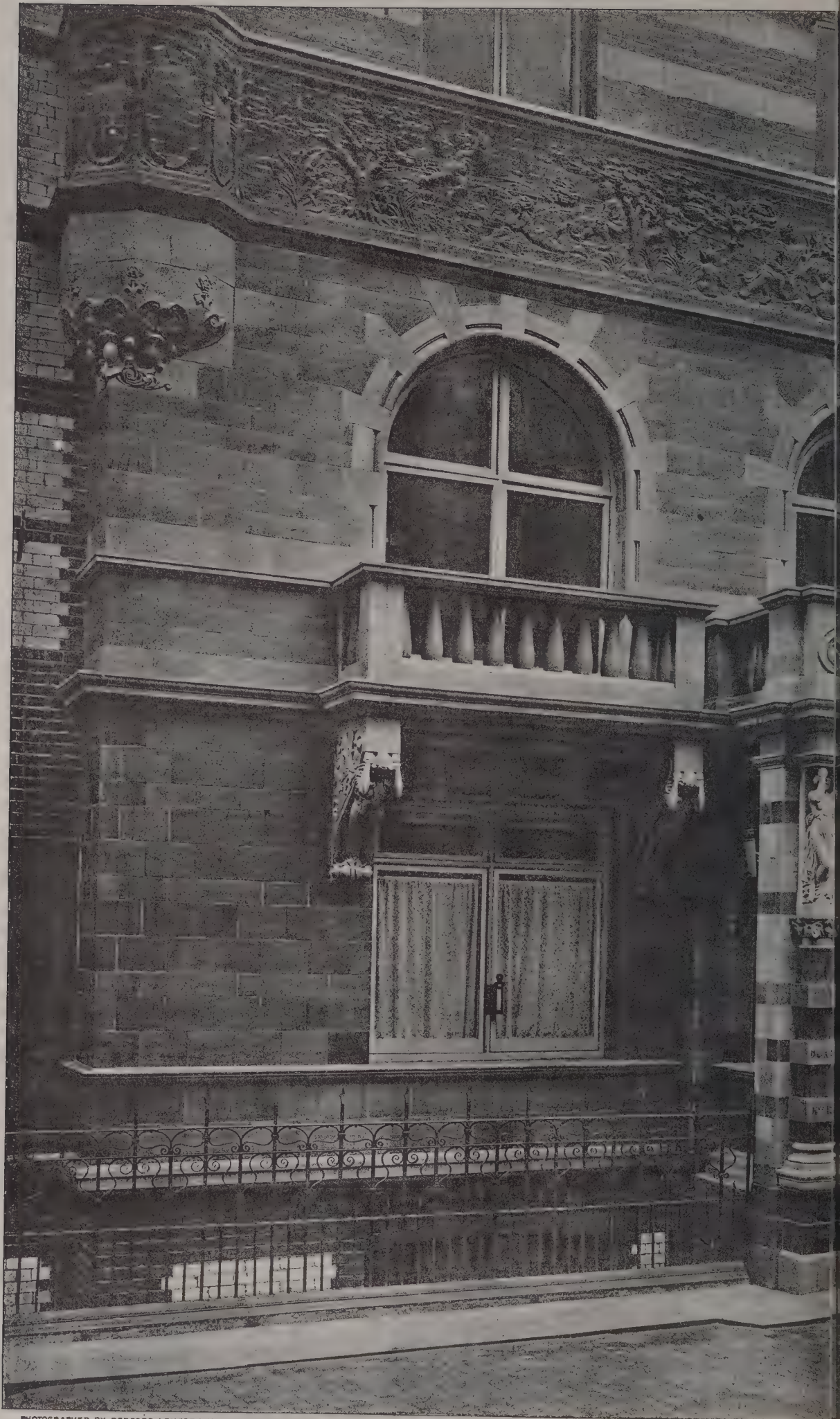




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CATHEDRAL SERIES, No. 452.—EXETER: THE WEST FRONT.



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July 3rd 1903.



INK PHOTO, SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE E.C.

IL OF ONE ENTRANCE.

.D. Architect.



J. N. ARMSTRONG, PHOTO., SHETTLSTON.

PREMISES: ARGYLE STREET AND B

HORATIO K. BROWN

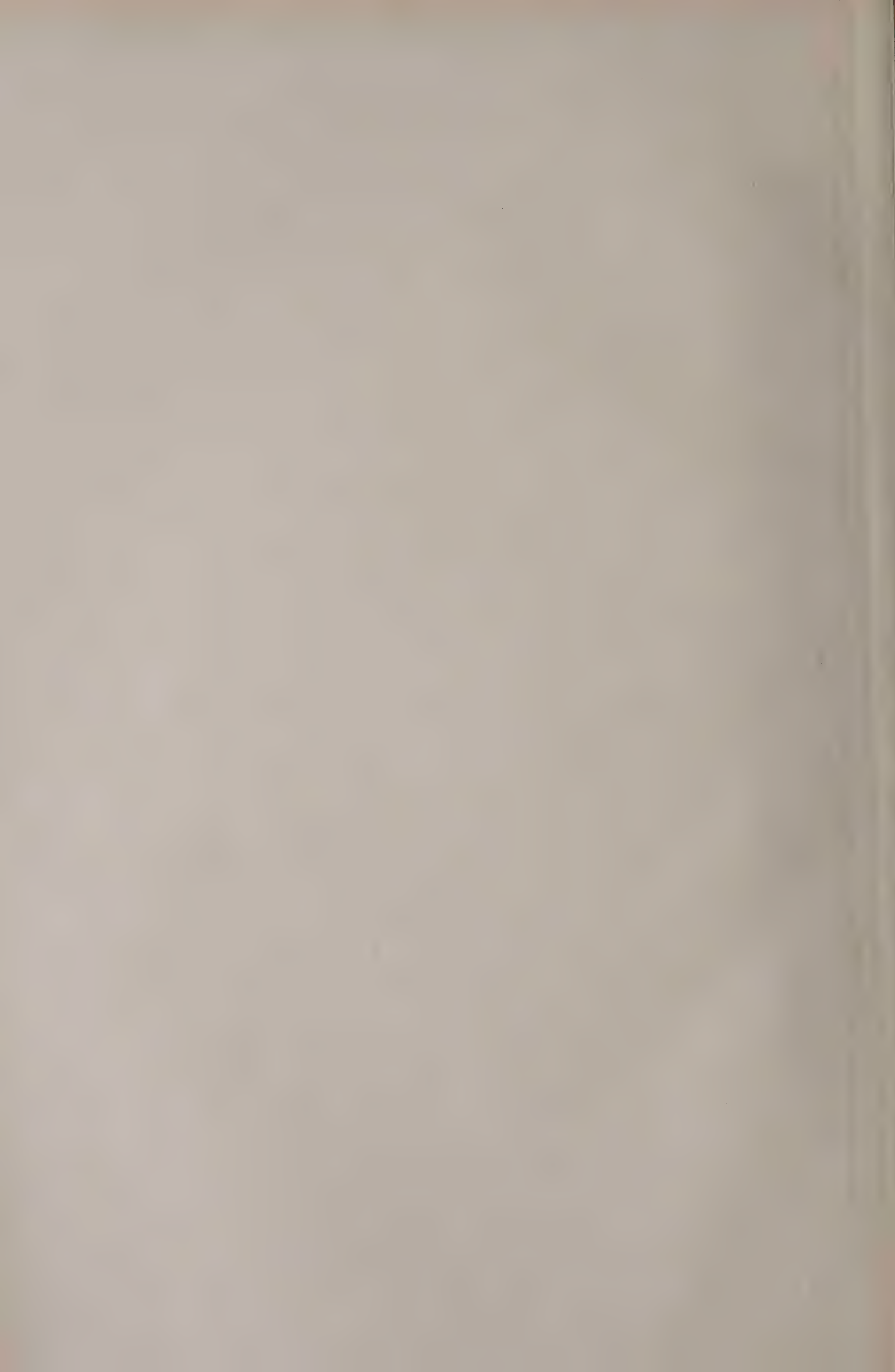
July 3rd 1903.



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CHANAN STREET, GLASGOW.

J. D. A. Archibald



The Architect, July 3rd 1903.





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BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.: GENERAL OFFICE.

J. MACVICAR ANDERSON, Architect.

THE Architect and Contract Reporter

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

TAUNTON.—July 20.—Competitive designs are invited for a library building to be erected in Corporation Street, at a cost not exceeding 5,000*l.* inclusive. Premiums of 30*l.*, 20*l.* and 10*l.* will be awarded for designs adjudged of sufficient merit, and placed first, second and third in order respectively. Mr. George H. Kite, town clerk, Municipal Buildings, Taunton.

CONTRACTS OPEN.

ACCRINGTON.—July 14.—For the erection of bank premises, Blackburn Road, Accrington. Mr. Henry Rose, architect, 15 Cannon Street, Accrington.

ALLERWASH.—July 8.—For the erection of a pair of cottages at Allerwash, near Fourstones. Mr. C. H. Sample, land agent, Matfen, Corbridge-on-Tyne

BAILDON (YORKS).—July 9.—For the erection of a residence. Mr. Sam Bradley, architect, Yorkshire Bank Chambers, Shipley.

BARNSELY.—July 10.—For erection of five houses, Hunningley Lane, Stairfoot. Mr. Ernest W. Dyson, architect, 14 Market Hill, Barnsley.

BERMONDSEY.—July 8.—For the casing of the front steps of the town hall with marble. Mr. R. J. Angel, borough surveyor, Town Hall, Bermondsey.

BIGGLESWADE.—July 14.—For the erection of vagrants' ward, disinfecting chamber, work-sheds, &c., at the work-house. Mr. J. Owen Jones, Shortmead Street, Biggleswade

BRADFORD.—July 6.—For the erection of shop property in Manningham Lane. Mr. Jas. Ledingham, architect, District Bank Chambers, Bradford.

BRADFORD.—July 7.—For the erection of electricity station at Sunbridge Road destructor works. Mr. F. E. P. Edwards, city architect, Whitaker Buildings, Brewery Street.

BRADFORD.—July 8.—For the erection and fitting of mortar-pan shed and engine-house at Sunbridge Road destructor works. Mr. F. E. P. Edwards, city architect, Whitaker Buildings, Brewery Street.

BRIGHTON.—For plastering the exterior of Manor House, Brighton, near Howden, Yorks. Mr. T. S. Ullathorne, architect, Selby.

BRIERFIELD.—July 14.—For the erection of a police station and courtroom at Brierfield, Lancs. Mr. Henry Littler, architect, County Offices, Preston.

BRISTOL.—July 9.—For refronting premises in Marsh Street, Bristol. Mr. T. H. Yabbicom, city engineer, 63 Queen Square, Bristol.

CARLISLE.—July 13.—For alterations to the Crown Court, Carlisle. Mr. Geo. Dale Oliver, county architect, Carlisle.

CARLISLE.—For the erection of a new house for the medical superintendent at Garlands Asylum. Mr. Geo. Dale Oliver, architect, Carlisle.

COCKERMOUTH.—For repairs and painting of All Saints Church, Cockermouth, and spire, reslating part of the roof, boarding ceiling and other general repairs. Mr. John Fleming, Market Place, Cockermouth

CROYDON.—July 6.—For an addition to the dining-hall and alterations to the laundry at the workhouse, Queen's Road. Mr. F. West, surveyor, 23 Coombe Road, Croydon.

DARLINGTON.—July 8.—For the erection of a wing to the technical college, comprising lecture theatre, engineering drawing-office, classroom, &c. Mr. G. Gordon Hoskins, architect, Court Chambers, Darlington.

DARTFORD.—July 7.—For the erection of a boundary wall at the infectious hospital, Bow Arrow Lane, Dartford, Kent. Mr. Robert Marchant, architect, 28 Theobald's Road, W.C.

DARTMOUTH.—July 6.—For the erection of four houses in Victoria Road, Dartmouth. Mr. E. H. Back, architect, Dartmouth.

DERBY.—July 6.—For the erection of a battery-house at the electric-light station. Mr. Arthur Eaton, 6 St. James's Street.

DEPTFORD.—July 14.—For the erection of four blocks of five-storey working-class dwellings at Hughes Fields. Particulars can be had at the Architect's Department, L.C.C. (Housing Section), 19 Charing Cross Road, W.C.

DORSET.—July 15.—For repairing and painting the exteriors of the following police stations throughout the county, viz. Blandford, Beaminster, Bridport, Cerne Abbas, Cranborne, Dorchester, Gillingham, Lyme Regis, Portland, Shaftesbury, Sherborne, Swanage, Wareham, Wimborne, and additions to Dorchester station. Mr. Walter J. Fletcher, county surveyor, Wimborne.

EAST HAM.—July 20.—For the erection of school buildings to accommodate 1,592 children at Monega Road, East Ham. Mr. H. C. Padgett, clerk, East Ham.

EDINBURGH.—July 8.—For the erection of an entrance lodge at north entrance to Blackford Hill. Mr. R. Morham, city architect, Edinburgh.

FALMOUTH.—July 6.—For the erection of public sanitary conveniences adjoining the town hall. Mr. E. E. Armitage, town clerk, Municipal Offices, Falmouth.

GIRLINGTON.—July 9.—For the erection of six small houses in Woodlands Road, Girlington. Messrs. Walker & Collinson, architects, 227 Swan Arcade, Bradford.

GREAT YARMOUTH.—July 11.—For the erection of five cottages at Runham Vauxhall. Mr. Chas. G. Baker, architect, Town Hall Chambers, Great Yarmouth.

HALIFAX.—July 8.—For the erection of a dwelling-house at King Cross. Mr. Arthur T. Whiteley, architect, 41 Stanley Road, King Cross.

HALIFAX.—July 9.—For the erection of a boiler-house and the seating of a Lancashire boiler and Green's economiser at Hipperholme Mills, Halifax. Mr. Arthur George Dalzell, architect, 15 Commercial Street, Halifax

HORNCastle.—July 6.—For taking-down and rebuilding a culvert in Moor Lane, Horsington, Lincs. Mr. Henry White, surveyor, 4 Church Lane, Horncastle.

HORDEN COLLIERY.—July 10.—For the erection of 150 cottages at Horden Colliery. Mr. E. W. Lyall, 39 Northgate, Darlington.

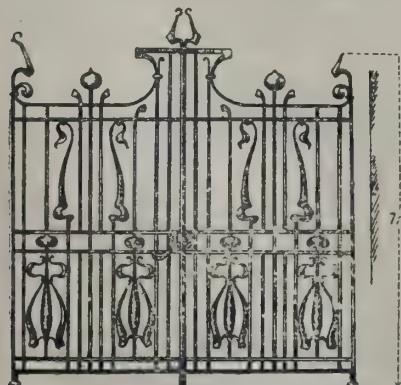
HUNTINGDON.—July 8.—For erecting a verandah at the hospital. Mr. S. Inskip Ladds, architect, Market Place, Huntingdon.

IRELAND.—July 6.—For the extension of the premises of the Nantymoel Industrial Co-operative Society. The Secretary, Nantymoel.

IRELAND.—July 6.—For the erection of two labourers' cottages in the townland of Navenny, and one in Sessiaghoneill, Stranorlar. Mr. G. M'Laughlin, clerk, Stranorlar.

IRELAND.—July 6.—For repairs of the breaches in the sea embankments near Limavady Junction station. Mr. Robert M'Feeter, Station Farm, Limavady Junction

IRELAND.—July 6.—For alterations to Castledawson Presbyterian church, Belfast. Mr. Thomas Houston, architect, &c, King's Court, Wellington Place, Belfast.



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IRELAND.—July 9.—For the erection of the main entrance-gate to the Victoria market, Londonderry. Specification can be seen at the City Surveyor's Office.

IRELAND.—July 13.—For the erection of a church, Garvaghy, Banbridge. The Rev. David Baird, Garvaghy Manse, Banbridge.

IRELAND.—July 13.—For the erection of a creamery near Lismore railway station. Mr. William Hartnett, secretary, Chapel Street, Lismore.

IRELAND.—July 15.—For the erection of eighteen labourers' cottages on selected sites within the Lurgan district. Mr. W. W. Larmor, Banbridge.

KENDAL.—July 8.—For the erection of a small house at Leasgill. Mr. John Banks, 14 Finkle Street, Kendal.

KINGSWEAR.—July 7.—For the erection of a cottage at Britannia Crossing, Kingswear, Devon, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington station, London.

LAMBETH.—For the erection of a boundary wall at Tyers Street, Vauxhall. Mr. W. Thurnall, clerk, Brook Street, Kennington Road, S.E.

LANGLEY BRIDGE.—July 11.—For widening Langley Bridge, situated on the main road between Eastbourne and Pevensey, Sussex. Mr. F. J. Wood, county surveyor, County Hall, Lewes.

LEEDS.—July 7.—For the removal of the existing latrines at the Church Fenton parochial school and the erection of new ones. Plans and specifications may be seen at the school.

LEICESTER.—July 10.—For the erection of tram-car sheds, workshops, stores, caretaker's house, offices, stables and all other buildings and works in connection therewith. Mr. E. George Mawbey, engineer, Town Hall, Leicester.

LIGHTCLIFFE.—July 16.—For the erection of two seven-roomed houses in Smith House Lane, Lightcliffe, Yorks. Messrs. Sharp & Waller, architects, 32 Bradford Road, Brighouse.

LONDON.—For the erection of scaffolding for the decoration of large public hall. Mr. L. C. Radcliffe, decorative artist, 43 Munster Road, Fulham.

LONDON, N.—July 6.—For additions to and the erection of foreman's cottage at Highgate depôt; additions to sanitary depôt, Hornsey; Muswell Hill sub-depôt, and Western Park

sub-depôt. Mr. E. J. Lovegrove, engineer to the Hornsey Urban District Council, 99 Southwood Lane, Highgate, N.

LONDON.—July 8.—For the erection of a block of tenement dwellings in John Street, Edgware Road, Marylebone. Mr. Harry B. Measures, 16 Great George Street, Westminster, S.W.

LONDON.—July 22.—For the erection of the superstructure of Block 3 of the new Admiralty buildings, for the Commissioners of H.M. Works and Public Buildings. Drawings and specification, conditions and form of contract may be seen on application to Sir John Taylor, K.C.B., H.M. Office of Works, &c., Storey's Gate, S.W.

LOWICK.—July 6.—For the erection of a dwelling-house and shop at Lowick, Northumberland. Mr. J. Lorimer Miller, architect, 39 Hide Hill, Berwick-on-Tweed.

MANCHESTER.—July 13.—For the erection of a cash office and premises in Stockport Road, Levenshulme. Mr. J. M. M'Elroy, general manager, Tramways Department, 55 Piccadilly, Manchester.

MEXBOROUGH.—For the erection of an hotel in Doncaster Road, Mexborough. Mr. Geo. White, architect, Market Street, Mexborough.

MORLEY.—July 14.—For pulling-down and rebuilding the Melbourne Mills, Morley, Yorks. Messrs. Buttery & Birds, architects, Queen Street, Morley.

OSWESTRY.—July 8.—For the erection of four cottages at Ifton Heath. Mr. W. H. Spaul, architect, The Gables, Oswestry.

PADDINGTON.—July 6.—For construction of a retaining-wall on land abutting on Ashworth Road and the Paddington recreation-ground and the supply and erection of railings thereon. Mr. E. B. B. Newton, borough surveyor, Town Hall, Paddington, W.

PADDINGTON.—July 13.—For painting, repairs, &c., at the North dispensary, Little Union Place, Lisson Grove, and the South dispensary, relief office, &c., East Street, W. Mr. A. Saxon Snell, architect, 22 Southampton Buildings, Chancery Lane, W.C.

PORTSMOUTH.—July 7.—For the enlargement of the post office at Portsmouth, for the Commissioners of H.M. Works and Public Buildings. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

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PRESTON.—July 17.—For the erection of an abattoir for pigs, cattle market, Brook Street, Preston. Schedule of quantities and form of tender obtained at the office of the Borough Surveyor, Town Hall, Preston.

ROTHERHITHE.—July 14.—For erection of four blocks of dwellings for the working classes on the Fulford Street area site, Rotherhithe. Mr. Fredk. Ryall, town clerk, Town Hall, Spa Road, S.E.

SCOTLAND.—For the erection of a theatre at corner of High Street and Redburn Wynd, Kirkcaldy. Messrs. J. D. Swanston & William Williamson, architects.

SCOTLAND.—July 6.—For the erection of a building for natural philosophy, and a building for physiology, materia medica, forensic medicine and public health, Glasgow. Mr. James Miller, architect, 15 Blythwood Square, Glasgow.

SCOTLAND.—July 6.—For the construction of the goods and minerals stations' buildings on the new Leith lines, for the Caledonian Railway Company. Mr. J. Blackburn, secretary, 302 Buchanan Street, Glasgow.

SCOTLAND.—July 8.—For alteration and addition to the gasworks office, East Dock Street, Dundee. Mr. Alex. Yuill, engineer, Dundee.

SHREWSBURY.—Aug. 4.—For the erection of station buildings and other works at Shrewsbury station, for the joint committee of the London and North-Western and Great Western Railway Companies. Mr. A. E. Bolter, secretary to joint committee, Paddington Station.

SMALLBURGH.—July 18.—For alterations and additions to the laundry and the erection of new receiving wards and a disinfectant at the workhouse, at Smallburgh, Norfolk. Mr. John T. Lee, architect, 26 Great James Street, Bedford Row, W.C.

SOWERBY BRIDGE.—July 14.—For additions to Calder Oilcloth Works, Sowerby Bridge, Yorks. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

SPROWSTON.—July 8.—For rebuilding offices and alterations to cloakrooms at the Sproston (Norfolk) mixed school. Mr. C. J. Brown, architect, Cathedral Offices, Norwich.

STAINLAND.—July 11.—For the erection of six dwelling-houses at Stainland, Yorks. Messrs. C. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

STOKE-ON-TRENT.—July 16.—For the erection of an isolation hospital containing two pavilions, one for twelve beds and one for four beds, administrative block and laundry, &c., at Cheadle. Mr. F. T. Inskip, surveyor, Brookhouse, Cheadle.

WALES.—July 6.—For repairs and painting the Varteg Hill mixed Board school, Cwmfrwdoer. infant Board school and Pontypool Board school. Mr. Henry Bythway, clerk, Pontypool.

WALES.—July 6.—For the erection of a new Congregational church at Caerphilly. Mr. W. Beddoes Rees, architect, 37 St. Mary Street, Cardiff.

WALES.—July 6.—For the erection of twenty houses (with option of building twenty more) at Six Bells, Abertillery. Mr. C. Telford Evans, architect, 8 Queen Street, Cardiff.

WALES.—July 6.—For erection of 300 workmen's ages at Glanamman. Mr. David J. Michael, National Chambers, 97 Oxford Street, Swansea.

WALES.—July 6.—For the enlargement of the Abergele county school. Mr. Frank Bellis, architect, 204 High Street, Bangor.

WALES.—July 9.—For the erection of assembly hall and institute at Abercynon. Mr. F. Gibson, architect, Mountain Ash.

WALES.—July 11.—For alteration and addition to Victoria Wesleyan chapel, Garndiffaith. Messrs. Fisher & Sons, architects, Club Chambers, Pontypool.

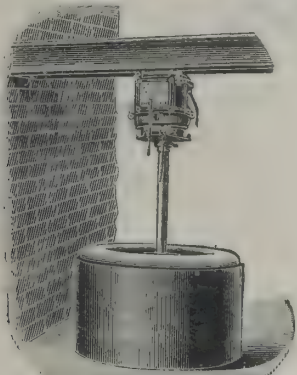
WALES.—July 11.—For the erection of a new English Baptist chapel, to seat 500, at Resolven. Messrs. Llewellyn Smith & Davies, architects, Aberdare.

WALES.—July 13.—For the erection of three additional classrooms at Abertillery to accommodate 170 children, with cloak-room, store-room, &c. Mr. R. A. Roberts, architect, Abercarn, Mon.

WALES.—July 13.—For the erection of a boys' department and for extending and improving the infants' department at Cwmpark school, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

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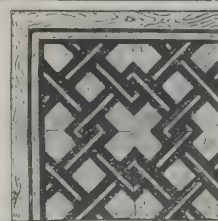
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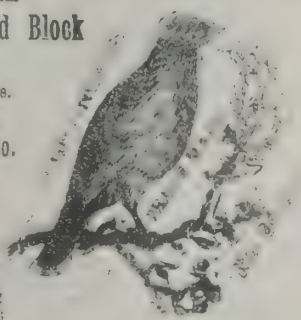
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WALES.—July 13.—For the erection of a new physical laboratory to the school buildings in Bush Street East, Pembroke Dock. Mr. D. Edward Thomas, architect, Victoria Place, Haverfordwest.

WALES.—July 14.—For the erection of thirty-four houses at Bedlinog. Mr. P. Vivian Jones, architect, Hengoed.

WALES.—July 14.—For the erection of boundary walls for the extension of the Pant cemetery, Dowlais. Mr. T. F. Harvey, surveyor to the Urban District Council, Town Hall, Merthyr.

WALES.—July 15.—For the erection of a new hotel to replace the Ship Aground, Porthcawl. Messrs. Cook & Edwards, architects, Masonic Buildings, Bridgend.

WALTHAM ABBEY.—July 7.—For the construction of foundations for the new public offices, fire station, &c., at Waltham Abbey. Mr. W. Turner-Streather, surveyor, High-bridge Street, Waltham Abbey.

WHITECHAPEL.—July 6.—For structural repairs and alterations at 403, 405, 407 and 409 Mile End Road, E. Mr. F. J. Tootell, clerk, 74 Vallance Road, Whitechapel, N.E.

WICKLEWOOD.—July 6.—For alterations and additions to the workhouse at Wicklewood. Mr. J. Owen Bond, architect, 15 Upper King Street, Norwich.

THE old station buildings at Carnoustie having been found inadequate for the heavy traffic, the directors of the Dundee and Arbroath Joint Railway decided some time ago to erect new station buildings. A portion of these, the buildings on the north platform, are now almost completed, and when the whole is finished the station will be one of the finest of its size on the East Coast of Scotland. The platform has been made several yards wider than before, while the buildings, waiting-rooms and office are well appointed and well finished. A glass roof, the supporting girders of which are tastefully painted, shelters a large portion of the platform. These and several other alterations will be much appreciated by visitors during the coming season.

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EMPTYING

TWIN STOP-COCK.

As used by War Office and

London School Board.

B

To empty

the pipes,

shut

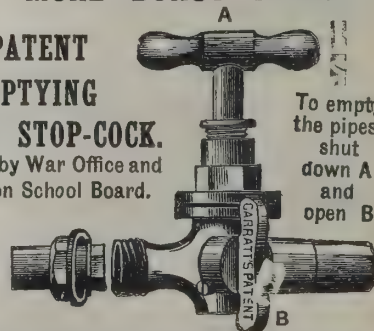
down A

and

open B

GARRATT & CO.

Leipsic Road, Camberwell, S.E.



BISHOP AUCKLAND.

For sewerage works with necessary manholes, &c., in Thompson Street, Grainger Street, Clayton Street, Sadler Street and Adelaide Street.

P. Frater	£226	15	11
J. Manley	189	5	0
J. Stobbs	151	12	8
G. H. BELL, Bishop Auckland (accepted)	123	1	9

BRIGHTON.

For the construction of an engine-room, boiler-house, chimney-shaft, &c., at the Falmer pumping station. Mr. J. C. MAY, surveyor.

KIRK & RANDALL, Woolwich (accepted)	£10,933	0	0
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CARLISLE.

For the erection of a new bakehouse and for substituting steel and concrete floors in the bathrooms of Nos. 1, 2 and 3 female wards at Garlands asylum. Mr. G. D. OLIVER, architect, Carlisle.

Accepted tenders.

J. Laing, builder	£442	0	0
Werner, Pfeiderer & Perkins, Ltd., London, ovens	364	5	0
J. Hodgson, joiner	146	0	0
R. M. Ormerod & Son, plasterer	93	16	11
J. T. Kellett, slater	41	10	0
Graham & Crawford, plumber	31	0	0
Ling & Mark, painter	15	9	0
Ormerod & Son, concrete floors, main building, Rest of Carlisle.			

CHEPSTOW.

For the erection of offices in Lower Church Street.

E. C. Jord in	£1,297	0	0
J. Phillips	1,150	0	0
J. Gurney	1,040	0	0
J. & G. Griffiths	1,023	0	0
T. J. Williams	998	10	0
S. Hatherley	997	0	0
W. F. & T. H. Drew	985	10	0
A. King & Sons	954	10	0
J. J. Partridge	915	0	0
J. Byard & Sons	897	0	0
D. W. Richards, Ltd.	868	0	0
J. HOBBS, Chepstow (accepted)	855	10	0

CAMBERWELL.

For painting and cleaning works at the relief station, 106 Peckham Park Road.

T. Brown	£197	10	6
B. Gale	189	0	0
W. Bickell & Sons	185	0	0
W. Parker & Co.	180	0	0
S. Hoare & Son	159	0	0
W. R. Athey	139	0	0
R. Blogg	135	10	0
Smith & Son	135	0	0
Lock & Head	135	0	0
R. Iles	133	0	0
Douglas & Sons	132	15	0
H. Line	129	0	0
H. HUSSEY, 1 Maismore Terrace, Peckham Park Road (accepted)			
J. J. Lawrence	117	0	0
Hall & Son	108	0	0
	94	15	0

DURHAM.

For sewerage works, with manholes and ventilating shafts in connection therewith, at Coxhoe. Mr. GEORGE GREGSON, surveyor.

J. Spark	£501	14	8
G. T. Manners	480	0	0
J. Carrick	432	4	9
W. Stelling	407	14	0
R. Oliver	339	9	9
T. H. SKELTON, Durham (accepted)	327	7	3

For the erection of a Wesleyan minister's house, Houghton-le-Spring.

R. D. HARRISON, Houghton-le-Spring, R.S.O. (accepted)	£633	0	0
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EASTBOURNE.

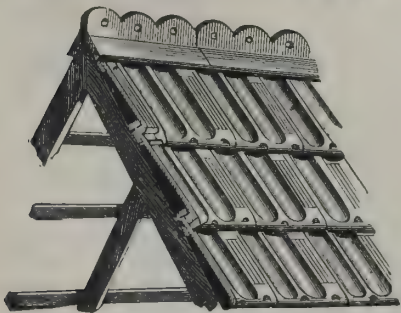
For the supply and erection of pumping machinery, laying-out of land for sewage disposal and other works in connection with the sewerage of Willingdon.

W. SMITH, The Hollies, Burry Road, St. Leonards (accepted)	£4,290	0	0
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Artificial Stone & Mosaic,
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STANCHIONS AND GIRDERS

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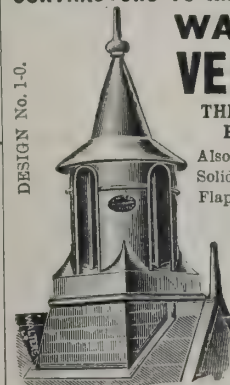
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Cowls, &c.

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Private Buildings, &c.
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LIVERPOOL.

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Total Security, £3,700,000.

GREAT BARFORD.

For erection of Wesleyan chapel, Bedford Road, Great Barlow, Beds. Mr. THOMAS COCKRILL, architect, Market Square, Biggleswade.

Norman	£527	15	0
Wright	470	0	0
WRYCROFT & SON, St. Neots (accepted)	449	0	0

HARLOW.

For sewerage works, Harlow, Essex. Mr. H. TOOLEY, architect, Buckhurst Hill.

Broomfield & Co.	£989	0	0
G. Bell	431	0	0
D. H. Porter	417	0	0
W. Winch	398	0	0
W. & C. FRENCH, Buckhurst Hill (accepted)	395	0	0

HEREFORD.

For the erection of an isolation hospital, administrative block and other works at Stretton Sugwas, Hereford. Mr. ERNEST G. DAVIES, architect, Bridge Street, Hereford.

Davies & Co.	£2,220	0	0
H. R. Beavis	2,200	0	0
W. Powell	2,067	0	0
J. Davies	2,062	0	0
H. P. Lewis	2,050	0	0
E. W. Wilkes	1,875	0	0
C. COOKE, Hereford (accepted)	1,875	0	0

HEYWOOD.

For painting at the cemetery chapel.

A. ASHWORTH, Hindhill Street (accepted).

For painting at the Queen's Park. Mr. J. AINSWORTH SETTLE, borough engineer.

E. SCHOFIELD, Heywood (accepted).

HULL.

For the erection of a new entrance and boundary walls in Durham Street, in connection with the Mersey Street Board school.

F. Southern	£195	13	6
C. W. Richardson	188	10	6
M. Harper	184	10	0
Whitelam & Cooper	156	17	5
HULL GENERAL BUILDERS, LTD., Hull (accepted)	152	17	0

IPSWICH.

For the erection of an infants' school and alterations to the existing buildings at Wherstead Road school. Mr. T. W. COTMAN, architect, Northgate Street, Ipswich.

S. A. Kenney	£6,576	0	0
N. J. Linzell	6,317	0	0
F. C. Thurman	6,316	2	5
E. Grimwood & Sons	6,143	0	0
T. Partington & Son	6,136	0	0
C. Roper	6,115	10	0
A. Sadler	5,929	0	0
Spencer, Santo & Co.	5,750	0	0
E. WEST, Chelmsford (accepted)	5,699	0	0

IRELAND.

For the erection of a dispensary residence at Ballinvullen, Mitchelstown.

C. Kelleher	£1,100	0	0
J. O'Mahony	1,031	0	0
J. ROCHE, King Street, Mitchelstown, co. Cork (accepted)	993	0	0

For the erection of two cottages in the townland of Drumsurn, Limavady.

J. Gordon	£275	0	0
H. THORPE, jun., Limavady (for the pair) (accepted)	264	0	10

KING'S LANGLEY HILL.

For the erection of houses and cottages at King's Langley Hill, Herts. Mr. W. H. SYME, architect, Watford.

A. TIMBERLAKE, King's Langley (accepted)	£4,300	0	0
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LIMEHOUSE.

For completing the electric-light installation at the public library, Commercial Road East. Mr. M. W. JAMESON, borough engineer.

Strode & Co.	£98	0	0
Tamplin & Makovski	75	0	0
J. C. Christie	68	15	0
F. E. Emerson & Sons	52	0	0
Ward Bros. (informal)	51	17	0
BARLOW BROS., 237, Shaftesbury Avenue, W.C. (accepted)	42	10	0

Prevents Dry Rot,
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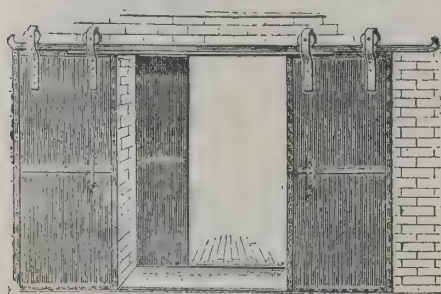
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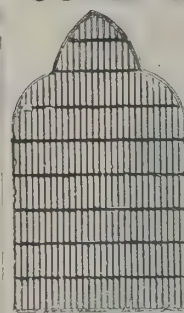
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IN ALL
COLOURS.

SANITARY PIPES.

GLAZED BRICKS.

LAMBETH.

For iron fire-escape staircases and building works connected therewith at Renfrew Road workhouse.

W. A. Baker & Co.	£2,525	0	0
B. E. Nightingale	2,439	0	0
Hayward Bros. & Eckstein	2,360	0	0
Jukes, Coulson, Stokes & Co.	2,160	0	0
Herring & Son	2,000	0	0
Bostwick Company	1,967	0	0
T. Pearce	1,950	0	0
Hart, Son & Peard	1,925	0	0
H. & G. Measures	1,907	10	0
R. Carr & Co.	1,797	3	6
T. Potter & Sons	1,789	0	0
St. Pancras Ironworks Company	1,768	0	0
J. Stone	1,707	10	0
E. WALL, 2 Alice Terrace, Barratt Lane, S.W. (accepted)	1,380	0	0
J. Hall	—	—	—
Powers, Deane & Ransome (withdrawn)	—	—	—

LIVERPOOL.

For providing and fixing No. 2 Cornish boilers, hot-water, steam and heating piping, radiators, cooking appliances, &c., at the new workhouse infirmary at Highfield, Knotty Ash.

L. HILL, Edge Hill, Liverpool (accepted).

LONDON.

For work to be done at the relief offices, Barnsbury Street, and the register office, Liverpool Road. Mr. WILLIAM SMITH, architect, 65 Chancery Lane, W.C.

Aspland & Sons	£426	0	0
Leslie & Co.	389	0	0
Weibking	365	0	0
Stevens Bros.	354	0	0
Akers & Co.	340	0	0
Harris	295	0	0
Bates Bros.	289	0	0
Cheetham	259	0	0
COOMBES, 1 Tyndal Place, Upper Street, N. (accepted)	245	0	0

LONDON—continued.

For a suspended electric goods lift in the large store at the Wentworth Street depôt, Stepney. Mr. M. W. JAMESON, borough engineer.

Waygood & Otis	£315	0	0
Clark, Bunnett & Co., Ltd.	307	0	0
Ward Bros.	290	10	0
J. RICHMOND & Co., 30 Kirby Street, Hatton Garden, E.C. (accepted)	220	0	0
Barlow Bros.	200	0	0

For tar-paving works at the Western hospital.

R. E. Williams & Sons	£495	0	0
G. Neal	272	0	0
Fry Bros.	271	10	0
W. E. Constable & Co., Ltd.	229	0	0
J. Sheehan	186	10	0
J. Smart	156	0	0
Goddard & Co.	147	5	0
GROUNDS & NEWTON, Page Green Road, South Tottenham (accepted)	129	13	0

MORTLAKE.

For the erection of twenty-six workmen's dwellings, South Worple Way, Mortlake. Mr. G. BRUCE TOMES, A.M.I.C.E., surveyor, Mortlake.

G. E. Sturgis	8,953	8	11
Cropley Bros.	8,276	0	0
C. Feltham	7,643	4	7
Foster Bros.	7,492	0	0
Dakin & Co.	7,265	0	0
T. Bendon	7,183	0	0
B. E. Nightingale	7,126	0	0
Haynes & Co.	6,970	0	0
W. S. Beaton	6,837	0	0
W. H. Gaze	6,749	0	0
R. & E. Evans	6,589	0	0
W. J. Renshaw	6,477	0	0
Jones Bros.	6,304	4	6
A. Hunt & Sons	6,143	18	0
E. Seaber	5,966	0	0
J. Barker & Co.	5,900	0	0
ANTILL & SQUIRES, Fernlea, Fallsbrook Road, Streatham (accepted)	5,713	0	0

C. B. N. SNEWIN & SONS, LTD. MAHOCANY, WAINSCOT, AND TIMBER MERCHANTS, BACKHILL, HATTON GARDEN; & RAY ST., FARRINGTON ROAD, Telegrams, "Snewin, London." LONDON, E.C. Telephone, 274 Holborn.

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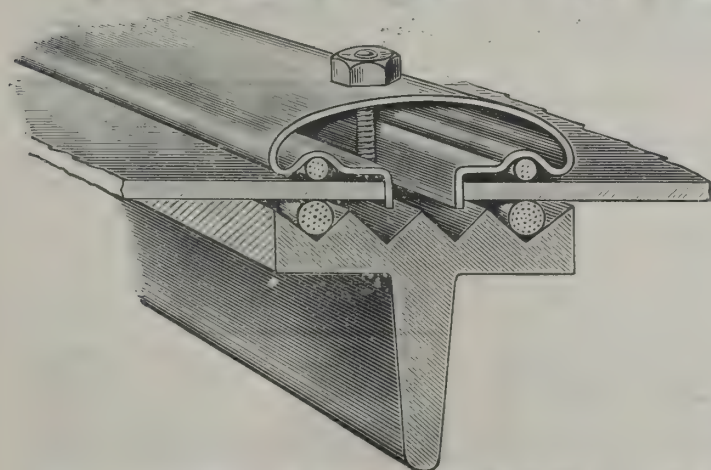
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WATERTIGHT GLAZING WITHOUT PUTTY

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For Index of Advertisers, see page x.



MAIDENHEAD.

For the extension of the central station buildings in Braywick Road. Mr. PERCY JONES, borough surveyor.

Peerless, Dennis & Co.	£1,242	0	0
Thompsett & Co.	1,221	0	0
W. J. Bloxham	1,174	0	0
H. Flint	1,127	12	6
C. W. Cox & Sons	1,110	0	0
A. J. Colborne	1,099	19	6
F. W. Edwards	1,080	0	0
F. Bissley	1,020	0	0
W. B. THEAKER, Maidenhead (accepted)	874	0	0

MILE END.

For painting the public library, Bancroft Road, E. Mr. M. W. JAMESON, borough engineer.

A. Andrews	£161	10	0
A. Heard (informal)	160	0	0
A. Kendall	156	0	0
J. CALCUTT, 2 Grafton Street, Mile End, E. (accepted)	148	10	0

PEMBROKESHIRE.

For additions, alterations, repairs, new stables, hayloft, &c, to premises at Lower Fishguard. Mr. J. PREECE JAMES, architect, Tenby.

D. & J MORGANS, Brodog, Fishguard, stables and hayloft (accepted)	£280	0	0
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PIXLEY.

For the erection of a parsonage at Pixley, Herefordshire. Mr. ERNEST G. DAVIES, architect, Bridge Street, Hereford.

D. Smith	£935	15	0
G. HILL, Ledbury (accepted)	863	18	6

PRESTON.

For the erection of buildings for a refuse destructor, also extension of stabling, storeyard, &c., off St. Paul's Road, Preston, Lancs.

T. CROFT & SONS, Victoria Street (accepted)	£12,234	0	0
---	---------	---	---

For the supply and erection of a refuse destructor, with boilers and other accessories, &c, at the St. Paul's Road yard.

MELDRUM BROS, Manchester (accepted)	£11,200	0	0
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SALTBURN-BY-THA-SEA.

For excavating and filling-in Sea Banks, widening the Marine Promenade and returning. Mr. GEO. S. L. BAINS, C.E., surveyor.

S. A. Taylor	£710	3	0
A. E. Hobbs	521	13	0
J. Sparks	480	10	0
Bates & Haggith	460	0	0
T. Barker	391	2	0
G. Ramshaw	367	0	0
J. FLINTOFF, Saltburn (accepted)	361	5	0

For painting iron and wood fencing, shelters, bathing-house, urinal and lamp-posts on the sea-front. Mr. GEO. S. L. BAINS, C.E., surveyor.

H. S. Holland	£95	19	0
C. Watson	55	0	0
Mazzetti & Son	50	0	0
TUNNICLIFFE & SON, Saltburn (accepted)	42	12	10

SCOTLAND.

For sewerage work in the special drainage district of Craigbank, New Cumnock, Ayr. Mr. W. R. COPLAND, engineer, 146 West Regent Street, Glasgow.

Milne & Murray	£3,350	10	5
R. Scott	3,102	10	1
J. Osborne	3,069	1	3
D. Watson	3,066	9	10
W. G. Flett	2,838	19	3
A. Stark & Son	2,571	1	1
T. Crawford & Sons	2,450	3	7
Kirkwood, Kerr & Co.	2,446	1	0
R. C. Brebner & Co.	2,237	10	6
A. Beattie	2,100	17	9
R. CRAWFORD-CASTLE, New Cumnock (accepted)	1,996	17	0

For opening and refilling trenches, and providing, laying and jointing about 650 lineal yards glazed fireclay and cast-iron sewer pipes, 15-inch to 18-inch diameter, at Campbeltown.

J. Boyce	£545	19	0
D. & A. Hamilton	479	18	0
N. M'Arthur	404	3	0
P. DOCHERTY, Campbeltown (accepted)	390	7	0

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Horizontal and Vertical damp course; flat roofs, basement, and other floors, &c.; or any other
Asphalting work. All communications to—

587 & 589 HARROW ROAD, KENSAL GREEN, W.



SEVENOAKS.

For taking-down and rebuilding a bridge (steel girders) at Hever Brook. Mr. W. H. BOLT, surveyor, Leigh, Tonbridge.

T. J. Collins & Son	£123 18 0
P. W. Langridge	123 10 0
H. J. Smith & Son	119 10 0
E. LEIGH, Edenbridge, Kent (<i>accepted</i>)	87 0 0
H. Leigh	85 0 0

SOUNDWELL.

For the erection of the first portion of the St. Stephen's Church, Soundwell, near Bristol. Mr. H. M. BENNETT, architect, 36 Corn Street, Bristol.

A. H. Forse & Sons	£3,314 0 0
Adams & Jefferies	3,025 0 0
Stephens & Bastow	2,856 0 0
J. Hatherley	2,527 0 0
E. Love	2,371 0 0
E. Walters & Son	2,297 0 0
R. H. BROWN, Downend, near Bristol (<i>accepted</i>)	2,161 17 9

STOCKPORT.

For street works in Norwood Road. Mr. JOHN ATKINSON, borough surveyor.

J. & W. S. Briscoe	£666 2 6
W. H. Worthington	592 10 5
Gosling & Stafford	581 6 11
W. H. Eva	577 11 11
P. D. HAYES, Stockport (<i>accepted</i>)	568 9 3

For the following streets and passages:—Pitt Street, Aberdeen Grove and passages Nos. 2 and 3 off York Street. Mr. JOHN ATKINSON, borough surveyor.

Gosling & Stafford	£427 13 11
W. H. Eva	410 1 0
P. D. HAYES, Stockport (<i>accepted</i>)	406 17 9

SWADLINCOTE.

For painting and decorating the inside of the town hall. Mr. THOMAS KIDD, surveyor.

A. Harvey	£123 0 0
W. Riley	110 0 0
TURNER & SONS, Guild Street, Burton-on-Trent (<i>accepted</i>)	107 0 0

TOOTING BEC.

For joinery fittings at the asylum.

Cabinet Carpentry and Shopfitting Company	£326 10 0
Parkstone Steam Joinery Company	194 0 0
General Builders, Ltd.	187 0 0
R. E. Williams & Sons	170 0 0
A. Duncan	157 0 0
T. Pearce	155 0 0
W. C. Ripper	150 0 0
Shannon, Ltd.	142 12 3
Muir & Child	139 0 0
J. Campbell	137 0 0
B. E. Nightingale	130 0 0
London School Furniture Company	126 5 0
E. Redman	115 8 6
E. Wall	109 0 0
Sims & Woods	107 10 0
E. H. Cripps	103 0 0
C. B. Roberts & Co.	99 0 0
H. Line	96 0 0
E. CHAMBERLAIN, Steam Joinery Works, Addlestone (<i>accepted</i>)	92 0 0

For supply of engineering tools to the asylum.

Britannia Co.	£666 2 6
Pfeil & Co.	514 10 2
Watts, Fincham & Co.	459 5 7
Easterbrook, Allcard & Co., Ltd.	445 17 5
Buck & Hickman, Ltd.	432 14 7
T. Lumsden	430 17 0
Fairbanks Co.	414 14 0
Jukes, Coulson, Stokes & Co.	414 1 5
G. Hatch, Ltd.	412 5 7
R. Dawson & Co.	411 2 9
H. GREENE & CO., 22 Martin's Lane, E.C. (<i>accepted</i>)	390 5 0

TOTTINGTON.

For the lowering of Holcombe Road, at or near Quakersfield. Mr. L. KENVON, surveyor, 33 Chapel Street, Tottington. W. GREENHALGH, Bury Road (*accepted*).

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TOTTENHAM.

For repair of the tar and asphalt paving throughout the district. Mr W. H. PRESCOTT, engineer.
BRADSHAW & Co., 52 Queen Victoria Street (*accepted*).

For street works in Cross, Frome, Junction and Manor Roads.
Mr. W. H. PRESCOTT, engineer.

Accepted tenders

Grounds & Newton, Tottenham, Cross Road, £184; Junction Road, £242; Manor Road, £1,315.
C. Bloomfield, Tottenham, Frome Road, £393.

THRAPSTON.

For the erection of co-operative shop and stores at Ringstead.

Messrs SHARMAN & ARCHER, architects, Wellingborough.

Smith & Son	£354	0	0
G. Henson	353	10	0
Berrill & Green	350	0	0
Coates & Son	348	0	0
Harksley Bros.	347	0	0
Goodman & Murkett	345	0	0
F. Henson	326	10	0
Siddens & Freeman	308	0	0
W TANNER BROS., Moulton, Northampton (<i>accepted</i>)	306	10	0

TRUNCH.

For restoration of Trunch Church tower. Mr ARTHUR J. LACEY, architect, 6 Upper King Street, Norwich, Norfolk.

W. Porter	£413	5	5
G. Riches	377	0	0
R. Chapman	315	0	0
S. R. Wilkins	305	0	0
H. Bullen	270	0	0
G. E. HAWES, Duke Street, Norwich (<i>accepted</i>)	245	0	0

WALES.

For the erection of a Calvinistic Methodist chapel and school-room at Llandegla. Mr. WILLIAM MOSS, architect, 2 Temple Row, Wrexham

R. Roberts	£1,245	0	0
S. Moss	1,203	0	0
T. Williams	1,199	0	0
J. J. CANNON, Coedpoeth (<i>accepted</i>)	1,180	0	0

WALES—*continued*.

For additions, alterations and improvements to the Brynhyfryd Board school, Swansea.

T. Richards	£14,900	0	0
H. Billings	14,150	0	0
Lloyd Bros	13,893	0	0
Walters & Johns	13,560	0	0
E. Morgan	13,392	0	0
J. & F. Weaver	12,995	0	0
Jones, Price, Rees & Davies	12,953	0	0
G. DAVIES, Heathfield (<i>accepted</i>)	11,499	0	0

For rebuilding the Waterloo hotel at the corner of Alexandra Road and Watch House Parade, Newport, Mon. Mr. R. J. POTTINGER HODGE, architect, Prudential Buildings, Newport.

Smith Bros.	£7,655	0	0
E. C. Jordan	7,640	0	0
Leadbeter Bros.	7,333	0	0
W. A. Linton	7,305	0	0
A. S. Morgan & Co.	7,157	0	0
C. H. Reed	7,046	0	0
C. Locke	6,827	10	0
W. MOORE, Daniel Street (<i>accepted</i>)	6,438	0	0

For the erection of the Queen Victoria memorial tower, Holy Trinity parish church, Gee Cross. Messrs. JAMES HUNT & SON, architects, 4 Warren Street, Stockport.

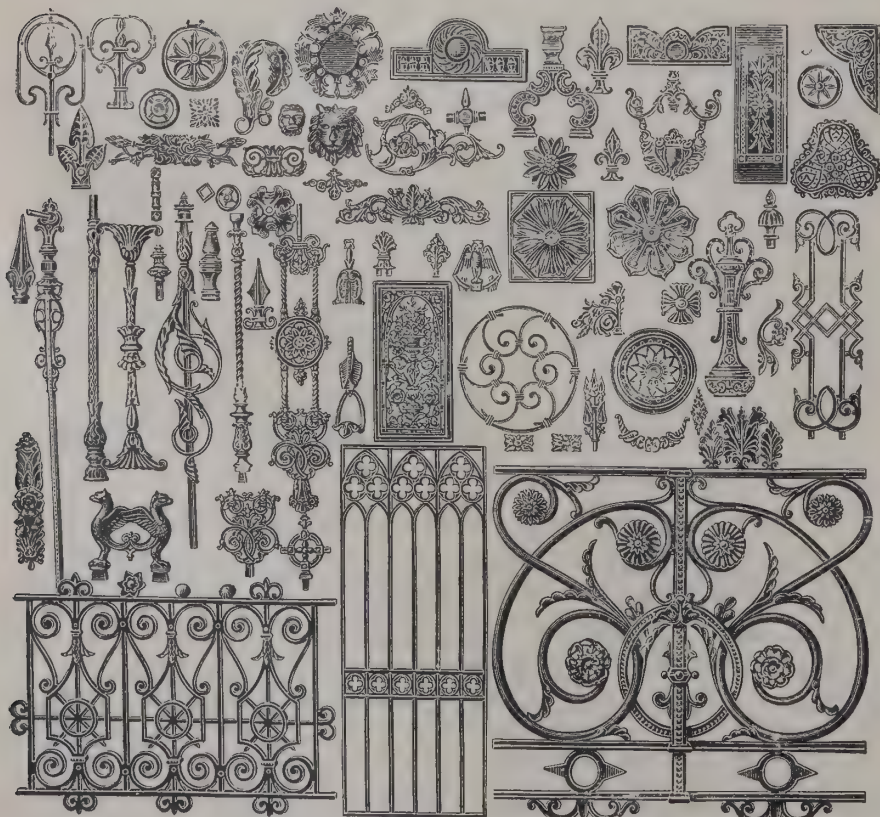
B. ARMITAGE, Gee Cross, Hyde (<i>accepted</i>)	£593	0	0
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WATFORD.

For the erection of a household management centre at the Alexandra school, Watford. Mr. W. H. SYME, architect, 4 High Street, Watford.

W. Sampson	£2,213	0	0
Goodchild & Jeffery	2,153	0	0
Clark Bros.	2,124	10	0
F. Dupont & Co.	2,095	0	0
G. Wiggs	2,076	0	0
R. L. Tonge	2,065	0	0
Townsend & Coles	2,004	0	0
W. King	2,000	0	0
Tyler & White	1,975	0	0
G. & J. Waterman	1,956	0	0
C. Brightman	1,920	0	0
H. BROWN, Whippendale Road (<i>accepted</i>)	1,897	0	0

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WEST HAM.

For the construction of corrugated-iron tramcar sheds, West Ham Lane, West Ham Mr. JOHN G. MORLEY, borough engineer.

J. McManus	£1,878	0	0
Humphreys, Ltd.	1,821	0	0
Hadley & Son	1,768	12	10
Hawkins & Co.	1,710	0	0
Powers & Deane, Ransomes, Ltd.	1,654	15	0
Peirson & Co.	1,569	0	0
W. Harbrow	1,510	0	0
Westwood & Co., Ltd.	1,495	0	0
Smith & Co.	1,480	0	0
Baker & Co.	1,450	0	0
F. Morton & Co., Ltd.	1,450	0	0
E. C. Keay, Ltd.	1,437	0	0
Whitford & Co.	1,423	0	0
Boulton & Paul	1,412	0	0
Jones & Son, Ltd.	1,390	10	0
Works Manager	1,363	0	0
Clyde Structural Iron Co.	1,346	0	0
J. Ellis	1,330	10	6
Grays Steel Construction Co.	1,325	0	0
Cross & Cross	1,286	0	0
Jukes, Coulson, Stokes & Co.	1,250	0	0
Bryden & Middleton.	1,200	0	0
Croggon & Co.	1,150	0	0
Steavenson & Co.	1,115	0	0
WALKER BROS., Ltd (accepted)	1,099	0	0

WEST HARTLEPOOL.

For painting several of the West Hartlepool Board schools.

Accepted tenders.

Boanson & Son, Church Street—Lister Street school exterior	£30	0	0
J. Burdon, Whitby Street—Oxford Street school exterior	19	10	0
J. Burdon—Lynnfield school exterior	18	19	6

WINTON (BOURNEMOUTH).

For street works near Wallis Down Road. Messrs. H. E. HAWKER & MITCHELL, surveyors, Bournemouth.

GROUNDS & NEWTON, Bournemouth (accepted) £373 0 0

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WESTON-SUPER-MARE.

For the erection of a shelter and convenience at the water-works lands. Mr. HUGH NETTLETON, surveyor.

Shelter.

H. Dyer	£24	0	0
G. Lucas	23	17	6
C. ADDICOTT, Weston-super-Mare (accepted)	20	0	0

Convenience.

G. Lucas	107	15	0
C. Addicott	98	10	0
H. DYER, Weston-super-Mare (accepted)	77	0	0

WHITBY.

For the erection of a farmhouse at Ward's Farm, The Grange, Egton estate. Mr EDWARD H. SMALES, architect, 5 Flowergate, Whitby.

A. Palframan	£627	16	6
J. Harrison	505	15	0
R. HARLAND, 4 Cleveland Terrace, Whitby (accepted)	498	10	0
Coverdale & Longhorn (for. all work except mason and brickwork)	261	17	1
R. Jowsey, plasterer	25	11	0
Smithson & Taylor, plasterer	21	0	0

WOLVERHAMPTON.

For storm-water sewers at Heath Town. Mr. R. E. W. BERRINGTON, engineer, Bank Buildings, Lichfield Street, Wolverhampton.

W. Thompson & Co.	£1,093	0	0
H. Holloway	1,087	0	0
J. White, jun.	1,048	9	0
J. Owen	949	18	2
W. H. Reading	911	3	3

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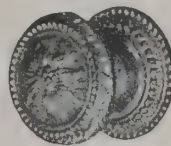
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is 50 feet wide, providing two footways each 7 feet wide, in place of a single footway from 2 to 3 feet wide in the old structure, and a 36-foot wide carriageway. The gradient is comparatively easy, and what is perhaps of more importance, a fairly straight line with the railway bridge to the north has taken the place of the zigzagging roadway of the olden days. Built of freestone, with a granite arch, it has a span of 60 feet, and is at the centre of the arch 10 feet above the bed of the stream. An ornamental touch has been given to the parapets by the construction of balustrades immediately over the archway. Otherwise they are plain and solid, stand 4 feet 3½ inches above the pavement, and are on the east side 205 feet and west side 300 feet long. In the centre of the balustrades on both sides bronze tablets bear an inscription setting forth that the bridge was built at the joint expense of the Corporations of Edinburgh and Leith, when Sir James Steel, Bart, was lord provost of the city, and Mr. Richard Mackie, provost of the burgh.

ELECTRIC NOTES.

THE Inverness Town Council have resolved to remit to a special committee to enter into negotiations with a company or companies for the introduction of electric light.

THE electric-light committee of the Coventry City Council have recommended that application be made for sanction to borrow 5,000*l.* for the purchase of electric motors to be let on hire.

MR. R. H. BICKNELL, a Local Government Board inspector, held an inquiry at the municipal buildings concerning an application by the Maidenhead Town Council for sanction to a loan of 10,000*l.* to extend their electric-light buildings and add new plant, cables, mains, &c. Mr. Burstall, the consulting engineer, informed the inspector that the original estimate was 24,249*l.*, and the actual expenditure 23,022*l.*

THE joint committee of the tramways and electricity departments of the Glasgow Corporation have agreed (1) that the total quantity of current now to be taken from the tramways department by the electricity department (including the 150,000 units, or any increase of that quantity, taken from the Coplawhill sub-station under the arrangement of date April 10, 1902) should be fixed at not less than 700,000 units, and (2) that it be remitted to the general manager of the tramways department to consider and report as to the price

at which the quantity of current to be taken from Pinkston station should be furnished to the electricity department, after which the details of the proposed new arrangement between the two departments can be finally adjusted and recorded in the minutes.

THE accounts of the Leeds Corporation tramways for the first year since they were completely worked by electricity show the profits to have been equal to a rate of 8*d.* in the pound. The gross profits, 103,055*l.* 3*s.* 9*d.*, were 21,911*l.* 3*s.* in excess of those of the previous year. From the gross profits, 103,055*l.*, the sum of 26,667*l.* has to be deducted for interest, and 14,387*l.* for sinking fund. The profit to the ratepayers amounts to 62,000*l.*, which is 13,758*l.* more than in the preceding year, while comparing the amount with that of two years ago the surplus is practically doubled. The net profit is equal to 24 per. cent. of the total receipts, and this is about 3 per cent. more than in the previous twelve months.

BUILDING AND BUILDERS.

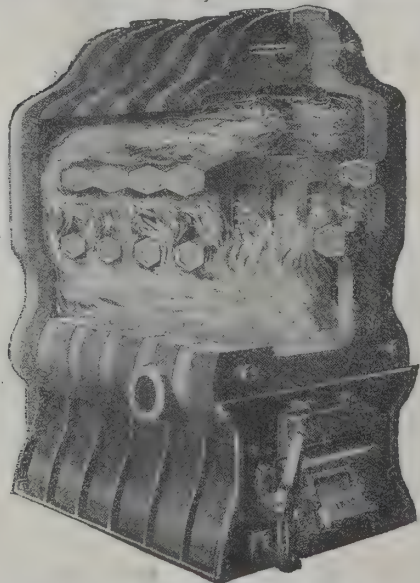
MEMORIAL-STONES have been laid of a new Methodist chapel which is being erected in Smart Road, Walton, the estimated cost of which is 3,600*l.*

THE general purposes committee submitted to the Sutton Coldfield Town Council on Wednesday the plans of the new town hall and fire station for approval, and recommended that application be made to the Local Government Board for their consent to appropriate the proceeds of the old town hall and offices in Mill Street (4,050*l.*) towards the erection of the new town hall, and for their sanction to borrow 4,086*l.*, the balance of the sum required to cover the cost of the erection of the hall. Further, that application be made to the Local Government Board for their sanction to borrow 1,920*l.* for the cost of the erection of the new fire station.

THE memorial-stones of a new Wesleyan church, to be erected on the Derby Road, Long Eaton, were laid on the 26th ult. The building which has hitherto done duty for both chapel and Sunday school was built sixteen years ago, and with the rapid increase of population in the immediate vicinity the disadvantages of carrying on services and Sunday-school work in the same building have become more pronounced. The erection of a new church and the enlargement of the Sunday school were consequently decided upon, and are now in course of fulfilment. The estimated cost of the buildings and site is 9,300*l.*

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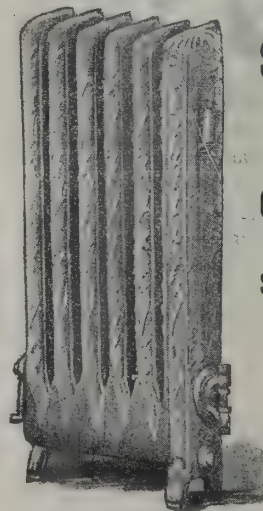
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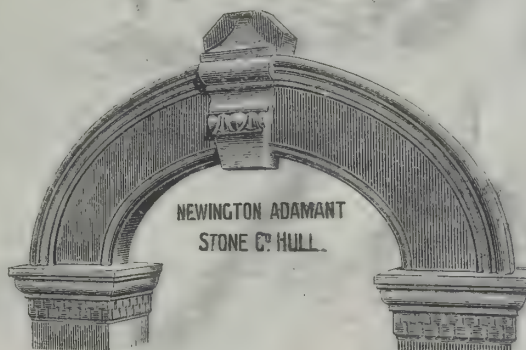
SEND FOR PARTICULARS.

LISTS of ART PLATES and of
CATHEDRALS, published in THE ARCHITECT, sent
on application to GILBERT WOOD & CO. Ltd., Imparia
Buildings, Ludgate Circus, London.

THE Glasgow and West of Scotland Master Plumbers' Association held their annual excursion on the 25th ult. Driving from Edinburgh through the policies of the Duke of Buccleuch, the party, numbering about 100, lunched in the Dalkeith Cross Keys. In the afternoon the drive was continued by Melville Castle to Roslin, the party returning by brakes to Edinburgh, where they dined at Ferguson & Forrester's. Ex-bailie Macfarlane, Port Glasgow, presided, and the croupiers were Messrs. Robert Russell and Chas. Higney, jun. After dinner the toast of "The King" was given in felicitous terms by the chairman, who also submitted "The Guests," coupled with the names of Major Findlay, who represented the Master Wrights' Association, and Mr. Webster, of the Master Masons' Association, both making appropriate replies. The party arrived in the city shortly after eight o'clock.

MR. H. P. BOULNOIS, Local Government Board inspector, held an inquiry at the Council Chamber, Birmingham, into the merits of a scheme prepared by the London and North-Western Railway Company for providing new dwellings for persons of the labouring class. It was explained by Mr. W. Bishop, solicitor, London, that the London and North-Western Railway Company proposed to acquire thirty-three houses near Monument Lane station for the purpose of improving the railway. The houses were occupied by persons of the labouring class, and it was proposed, in accordance with statutory obligations, to provide accommodation for the persons displaced, numbering 122, by erecting houses at no great distance from the dwellings which would in the near future have to be pulled down. It was intended to erect nineteen new houses, each house containing five rooms, with yard, &c. Mr. Bishop suggested that the site, which Mr. Boulnois had inspected, was eminently suitable and desirable. Accommodation would be provided for all the people who would be displaced. The new houses, too, would be superior to the old ones. Further information was given to Mr. Boulnois by Mr. Stannard, district estate office of the company. Messrs. Ball & Hatley, of the chief estate office, were also present. The Local Government Board will receive a report in due course.

grounds of the Royal Botanic Society, Regent's Park. Absolutely perfect summer weather favoured the function, the success of which was a record. The grounds were brilliantly illuminated with electric light and gracefully arranged Japanese lanterns. On the west lawn and in the conservatory military bands performed the numerous items of lengthy programmes to the manifest delight of appreciative listeners; a magnificent exhibition of rhododendrons and another of roses attracted flower lovers in the intervals of the pieces; while the rival marquees, in which were dispensed strawberries and cream and other delectable summer consummations, were not less assiduously frequented. Altogether the Society may be congratulated on having given an entertainment of which pleasant memories will remain with those who were so fortunate as to be present.



THE Newington Adamant stone, which is being put on the market by the Newington Adamant Stone Co., of Pulman Street, Newington, Hull, is an artificial stone manufactured by experienced men under the direct supervision of the manager, Mr. H. Vokes, and is guaranteed by the makers to be equal to natural stone in appearance, and to offer the following advantages over the latter to the user:—Greater durability, it being practically indestructible; it is more economical, its cost being considerably below the natural stone; it can be made to any shade of colour; it possesses an attractive appearance and perfect finish; and is non-absorbent.

SOCIETY OF ARTS CONVERSAZIONE.

THE members of the Society of Arts and their friends, who mustered in force, spent a most enjoyable evening on Tuesday last, when the annual conversazione was held in the beautiful

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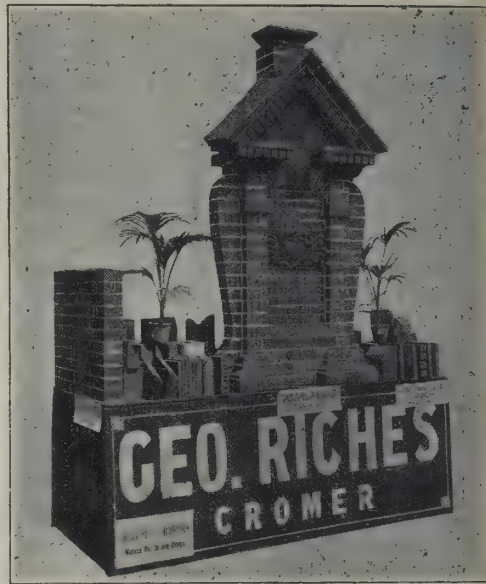
INDUSTRIAL EXHIBITION, GLASGOW.

FOUR competitive designs were submitted to the Council of the Glasgow East End Industrial Exhibition, and those of Mr. John Fairweather, A.R.I.B.A., 136 Wellington Street, Glasgow, were selected as being the most practical and suitable for the exhibition. Much originality and resource was shown in the adaptation of the present buildings and grounds, and in the treatment of the entrance façade and concert hall. The

Infirmiry. It will be opened next December. The guarantee fund already amounts to over 10,000/.

BUILDING TRADES EXHIBITION.

IN the course of our notes on the recent exhibition at Islington we gave a detailed description of Messrs. R. W. Blackwell & Co.'s Stand in the Gallery. We are now able to give a view of it.



latter is designed to accommodate 3,500 persons, and the platform, in addition to the usual accessories, will have a fine orchestral organ. All the leading military and court bands are being engaged. The exhibition will be of a general character, divided into three sections, and is under the patronage of Glasgow's most influential citizens, and is being promoted for the benefit of the reconstruction scheme of the Royal

As will be seen, specimens of the firm's specialty, "Ruberoïd," were exhibited, together with examples of the application of the material to the many uses to which it is suited. The value of "Ruberoïd" as a roofing material has been substantially recognised, eighteen medals having been awarded at exhibitions, including the Paris International and the Pan-American.

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12s. 9d per 100; 17 1/2" x 3" x 2" ditto, 8s. 3d. per 100;
17 1/2" x 3" x 1 1/2" ditto, 6s. 9d. per 100.

Also in Pitch Pine. Prices on application.



Figured Wainscot Flooring with above special joint to
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1 1/2 x 4 1/2" Wainscot Oak	at 53s. 0d. per square.
1 x 4 1/2" ditto	at 42s. 6d. "
1 1/2 x 4 1/2" Pitch Pine	at 23s. 0d. "
1 x 4 1/2" ditto	at 19s. 6d. "

These prices do not include desiccation.

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The second illustration is from a photograph of the Stand arranged by Mr. G. Riches, of Cromer, whose specialty is hand-moulded, sand-faced red bricks. The above specimen of work, with gauged carved centre panel introduced to illustrate how especially adapted are the bricks for this class of work, was designed by Mr. W. Barnsley Hughes, architect, of 31 Craven Street, W.C.

TRADE NOTE.

A LARGE new clock has just been erected upon the church tower at Beadnell, Northumberland, in commemoration of the Coronation. Messrs. John Smith & Sons, Midland Clock Works, Derby, have carried out the work, and they are also just completing a similar clock for Colnbrook, near Windsor.

THE SPEEDON RADIATOR.

THIS is a new radiator now being presented to the public by the Coalbrookdale Company, Ltd., 141 Queen Victoria Street. It is a complete hot-water circulating system within itself, being boiler, circulating pipes and radiator combined. It can be placed anywhere; takes up little space; is perfectly safe and odourless; requires no chimney. It costs, we are told, less than one farthing per hour, and is eminently suitable for bedrooms, bath-rooms, libraries, drawing-rooms, shops, churches, schools, greenhouses, &c. It is fitted with an automatic attachment which turns the gas down when the temperature of the water reaches 197 degrees, and retains its heat for a considerable length of time after the gas has been quite extinguished.

MAYRESCO.

MAYRESCO is the name given by Messrs. Mayfield Bros., of Sculcoates, Hull, to a new water-paint and sanitary washable distemper which is fireproof, free from lime or other alkali, and lime-resisting, and is equally applicable to wood, iron, brick, stone, or plaster. It is made in pure white and a variety of delicate tints. It will take varnish, forms a valuable priming, and, it is claimed, applied to old tarred work, will effectually prevent the tar from coming through new paint.

HOUSES IN IRELAND.

A PAPER on "The Housing of the People of Ireland during the Period 1841-1901" was read by Mr. R. E. Matheson, registrar-general, at the last meeting of the Statistical and Social Inquiry Society. It stated that during the sixty years there was a gradual reduction in the number of houses from 1,328,839 to 858,158. There was also a great alteration in the relative number of houses. Thus mud cabins, which in 1841 numbered 491,278, fell to 9,873 in 1901. In considering this decline it should be borne in mind that a large portion of the decrease was due to emigration. Houses of a somewhat better class also showed a considerable falling off, while second class dwellings or good farmhouses gradually increased from 264,184 to 521,454, and first-class houses of a better description than the preceding rose from 40,080 to 75,225. As to house accommodation in the whole of Ireland, he said in 1841 the number of families having only fourth-class accommodation formed 42.46 of the total families in the country, and in 1901 the percentage was only 4.53. The percentages of third-class accommodation respectively were 39 and 31.64. In the second-class the figures were 16.41 and 56.37, while in the first-class the figures were 2.13 and 7.46 respectively. Dealing with one-room tenements, he said of the 59,265 families in Dublin 21,747 were located in one-room tenements, or 36.70 per cent. The percentage in Belfast was 1; Cork, 10.62; Londonderry, 7.15; Limerick, 15.80, and Waterford, 7.28. Comparing Dublin with other big cities it was found that the number of persons in one-room tenements with five or more occupants in every 100 of the total population was—Dublin, 10.61; Belfast, 0.10; London, 0.70; Liverpool, 0.24; Manchester, 0.05; Edinburgh, 2.33; Glasgow, 5.24. In conclusion, he said that the material improvement in the housing of the people of Ireland since 1841 was very satisfactory, but there was still much to be accomplished. The substitution of modern labourers' cottages in the rural districts for mud cabins and the erection of artisans' dwellings in some of the larger urban districts had done much to provide suitable habitations for the people, but the statistics of tenements of one room showed that in many parts a considerable proportion of the population were still exposed to the evils resulting from overcrowding. It was gratifying to know that the subject was attracting earnest attention in Dublin, where great good had been effected through the princely munificence of Lord Iveagh. The movement for the dwellings of the poor had recently received an important

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impetus by reason of the great practical interest manifested by His Excellency the Lord Lieutenant.

Mr. Ormsby, president of the Royal College of Surgeons, said he felt that the rich did not often think or know of how the poor lived, and very often these poor dwellings were within a stone-throw of the houses of the wealthy. He maintained it was the bounden duty of everyone to do something to ameliorate the condition of their poorer brothers. The condition in which they lived was a blot on civilisation and a reproach to Christianity. At the recent meeting in the College of Surgeons, presided over by His Excellency, he was much disappointed at the apathy shown by those who attended. Out of that large meeting not more than a dozen responded to the appeal of taking even one share, where they were promised 3 per cent. for their money.

Mr. Frederic W. Pim said overcrowding was the greatest evil from which Dublin suffered. It suffered both morally and physically, and little improvement might be looked for until houses were built for the poorer population, and until they were removed from the terrible overcrowding and the wretched condition in which they lived at present.

EAST LONDON WATERWORKS.

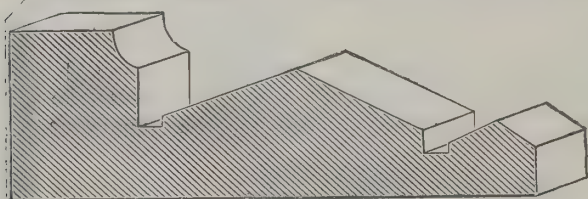
THE East London Waterworks Company have opened two new reservoirs at Walthamstow. The company have now twelve storage reservoirs in the Lea Valley, which, when full, have a combined water area of 479 acres, and a total capacity of 2,400 million gallons, and a shore line of over fifteen miles. All of the reservoirs can be filled by gravitation, with the exception of the two new ones, which can only be filled half-way by that means. The other half has to be filled by pumping. The Act of 1897 granted the company powers for the construction of these two new reservoirs, which have been named the Banbury and the Lockwood, a pumping station, aqueducts and further diversions of the Lea and Ching Brook, which works are now approaching completion. In 1900 powers were obtained for removing the intake on the Lea from its present position at Ponder's End to Enfield Lock, for constructing two storage reservoirs to cover an area of about 1,000 acres between Enfield Small Arms Factory and Chingford Mill, and for building a pumping station, forming aqueducts, diverting roads, and other incidental work. The works to be carried out under the powers of the Act of 1897 were begun in May 1899, and the two new reservoirs have a

combined capacity of 1,198 million gallons. This will nearly double the water storage for East London. Brick-lined aqueducts, over a mile and a half in length, have been constructed, as well as inlet and outlet work for both reservoirs, while the river Lea diversion extends to a mile and three-quarters. In the new pumping station, which is situated close to the Banbury reservoir, and has been called the Greaves, pumps have been erected. These are capable of lifting 105 million gallons of water a day. The chief difficulties of the works were in connection with the puddle trench of the Lockwood reservoir, where it was found necessary to carry the excavations down to 60 feet below the ground level. The length of the banks encircling the new reservoirs is over three miles. The northern extremity of the new works adjoins the Chingford pumping station, and the water here enters a double culvert and also the new aqueduct, 36 feet wide, which is capable of carrying 180 million gallons daily. This aqueduct extends for half a mile to the Greaves pumping station, where there are the three new centrifugal pumping engines to lift water from the aqueduct into the Banbury reservoir. From this aqueduct a similar channel, 20 feet wide, with a carrying capacity of 80 million gallons per day, leads to the High Maynard reservoir, a mile further south, passing on the way the inlet chamber to the new reservoirs. Three cast-iron pipes lead vertically down for 50 feet from the inlet chamber to a tunnel 577 yards long, connecting the two reservoirs. The tunnel has a valve tower at each end—one in each reservoir—and there are also valves on the vertical inlet chamber pipes so that water can be directed from one reservoir to the other, or from the aqueduct to either reservoir, or from either reservoir to the aqueduct as the water level will allow. At the south end of the Lockwood reservoir is another valve tower, at the commencement of an outlet tunnel, leading to the Capper Mills aqueduct, whence the water can pass to the Lea Bridge station.

BUILDING IN GLASGOW.

EVIDENCE was given on behalf of the operative masons before the Glasgow Municipal Commission on the Housing of the Poor. The witnesses were Mr. A. M'Gillivray and Mr. Thomas Fraser.

They said that, viewing the matter, firstly, from their standpoint as workmen, the cost of building (including high wages



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&c.) and the rise in the price of materials were not the main causes of the excessive rise in rents. The cost of erecting houses had risen considerably of late years, yet in districts where the expense of building was greater than it was in the city, the rents were considerably less. In country districts, for instance, the labour involved in erecting a building was much greater than it was in the city. In Glasgow the methods of building had been so much modified and altered that the cost of every particular item was reduced to the lowest possible point. Brickwork, concrete rybats, mullions, stairs and pavements were substituted for the dearer material—stone. Rubble from old buildings was used for the back walls of tenements. In the dressing of the stonework machine power had replaced hand labour; machines were now used which, at a very small cost, could do the work of eight to fourteen men. The hoisting of the materials and preparing of the mortar was done, for the most part, by steam-power. The actual work of the operatives had been so split up and specialised that the greatest possible amount of work was taken out of the workman.

They stated emphatically, as a direct contradiction of the statements already made to the Commission, that the policy of "ca' canny" was unknown in the building trade in Glasgow. They were of opinion that high rent was the direct outcome of land monopoly, and they were persuaded that if the municipality was ever to accomplish anything in this matter, it must secure the land in and around the city. Besides this, if the building operations which the municipality might undertake were to be a success, it must not let out the work to a contractor, but employ the labour direct. The point which they desired particularly to emphasise in this connection was that it had been their experience all along, while engaged on public buildings, that the contractors almost invariably scamped the work. They did not only regard the subject from their standpoint as operatives. They were also deeply interested in the housing problem as citizens and occupiers of houses. Land monopoly could not in itself cause rent to rise if workmen did not crowd into the city and compete for house-room. The reason why workmen came to the city where house-room was scarce and rents high was that they could not find work in the country. In their trade it was becoming every day more difficult to obtain employment outside the large cities. The cause of this was that those industries alongside of which their trade could only be carried on were being localised in the cities, so that they might be conducted at the lowest possible cost.

Statistics showed that the lives of city dwellers were eight years shorter than those of country dwellers. This side of the question had, therefore, a very direct bearing upon the housing problem. For where a man worked, there he must dwell. And while they did not believe it to be the duty of the municipalities alone to say where industries should be carried on, it was nevertheless necessary that this side of the question should be considered. The development and improvement of the tramway system might alleviate the present conditions. In going to and from their work they often found it very difficult to obtain the necessary car service. In the first place, the cars were run in many districts with evidently no regard to the starting or stopping hours of workmen. As a result of the route system, they found it very expensive travelling by the cars. The extension and improvement of the tramway system might for a time alleviate the evils, yet this expenditure of the citizens' money would, unless the municipality acquired the adjacent land, simply enrich the present landowners. They submitted, therefore, that the municipality should acquire land and erect dwellings fit for men to live in—dwellings, not in the vicinity of smoky factories or poisonous chemical works, but dwellings which men might consider their home. No one-apartment houses should be tolerated. Some of the remedies proposed by them were beyond the present powers of the municipality. Yet the evil effects of the present system were so far-reaching and the whole matter so pressing that they believed the municipality should endeavour to deal with the subject in a thorough and drastic manner. Referring to "jerry buildings," one of the witnesses stated that some of the most glaring examples of "shoddy work" were to be found in certain public buildings, which he particularised. The same witness added that the introduction of machinery in their trade meant harder work for the men.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THE annual meeting of the above Society was held at the town hall, Kensington, on the 25th ult. Mr. William Weaver delivered the presidential address. He referred to the vast importance of municipal work and its effect upon national life and welfare as a whole. The continued growth and changes in the vast Metropolis presented, he believed, a grave problem

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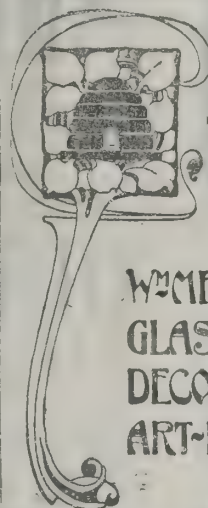
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which, in a lesser degree, applied to many of our large towns. The changes during the last half-century were stupendous, and there was every indication that the next half-century would present a similar record. It was "the age of the engineer," and Mr. Weaver went into detail upon the wonderful progress made in such departments as water-supply, locomotion, roads, refuse removal, sanitation and lighting. As to locomotion, the President said that the partial or complete disappearance of horse traction would effect a vast improvement in the sanitary condition of the streets, would demand altered methods of road construction, and lead to the universal adoption of impervious pavements. With proper regulations motor traction should prove a great addition to the comfort of town residents, and the general adoption of such traction would be equivalent to widening the streets owing to the lesser requirements of the changed traffic.

Then followed a series of papers on technical subjects. The treatment of sewage is apparently an engrossing topic for the engineer, and such authorities as Professor Frank Clowes and Mr. Scott-Moncrieff were heard. The former gave the result of the experimental bacterial treatment of sewage as pursued by the London County Council. It is satisfactory to learn that under proper conditions a very uniform and satisfactory purification of sewage can be effected, and that the process is comparatively cheap. So important is the subject as regards the health of the community and the condition of the river Thames that the London County Council is now publishing a standard book containing an account of the experiments.

Mr. F. Smythe showed how public roads can be brightened and the air sweetened by the planting of suitable trees. In future there is no reason why some of our most desolate town thoroughfares should not be improved in this way, and he recommended the modern municipal engineer to add arboriculture to his list of studies. The plane is the finest tree for road-planting, and the next in order of preference are maple, sycamore, oak, poplar, elm, lime, birch, ash and willow. For manufacturing or smoky districts planes, Norway maple, sycamore, poplars and ash are the most satisfactory.

Mr. T. W. E. Higgins dealt with the importance of motor-vans for municipal purposes. Their employment would relieve the streets of many tons of horse manure and dispense with a

small army of scavengers. Mr. T. W. Aldwinckle read a useful paper on "Minimising the Risk of Fire in Temporary Buildings," and Mr. W. Nisbet Blair discussed "Cremation." According to figures quoted, cremation in England is making very slow progress. In ten years only 2,015 bodies have been cremated at Woking—the first crematorium in England. Ten years ago the total for Woking was 101, and last year it was only 275, as compared with 301 in 1900.

Lunch was provided by the Mayor, and later in the day a party of engineers proceeded to Earl's Court to inspect the complete exhibition of fire appliances.

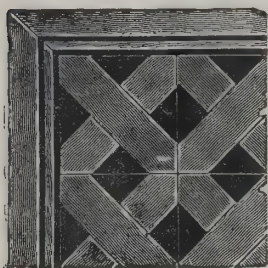
NEW SCHOOL BUILDINGS, COSELEY.

THE memorial-stone of the new school for girls, cookery, laundry and woodwork centres, at Mount Pleasant, Coseley, Staffs, was laid on the 22nd ult.

The buildings will be an important addition to the educational machinery of the district. They are being erected upon sites immediately adjoining and connected with the existing mixed and infants' schools at Mount Pleasant. The new girls' school is for 350 scholars, and is placed with its chief elevation to Mount Pleasant Street. It has a large central hall and seven classrooms, together with cloak-room, lavatory and other conveniences. The central hall is effectively lighted by large clerestory and dormer windows, and the classrooms with boldly arched windows of fresh and original character. A central fêche is placed upon the main roof.

The block containing the cookery and laundry centres is situated upon the Ivy House Lane side of the site. There will be a large room for sixty cookery students, with scullery, cloak-room and lavatory attached, and another similar room for the accommodation of sixty scholars in the laundry department. This is provided with a drying-room and other requisite appurtenances. Upon the south-east, or boys' side of the site, the centre for the teaching of woodwork is placed. This contains a workshop, with cloak and lavatory accommodation.

The existing mixed and infants' school will be converted into a boys' department and infants' department, and will be generally renovated and properly ventilated. A compact and



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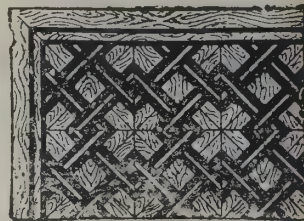
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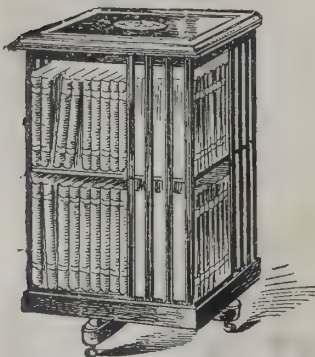
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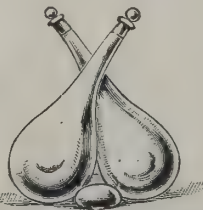
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convenient residence for the caretaker is put in a commanding position upon the site.

The style of the various buildings is an economical and inexpensive type of Renaissance. The materials are brick and stone, relieved by moulded brick strings and pressed arches and quoins. There will be tile roofs and wood-block and granolithic floors. The interior will have glazed brick dadoes. The ventilators are those of Messrs. Walters, of Wolverhampton, and the low-pressure heating apparatus is being installed by Messrs. Glydon, of Birmingham. The contractor is Mr. Henry Gough, of Wolverhampton, the amount of whose tender is 8,394*l*.

The whole of the work is being executed from the designs and under the personal superintendence of Mr. S. Henry Eachus, architect, of Temple Chambers, Wolverhampton.

LONDON COUNTY COUNCIL WORKS DEPARTMENT.

THE half-yearly return of the works committee of the London County Council, covering the cost of works completed by the works department during the half-year ended March 31 last, has been presented to the Council. It discloses some large and serious losses, but these are mainly in connection with the erection of Horton Asylum, Epsom, and the matter has already been fully discussed in the Council. The return deals with twenty estimated works, the final estimate for which was 591,790*l*, while the actual cost has turned out to be 638,534*l*, or a balance of cost above final estimate of 46,744*l*. On only four of the works is any excess of cost over estimate shown, but in these cases the excess is 56,535*l*. The cost of the building of the superstructure of the Horton Asylum has exceeded the estimate by 37,878*l*, the final estimate being 291,165*l*, and the actual cost 329,043*l*. The erection of a central electric-lighting station for the same asylum has resulted in an excess of cost over estimate of 1,977*l*, on a job estimated to cost about 14,000*l*. The provision of an "epileptic colony" on the Horton estate, as an adjunct to the asylum, has resulted in a balance of cost above estimate of 5,018*l*. The other loss, which amounts to 11,617*l*, is on the construction of the Hackney Wick relief sewer. This work was estimated at 125,329*l*, and has actually cost 136,946*l*. With regard to this work the committee do not think that the

ultimate cost is excessive having regard to the difficulty of estimating accurately. A great deal of difficult work was encountered, and much pumping was necessary. The remaining sixteen works embraced in the return all show a balance of cost below estimate, the aggregate saving amounting to 9,791*l*. The jobbing works executed by the committee during the half-year have resulted in a balance of cost below schedule value of 1,334*l*. In concluding their report the committee state that the number of works referred to them for execution and not included in the present return was forty-one, representing an estimated expenditure of, approximately, 739,000*l*, but they did not anticipate an excess of cost over accepted estimate in respect of any works where the accepted estimate was over 1,000*l*.

WORKMEN'S DWELLINGS IN LIVERPOOL.

AT a meeting of the housing committee of the Liverpool Corporation on the 20th ult., Mr. J. B. Colton presiding, the following report as to the cost of workmen's dwellings was presented:—"The special committee appointed by the housing committee beg to report that they have carefully considered Messrs. Mines & Sutherland's offer to build twelve three-roomed tenements of similar dimensions to those proposed to be erected by the city engineer with 'the old-fashioned bricks and mortar for at least 25 per cent less than the city engineer's price' of 1,230*l*, according to the plans and specifications submitted."

While the plans and specifications were under consideration Messrs. Mines & Sutherland pointed out to the chairman that all they had offered to do was to build a block of cottages of "similar size" to the engineer's concrete cottages, but not to a similar specification.

The committee are of opinion that it is not generally understood that workmen's cottages erected for the class of tenants for whom the Corporation seek to cater, viz the dispossessed, must be erected so as to comply with the requirements of the Local Government Board, and justify the sanction of an adequate period for repayment of loans.

The special sub-committee on examining the plans and specification came to the conclusion that cottages built thereunder would not be approved by the Local Government Board, and would be of no use to the housing committee. The buildings, which were to be of the cheapest possible structure, had

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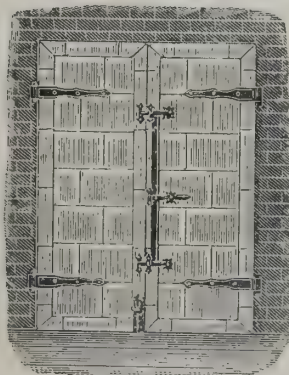
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an estimated life of only thirty-five or forty years, even if occupied by a good class of tenant. The partition walls between the rooms were to be lath and plaster. The floors were to be thin boards on wooden joists instead of being laid on concrete with iron or steel joists, which is considered an absolute necessity by the housing committee. There was no provision for ash-shoots and bins as in the city engineer's scheme. There was no gas supply. There was no specification for balcony and outside staircase. No provision was made for paving the area at the rear or building boundary walls. All the rooms were 2 feet lower in height than the engineer's scheme.

The above are some of the principal defects in the plans and specification, and the committee accordingly amended and submitted the same to Messrs Mines & Sutherland for their consideration. The town clerk also sent Messrs. Mines & Sutherland a comparative note, pointing out the differences between their specification and that of the city engineer, in order that they could see what was really included in the city engineer's scheme and estimate of 1,230*l*.

On the 15th inst. Messrs. Mines & Sutherland wrote to the town clerk as follows:—"We regret we cannot see our way to build the workmen's dwellings at the price we tendered under the specification as altered by you."

The special sub-committee would point out that Messrs. Mines & Sutherland were not asked to provide anything that was not similar to or was not included in the city engineer's scheme.

TRAMWAYS AND BUILDING ESTATES.

At the Middlesex Guildhall, Westminster, recently, Mr. Walter Dowson, deputy under-sheriff of Middlesex, and a special jury, sat to assess the compensation to be paid by the London United Tramways (1901), Ltd, to Mr George Ralph Fitzroy Cole for the value of the freehold land and premises at Twickenham, which the company have compulsorily acquired in connection with their tramways. Mr Rawlinson, K.C., and Mr. G. E. Jones, instructed by Messrs. Crawley, Arnold & Co., appeared for the claimant; and Mr. Roskill, K.C., and Mr. E. Morten, instructed by Messrs. Stanley, Wasbrough & Doggett, represented the tramway company. The case was of considerable importance, inasmuch as a large portion of Mr. Cole's claim consisted of items for alleged depreciation to his estate at Twickenham caused by the advent of the tramways. The

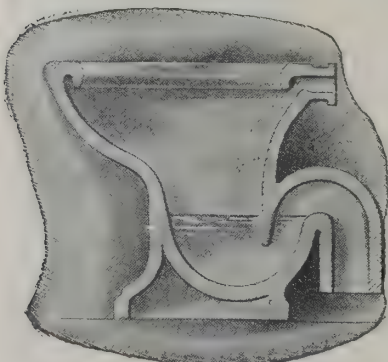
properties acquired by the company were:—(1) A piece of land at the corner of Colesbridge and Cole Park Road, Twickenham, 475 square yards, of which 85 were included in the bed of the river Crane; (2) a small triangular piece of land $3\frac{1}{2}$ square yards in area, forming part of the Gables, London Road; (3) 650 square yards of roadside waste on the west side of Ivy Bridge, London Road; (4) 60 square yards of roadside waste on the east side of Ivy Bridge; and (5) a cottage in Oak Lane, Twickenham, with an area of 567 square yards, rent 25*l*. a year. Mr. Rawlinson stated that Mr. Cole's claim was under two items—one for land actually taken, and the other, which was a much larger item, for injurious affection to the Cole Park estate by the construction and working of the tramways. The amount originally claimed by Mr. Cole was 27,308*l*., and the amended claim 15,521*l*., of which 11,568*l*. was for consequential damage. Mr. George Frederick Sharpe, architect and surveyor, gave evidence to the effect that he had acted as surveyor to the Cole estate for seven years, and had assisted in the development of that estate. He considered the tramways had considerably depreciated the property. The first claims made by Mr. Cole, amounting to 27,308*l*., were put forward partly on his advice, and reduced afterwards to 13,000*l*.. His reason for this reduction was that the effect of the tramways had not been so serious as he had anticipated. Mr. Benjamin P'Anson Beach, F.S.I., a member of the firm of Messrs. Farebrother, Ellis & Co., Fleet Street, was also called on behalf of the claimant. His figures for the land actually taken amounted to 12,803*l*.. After Mr. Fitzroy Cole, the claimant and other witnesses had given evidence, Mr. Roskill, on behalf of the company, commented on the extraordinary nature of the claim, the original amount of 27,000*l*. being reduced to 13,000*l*.. No damage had been done by the trams. Mr. E. H. Bousfield, of Messrs Edwin Fox & Bousfield, stated that he had acted as surveyor and valuer to the company in the compulsory acquisition of these properties, and had amicably settled nearly every claim. This claim, too, would have been settled had it been in any way within reason. His figures were 683*l*.. He considered that the claim for consequential damage was absurd, as there was no damage whatever; the tramways benefited the estate rather than damaged it. Ultimately the jury returned the following verdicts:—(1) Cole's Bridge, 55*l*.; (2) the Gables, 5*l* 10*s*; (3) west side, Ivy Bridge, 132*l*.; (4) east side, Ivy Bridge, 16*l* 10*s*.; (5) cottage, Oak Lane, 55*l*.; consequential damage, nil—total, 759*l*., which included the usual 10 per cent.

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THE WEEK.

THE address of the Earl of STAMFORD to the Congress of the Sanitary Institute on Tuesday was well adapted to the occasion. His lordship did not attempt to pose as a specialist, but he was successful in a task which specialists avoid—that is, in summarising what has been accomplished of late years in sanitation, as well as what remains to be done. There was also courage shown in pointing out in a manufacturing city like Bradford the necessity of a central authority to deal with the evils arising from trade effluents. The shortcomings of the Factory and Workshops Act were also described, and it was said that, owing to careless draughtsmanship and definition, the majority of workshops remain in a similar condition to that of the cotton factories at the beginning of the nineteenth century, when the law from its indefiniteness remained a dead letter. Mr. FITZMAURICE, in his address to the Section of Engineering and Architecture, was able to give some facts to prove the difficulty attending the housing problem in London. It was calculated that in some of the central districts a tenant would have to pay for a five-room tenement 6s. 8d. a week to meet the interest and sinking-fund charges on the capital required for the land, whereas in the suburbs the corresponding figure for similar accommodation would be 1½d. per week.

THE new Rector Magnificus of the Technical High School of Berlin, Professor GEORG HERMANN HETTNER, has gained reputation by his investigations in the higher mathematics. His appointment to the office shows that skill in practical engineering or manufactures is not the only condition required for the control of so important an establishment. The rector is a remarkable example of the professorial caste in Germany. His father, Professor HERMANN HETTNER, was a distinguished authority in literature and the history of art. He also served for many years as the Director of the Dresden Museum. One of his numerous books described his travels in Greece, which were mainly directed to the elucidation of subjects relating to art and archæology. A translation of it was published in Edinburgh, and few books of its class are so interesting and instructive. His eldest son, FELIX, who died in October last, was an archæologist, and was entrusted with the direction of some of the German explorations. Another son is a professor in the University of Leipsic. Professor GEORG HETTNER was born in 1854 at Jena, where his father was then professor. He taught in Göttingen and in the University of Berlin, before he was appointed to the Technical High School.

THE case of MILLAR, SON & CO. v. RADFORD, which was heard in the Court of Appeal, is of importance to all agents connected with the selling or letting of property. The plaintiffs were in 1900 employed to find a purchaser or tenant for a property in Surrey. The arrangement was not in writing, but the plaintiffs claimed that it was agreed by the defendant that they were to receive a commission of 5 per cent. on the rent in the case of letting, and in case of sale they should receive a commission of 5 per cent. on the first 1,000l. of the purchase money, 2½ per cent. up to 5,000l., and 1½ per cent. on the residue. A tenant was found who took the house on a lease for seven years and the plaintiffs were paid commission. About fifteen months afterwards the tenant purchased the property. The plaintiffs claimed commission on the sale, giving credit for the sum they had received. The defendant declined to pay, stating that the purchase was due to his own negotiation. At the trial Mr. Justice LAWRENCE said no evidence had been produced of the contract, and gave judgment for the defendant. The plaintiffs sought to have a new trial, partly on the ground that from the correspondence there was a continuous retainer of them. The Court of Appeal dismissed the application. The Master of the Rolls remarked that "the claim of house agents to be entitled to commission in circumstances like the present was a claim which was often made and was likely to continue to be

made. It was therefore important to point out that the right to commission did not arise out of the mere fact that agents had introduced a tenant or a purchaser. It was not sufficient to show that the introduction was a *causa sine qua non*. It was necessary to show that the introduction was an efficient cause in bringing about the letting or the sale. Here the plaintiffs failed to establish what was a condition precedent to their right to commission, viz that they had brought about the sale. It was open to the defendant in an action like this to say either that, though the plaintiffs effected a sale, they were not his agents, or that, though they were his agents, they had not effected the sale. If the defendant proved either the one or the other, the plaintiffs failed to make out their case." The decision is undoubtedly hard on the agents. It was understood at the time of letting that the defendant wished to have the sale deferred, and that the matter was left in the plaintiffs' hands. The case is, however, only a variety of a practice that is becoming general. People with property to let or sell are not satisfied with putting it on the books of several agents, but they endeavour to supersede them by acting on their own behalf. Much trouble is therefore gone through without the least remuneration, while the tenant or purchaser rarely gains any advantage, for he is not allowed the commission which should have been paid. For many reasons it is therefore preferable to deal with the agents.

THE competitive trials of wind pumping-engines which were arranged by the Royal Agricultural Society have an interest for others besides those engaged in agricultural pursuits. Water has often to be raised by wind engines for domestic supply as well as during building operations in the country. One of the conditions was that the engines should not exceed 4 b.h.p., with an actual wind velocity of ten miles per hour, and they were required to be erected on towers so constructed that the centre of the vane should be 40 feet in height from the ground level. Seventeen competitors took part in the trials, but there were twenty-two engines. The first prize was awarded to a Canadian firm for a machine which costs 70l., and the second to a Worcester firm for one which costs 77l. A description to the competing engines by Mr. F. S. COURTNEY has been published for the Royal Agricultural Society by Mr. JOHN MURRAY. The prize engines are economical in maintenance. It is not difficult to fix them, and they seem to be well adapted to builders' requirements.

ALTHOUGH there may be a tendency to litigation in Scotland it cannot be said that many actions arise out of the relations between architects and clients. Two cases springing out of one transaction which have been heard in the Sheriff Court of Ayr are therefore noteworthy, apart from the importance of the questions involved. Mr. W. W. REID, architect, Kilmarnock, sought to recover 156l. 18s. 2d., balance of fees due for designing a house at Monkton for Mr. DUNDAS HAMILTON. As a sum of 154l. had been received, the amount sought was about one-half the fees. Payment was refused on the ground that the architect had failed to perform his duties with reasonable skill and care, and that the defendant had sustained loss and damage to an extent exceeding the sum sued for. A cross action was taken by Mr. HAMILTON for the recovery of the large sum of 1,150l. for damages. It was said that Mr. HAMILTON had stipulated that the house was not to cost more than 2,600l., whereas the actual amount was 4,268l. It was also alleged that defective construction and inferior workmanship had been allowed, and in consequence of the delay in supplying working drawings great inconvenience was caused. Mr. REID explained that the original estimate amounted to close on 3,000l., but by lessening the size of the stable and modifying the decorations of the main house it was reduced to 2,600l. The cost would not have exceeded this sum if new work had not been rendered necessary by pursuer's interference while the work was in progress, and his frequent changes of mind as to what he actually did want. The Sheriff considered the allegations of Mr. HAMILTON to be too general and vague, and on that account dismissed the action. The architect's claim was considered to be proved.

FRENCH CRITICS AND ENGLISH PAINTING.

AMONG the numerous visitors from France who were encountered in London during the present week a large section, we hope, visited the English pictures in the National Gallery as well as those in the gallery at Millbank, which to some extent corresponds with their Luxembourg. It may be confidently asserted that the majority would be at least surprised. So many efforts are made to enable French people to realise the varieties of art, and France is so rich in examples, it would not be complimentary to suggest any deficiencies in their knowledge. But anyone who will take an impartial view of the public galleries in Paris and in London can have no hesitation in concluding that an ordinary Englishman has more opportunities to become acquainted with French pictures than a Frenchman with those of the English school. Although several French artists whose words carried weight with their countrymen have spoken most favourably of English work, their opinions did not count for much with the authorities of the Louvre. Fifty or sixty years ago it was possible to purchase examples by English masters at a moderate rate. But the prices of the pictures that could be regarded as really representative are now too exorbitant to be paid for out of the modest budget which the State assigns for such purposes. All the French pictures which we possess were not acquired out of public grants. The most interesting collection of modern examples is undoubtedly the gift of the late Sir RICHARD WALLACE. But however obtained, we have the materials which will enable a student to understand the characteristics of the French school from NICHOLAS POUSSIN to MEISSONIER.

There is the more need of a Frenchman making himself conversant with the numerous examples of English painting which are to be viewed at the National Gallery and at the branch establishment, because to some extent the old prejudices about English incompetency have not entirely lost their power. It is doubted whether there is an English school. The examples occasionally seen in international exhibitions in Paris were supposed to display exceptional ability, and to be picked to suit French taste. It is difficult for a stranger to realise that in the selection of such works favouritism counts for a great deal. The examples purchased by the donor of the Tate Gallery were not always of the highest class. But on that account they have their uses for strangers by revealing the average power of English artists. The accounts of English pictures which are written by Frenchmen commonly contain expressions of astonishment at the unexpected ability which they witnessed. We have no doubt that to any expert the humblest examples in Trafalgar Square or Millbank would also serve as evidence that English painting never descended so low as was imagined.

The surprise was quite natural if we remember the state of opinion on the subject. That most capable critic THORÉ, who wrote under the name of BURGER, said that the English school had not even entered into the history of art as it was taught on the Continent. The reputation of the artists was entirely insular. At that time, which is not half a century ago, there was not one picture by an English master in the Louvre. Indeed, it appeared as if the prejudice weighed so much on foreign intellects, men who otherwise were good judges were unable to consider English pictures on true grounds. MÉRIMÉE declared that HOGARTH could neither paint nor draw; that he was a comic poet rather than a painter, and it seemed to him incomprehensible that such a man would dare to write an "Analysis of Beauty," and still more extraordinary that a Frenchman could be found to make a translation of it. Now it is only necessary to look at his pictures in the National Gallery to learn that HOGARTH, apart from his subjects, was an excellent manipulator of colours, and he could apply them in such a manner that they continue to show more freshness than is visible in the works of men who believed they had acquired the Venetian and other secrets. Most of his paintings represent indoor scenes, and he has rendered architectural and other details with an accuracy that is remarkable. It is therefore absurd to affirm, like M. CHESNEAU, that the beauties of nature, the reflection of light upon the face of the clouds, and other phenomena of open air, never received the least attention from him, and on that account he was

not an artist and never more than a moralist. HOGARTH was a realist, and he introduced no unnecessary elements in his pictures. But if he had had to deal with landscapes he would have presented what he saw in as downright a manner as any modern realist. REYNOLDS, on the contrary, has been a favourite with French critics. THORÉ begged Lord HERTFORD to enrich the Louvre with the *Nelly O'Brien*, for in that gallery he said it would have enormous success, and would inspire French painters to make new combinations in their own works. Another picture which he wished to see in the same place was GAINSBOROUGH'S *Mrs. Siddons*, which THORÉ described as being a creation entirely singular in its incomparable originality. Among landscapists CONSTABLE was fortunate in captivating the French. VILLOT, who was the official critic and historian for the Louvre, called him "the MESSIAH of modern landscape-painting," and, if possible, DELACROIX and GERICAULT would have used a higher eulogium if one could be discovered. LAWRENCE was another favourite, and became so by the exhibition in Paris of his Byronic *Master Lambton*, in 1824. But it is dubious whether if the picture were shown this year it would receive any commendation.

One objection raised by the French critics is that English painters possess no general types of humanity, and no matter what the subject may be, whether scriptural or classical, they present figures which are unmistakably of the English race. That is a question which it is difficult to discuss. Idealising is certainly not much practised in England, and it may be that foreign eyes are able to detect resemblances which a native critic would pass over. It is beyond contradiction that in some successful modern pictures it is easy to recognise the models used for some of the principal figures. The painters make no secret of the aid they have received, and if they are silent their friends may be more communicative. But the attempt to be natural in that way has an irritating effect on a French critic or amateur. The caricaturists have created types of English people which are accepted as faithful, and it is concluded the figures in the paintings have an affinity to the humorous exaggerations of the satirical journals. The variety of faces, the characterisation, the truth of expression are disregarded because it is believed the best pictures are no more than portraits of Englishmen and Englishwomen in fancy dresses. The French claim to be the sole inheritors of the generalising faculty which belonged to the Latin race; whilst in England, on the contrary, individualism is omnipotent, and asserts itself not only in literature but in art.

It cannot be denied, however, that although not avowed, the aim of Frenchmen has been the attainment of a quality which is believed to be peculiar to Englishmen. The point at issue in the great contest between classicists and romanticists turned on it. Was it preferable to have characters which came very near to abstractions in dramas and romances, or those which were as peculiar as an author could devise? In "Hernani," "Ruy Blas" and "Notre-Dame" beings were introduced which would have horrified the playgoers and readers of the time of LOUIS XIV. They were, perhaps, as far removed from nature as the classic people of CORNEILLE and RACINE, but they had an excess of individuality which was believed to be enough to redeem their extravagance. The fight against the principles supposed to be rooted in the Académie des Beaux-Arts is another sign of the tendency. A winner of the Prix de Rome in painting must now possess extraordinary powers or he is doomed to failure. He is supposed to be imbued with the antique and academicism. That is taken to mean, in other words, his acquirement of stereotyped formulæ for treating different classes of pictures, and to set himself right with the critics and the public he is bound to make a formal show of revolt. Of course, Frenchmen would maintain they had no thought of descending to the English level. But all who have studied French exhibitions for twenty or thirty years can hardly fail to recognise a tendency which from its persistence seems to be unavoidable.

Every benefit has its drawbacks, and it is possible that the systematic study of works of art which is followed in France leaves impressions which are not always favourable to the young artist. The copyists of pictures in our

galleries never become remarkable for their own originality. Dead masters control their thoughts as well as their hand. CONSTABLE used to say that, when he sat down to draw a scene from nature, as the first stage in the composition of a picture, he took care to suppress recollections of all the land-scape paintings he had seen. He was not alone in seeking independence. One consequence of French practice is the greater ease in the classification of modern French pictures than of those by Englishmen. We can recognise the masters to whom French painters believed they owed allegiance, and we can use those masters as representatives of different classes. In England, on the contrary, there is no such recognition of authority. Every painter aspires to be an islet and to be as widely separated from former masters as from his contemporaries. His countrymen he knows wish to have his personality asserted. No doubt some Frenchmen have believed that every master followed a like course. As THORÉ said, it is CHARDIN himself we admire when we look on his representation of a glass of water, and the "je ne sais quoi" which gives delight in pictures is simply the expression of the peculiarity of the artist's own way of seeing things and not his recollections of the style of other men's works. It is no doubt hard for Frenchmen who have been brought up in a belief about the virtues to be found in various dogmas of art to realise the worth of the peculiarities which are visible in English pictures. It is only occasionally they are allowed the chance to see English work in their own country, and then the examples may not be the best of their kind. For that reason it is to be hoped they will use the present opportunity to visit London galleries in order that they may realise the true principles of English painting. If they conclude that the principles are defective, well and good, but in that case they will have judged by evidence, whilst at present the opinions expressed are generally derived from hearsay, or are based on illustrations which are unsatisfactory as representations of pictures.

SIR HENRY WOTTON ON ARCHITECTURE.*

IT would excite no surprise if an ordinary seventeenth-century tractate were reprinted, although the subject might be considered only temporary or polemical. But architecture, whether old or new, cannot be looked upon as appealing to the ordinary reader. It is therefore a compliment to the noblest of arts when we find a firm having the courage to reprint "The Elements of Architecture," by Sir HENRY WOTTON, which was published in 1624. It was not the earliest book on the subject, for in 1563, that is, five years before WOTTON's birth, "The First and Chief Grounds of Architecture," by JOHN SHUTE, appeared; there was a second edition in 1579, and a third in 1584. Little is known about SHUTE except that he was a painter and had the Earl of NORTHUMBERLAND for a patron, while WOTTON distinguished himself in public life as well as in other ways.

HENRY WOTTON was a scion of an old Kentish family, and was born at Boughton Hall on March 30, 1568. He was therefore a representative of one of the most famous English periods. He was four years the junior of WILLIAM SHAKESPEARE; seven years younger than FRANCIS BACON; he preceded BEN JONSON, who was poet and bricklayer, by six years, and INIGO JONES by four years. JAMES I., whom he long served, was only two years his senior. At Oxford he was recognised as a clever student. Foreign professors in England were then more common than now, and from ALBERICUS GENTILIS he acquired a knowledge not only of civil law and mathematics, but a mastery of the Italian language, which afterwards served him as a diplomatist. Possessing an independence, he adopted SHAKESPEARE'S theory that home-keeping youth have ever homely wits, and that a man cannot be perfect unless he has been tried and tutored in the world. He therefore spent eight or nine years on the Continent, of which five were passed in Italy. According to IZAAC WALTON, "he became acquainted with the most eminent men for learning and all manner of arts,

as picture, sculpture, chemistry, architecture and other manual arts, even arts of inferior nature, of all which he was a most dear lover and a most excellent judge."

On his return to England he was appointed one of the secretaries of the unfortunate Earl of ESSEX. When the differences arose between the favourite and Queen ELIZABETH, partly owing to the failure of ESSEX to subdue the Irish chiefs, WOTTON became alarmed. As soon as ESSEX was consigned to the Tower, WOTTON was too well conversant with the risks of secretaries to be indifferent to the value of an hour. He used all expedition to reach Dover, hired a vessel at a heavy cost, and succeeded in reaching France. The second secretary of ESSEX remained and was executed. WOTTON had therefore at least another year to study art and politics in Italy. He wrote a book on the political state of Christendom. Having become acquainted with a plot against JAMES, he lost no time in travelling to Scotland, and introduced himself to the Court at Stirling as OCTAVIO BALDI, an Italian diplomatist. When JAMES was secure on the English throne, he appointed WOTTON to be ambassador to the Venetian state. It was while on the journey he made the celebrated definition of an ambassador as "an honest man sent abroad to lie for the good of his country," a witticism which afterwards caused him some trouble. Indeed, it has been stated he was recalled in consequence of the words. He spent four or five years unemployed in England, then he was despatched on a mission to the United Provinces and afterwards to Venice. WOTTON had a platonic affection for the daughter of JAMES I., who had married the Elector Palatine, and he was sent several times as adviser to her Court. JAMES was not liberal with his ambassadors, and after twenty years of journeyings and changes of residence in foreign cities, WOTTON was a poorer man than when he started in the king's service. He was promised the reversion of the office of Master of the Rolls, but through his necessities he could not wait until the holder died. As a refuge he accepted the Provostship of Eton, which he held until his death in 1639. Those who wish to know more about him can consult the biography which was written by his friend, IZAAC WALTON, and, with those of DONNE, GEORGE HERBERT and HOOKER, form the series of which WORDSWORTH says,

There are no colours in the fairest sky
So fair as these. The feather, whence the pen
Was shaped that traced the lives of these good men,
Dropped from an angel's wing.

The edition of "The Elements of Architecture" which Messrs. LONGMANS have reprinted is the first, which was brought out in 1624, ~~in~~ about the time when WOTTON was in treaty for his provostship. To it has been added the dedication to the Prince of WALES, afterwards CHARLES I. There is also a note relating to the ease with which a painter can convert a crying to a laughing face. He points out "this coincidence of extreme affections I observe represented by HOMER in the person of HECTOR'S wife, as paynters and poetes have alwaies had a kind of congenialitie. . . . She tooke her childe into her fragrant bosome weepingly laughing." Although it might be expected that WOTTON, from the nature of his pursuits, would give little attention to poetry, there is enough to show that like so many of his contemporaries he was impressionable to its charms. Some prefer his short poems to his grave treatises. In the last year of his life he wrote a letter to JOHN MILTON, in which he says, "I should much commend the tragical part if the lyrical did not ravish me with a certain Dorique delicacy in your songs and odes, whereunto, I must plainly confess to you, I have seen yet nothing parallel in our language." The words continue to be true, for after two centuries there is no rival of the class it represents to "Comus."

The tract on architecture, with others on education or moral architecture, a parallel between the Earl of ESSEX and the Duke of BUCKINGHAM, form the "Reliquiæ Wottonianæ" collected by IZAAC WALTON in 1651, and of which four editions were issued in the seventeenth century. The collection wrung praise from so cantankerous a critic as CARLYLE, who observed:—"His good old book deserves new editing, his good old genially pious life a proper

* *The Elements of Architecture*. Collected by Henry Wotton, Kt., from the best Authors and Examples. (London: Messrs. Longmans, Green & Co.)

elucidation by some faithful man." It is so excellent a miscellany we wonder it has not been often reprinted. Our business, however, is with one part of it, "The Elements of Architecture."

It would be interesting to discover the history of the book and the motives which inspired the author. It could not be asserted that the twenty-four years of the seventeenth century which had elapsed before the publication were entirely wanting in architecture. It is well to remember that the art was to some extent made illegal, and was therefore hampered in its exercise. Both ELIZABETH and JAMES had prohibited the building of new houses within three miles of London. It was preferable to authority that residences should be scarce than that the price of food should be raised through the increased demand for it, or that through the additional sewers the Thames should be rendered less agreeable to those who took pleasure in barges or boats. But London could show as examples of seventeenth-century architecture Staple Inn, Northumberland House, Zion House, King James's College in Chelsea, the Rolls Chapel and House, Camden House, Old Somerset House, the Queen's House, Greenwich; the Banqueting Room, Whitehall; Holland House, Kensington; and in the country, Crewe Hall, Audley End, Aston Hall, &c. Some of these evince foreign influence, but the majority were designed by Englishmen who carried on the old tradition and were indifferent to any reputation which was not local. It was, however, a time when native work was brought into competition with foreign; and thus about the same date we see Moreton Old Hall rebuilt in the half-timbered style that was familiar in Cheshire, and a start made with Audley House, Audley End, Essex, which shows Italian inspiration. WOTTON, we suppose, believed the period was ripe for the production of a book to embody the results of some of his studies in Italy. It might be thought that as the new philosophy was then occupying men's attention he should endeavour to act in the spirit of it and to promulgate the law of liberty rather than of convention. But possibly the whilom secretary of ESSEX was unable to admire anything which came from BACON, the weak man who was indebted to ESSEX for so much and who displayed his gratitude by bringing about the execution of his patron.

Whatever might be the cause, WOTTON declared that "our principal master is VITRUVIUS," whose felicity it was to write when Rome had attained the summit of power. Then we have such reverence for authority as is seen in the adoption of the advice of LEON BATTISTA ALBERTI, that all the timber used in a building should be cut from the same forest, and the stone out of the same quarry. Enormous heights of six or seven storeys in buildings were to be avoided. Even the determination of the depth to which foundations should be carried was supposed to depend less upon discretion than upon rule. PALLADIO advised a sixth part of the height of the fabric, and WOTTON appeared to think there was wisdom in the ratio.

The poets had made much use of the human figure as a standard for many things. The Tuscan pillar was therefore treated as a sturdy, well-limbed labourer homely clad. The Doric was a little trimmer than the Tuscan. The Ionic had much of the matron, the volutes being not much unlike women's wires in a spiral wreath. The Corinthian, lasciviously decked out, was like a courtesan. In spite of what VITRUVIUS said, WOTTON considered the entasis of pillars made them appear as if they were sick of some tympany or dropsy. Semicircular arches he held to be the securest, but the most graceful were those which, keeping the same height, shall be extended one-fourteenth part longer than the diameter. Gothic arches WOTTON despised on account of the natural imbecility of the sharp angle and their uncomeliness. He believed they ought to be removed from judicious eyes and left to their first inventors, the Goths or Lombards, amongst other relics of that barbarous age.

The endeavour to obtain a universal principle which could be applied to all manner of buildings is suggested by what is remarked about doors and windows. LEON ALBERTI, as a follower of PYTHAGORAS, determined the comeliest proportion for breadths and heights, reducing symmetry to symphony, and the harmony of sound to a kind of harmony of sight after this manner. The two

principal consonances that most ravish the ear are, by consent of all nature, the fifth and the octave, whereof the first riseth radically from the proportion between two and three, the other from the double interval between one and two or between two and four. If these proportions be transported from audible to visible objects and apply them as they fall fittest (the nature of the place considered), namely, in some windows and doors, the symmetry of two to three in their breadth and length, in others the double as aforesaid, there will, said WOTTON, indubitably result from either a graceful and harmonious contentment to the eye. A frank light can misbecome no edifice, temples only excepted, which were anciently dark, devotion more requiring collected than diffused spirits. Yet a house must not be made all eyes, which in northern climes would be too cold, in southern too hot; besides, there is no part of a structure more expensive than windows or more ruinous, not only as being exposed to all violence of weather, but because consisting of so different and unsociable pieces as wood, iron, lead and glass, and those small and weak, they are easily shaken.

The English houses which could be considered ancient were not ashamed of chimneys. But WOTTON held the Italians to be the best councillors on the subject, for they taught how gracefully to disguise the shafts of chimneys. He is, however, more of an Englishman when he mentions that, according to PALLADIO, the ancients warmed the rooms from secret pipes that came through the walls with one common furnace, and the arrangement might be preferred before our own. He adds:—"If the very sight of a fire did not add to the room a kinde of reputation, as old HOMER doth teach in a verse sufficient to prove that himself was not blinde as some would laie to his charge."

He recommends that all who contemplate building should not be attracted by any drawing on paper, but should have a model of the whole structure and every parcel or partition of it in pasteboard or wood. It should be as plain as possible without colours or other beautifying. For a structure which is to cost 40,000*l.* or 50,000*l.*, at least 30*l.* ought to be expended on an exact model. This may appear to be in keeping with the advice of SHAKESPEARE. But did both writers mean the same thing? WOTTON's model resembled one of those which are sometimes seen in the Academy and elsewhere, but SHAKESPEARE says, "we first survey the plot, then draw the model," and if we find the cost too high "what do we then but draw anew the model in fewer offices." "Henry IV.," in which the lines occur, it is believed was produced before 1599, and the dramatist's description of practice was therefore earlier. The question has interest because it is possible that models of buildings were not employed until they were imported from Italy, or were more common in WOTTON's time than in SHAKESPEARE'S.

The second part relates to the decoration of buildings by paintings and sculpture. There was a fear of those arts at the time as aids to superstition. But, as WOTTON shows, even the highest and most perfect endowments of nature can be misapplied, "as beautie in a light woman, eloquence in a mutinous man, resolution in an assassinate, prudent observation of houres and humours in a corrupt courtier, sharpeness of wit and argument in a seducing scholler, and the like"—words which epitomise the causes of many political transactions in that age.

The new edition of "The Elements" is an excellent example of modern printing. There are only 350 copies of the edition. The little book is worth preservation on account of its appearance, and to all who love architecture it is valuable as an indication of the endeavours to express "with the freedome of a plaine Kentish man" a system of aesthetics at a time when the subject was in a state of obscurity exceeding that which now prevails.

Mr. Ernest Rüntz informs us that in consequence of the death of Mr. Albert C. Breeden, one of his partners, he has altered the style of his firm from Ernest Rüntz & Co., architects and surveyors, to Ernest Rüntz & Ford. Mr. Geo. McLean Ford, A.R.I.B.A., who has been associated with Mr. Rüntz for upwards of twelve years, is now his sole partner. We are also requested to inform our readers that Messrs. Ernest Rüntz & Ford have opened branch offices at Lewes, Sussex, which will be under Mr. Rüntz's personal supervision.

THE CONSULTING ENGINEER.*

I WISH to speak to you a little about the duties and work of an engineer after his academic work and practical training is over; when, in fact, not only you yourselves, but also your employers, think that you are really useful members of society. Roughly speaking, the work of engineers may be divided more or less into two sections, which for general purposes may be called manufacturing engineering and consulting engineering. It is not the case, of course, that everybody comes exactly into one or other division, but practically everybody's work tends more or less to one or the other side, and is chiefly connected with it. As between these two sections of engineering work I do not make any comparison whatever. They are both, it seems to me, absolutely essential, and, so far as I can see, are both equally dignified. I myself happen to belong to one of them, the consulting division, but, as is the case with nearly every consulting engineer, a most essential part of my training was passed in the works of manufacturers, and among consulting engineers who are connected at all with mechanical work, a man is absolutely no good unless he has passed a very considerable time in manufacturers' shops of some kind or other. But in what I have to say to you I will refer more particularly to what I know most about myself—the consulting branch of engineering. Among engineers who may be called "consultants" I would include not only men who work independently, like myself, but also the great army of borough engineers of all classes, of engineers to municipal works of every kind, and of engineers to companies or firms who are not manufacturers. All these men, although they are not strictly consulting engineers, at least belong to a class distinct from manufacturers, and it is their kind of work which I know most about and desire to speak of. Their business is generally to scheme out plans for carrying out works; to draw up the specifications in which these plans are, or ought to be, described; to superintend the work as it goes on, and in general to formulate what they or their employers want to be done, and then to see that it is properly done. Very often besides they have the interesting experience of being actually users of the works that they have schemed out.

Lawyers and doctors, who belong to the other two great professions which we, as engineers, wish to emulate in certain respects, are, through their societies, fenced in by all sorts of rules and customs (beneficial on the whole, I imagine), which taken altogether form a very rigid code of professional procedure. But engineers have no such professional organisation at all. Of course we have the various professional institutions, including at their head the Institution of Civil Engineers, to which I hope you will all in time belong. But none of these institutions take cognisance specially of professional procedure or behaviour. Nor can a college course or a pupilage possibly deal with such matters, and so it is rather about these things that I would like to speak to you; there are no text-books on such subjects, and it takes a good many years to find them out. A good deal of what I have to say affects engineers equally whether they are going to be manufacturers or not. But the manufacturing point of view is necessarily different from my point of view, although the two are not antagonistic.

The main duty of a consulting engineer, the sort of thing he spends his time on, is the formulation of what one may call "schemes." A corporation wants a water supply or a gas-works, or a company a big manufactory; a railway, a bridge, or a design may be required for a tramway or other power-house or for an electrical transmission scheme. The engineer in such a case has not himself to design machinery, nor generally to design the details of anything, although he may have to design a general scheme of very great complication. His real work is to get out such a scheme in general outline; and almost the first point he has to consider, beyond and along with the actual engineering part of the work, is a financial one. He finds himself at once face to face with the question of cost; and one of the most essential parts of an engineer's work is the consideration of what a thing will cost, and whether it will pay to carry out. He may be fortunate enough to receive instructions to carry out certain work entirely independent of what it is going to cost, but in that case it is desirable to have this stated in writing beforehand, so as to prevent any question being raised afterwards. Personally I have never been fortunate enough to come off that way. More generally your directors will say to you, "Tell us first whether it will pay to carry out so and so, and if so, how best to carry it out." The question as to whether a thing will pay is influenced by a great many conditions." It is influenced first by the immediate cost, which is not a very serious matter to arrive at by estimating. A much more difficult question, you will find, is to arrive at the conclusion whether certain variations, certain improvements or certain alterations, which will cost money, will really yield a profit if carried out; and here come in certain pitfalls which I

would like to caution you against, because I know that sometimes they are very troublesome. There may be two ways of doing a thing, of which one costs 20,000*l.* more than the other, and the one which costs 20,000*l.* more is the "better" way. The engineer's business, however, is not necessarily to do it in the better way, his first business is to find out whether that way is going to pay; and if that additional 20,000*l.* is only going to save 500*l.* a year he had better not ask his directors to spend the money. This is a question which crops up continually. For example, in the case of a power-house there may be a question of using condensing or non-condensing engines. You know that if you use condensing engines you may save 15 per cent. or thereabouts of your fuel, and therefore condensation is "better" than non-condensation. But you must look at the matter not only from the engineering point of view, but also from the financial. I have a case in my mind in which the actual cost of condensation—which could be carried out very well—was something like 30,000*l.* for a certain power-house. If that 30,000*l.* is going to entail capital charges of 1,500*l.* a year, the question is whether the 15 or 20 per cent. of the coal bill is, or is not, worth that amount. It may be "better," but it may not be in the least worth while doing unless it is followed by a true and actual saving. I put down in a large power-house, some years ago, plant for superheating the steam, which works most successfully and without any trouble whatever. When I came to put down another station in the same city I naturally inclined to do the same thing again. First, however, I decided to run my first station week about with the superheating and without it for awhile. In this way I found that the difference in fuel amounted to about 6 or 7 per cent. of the coal used. The coal cost me 7*s.* a ton, and it was only a question of arithmetic to see whether I was at liberty to put superheaters in the new station. The result was that I did not put them in. Questions like this are not, of course, matters that one can say anything of in general; they must always depend on a particular place and particular circumstances. If an engineer can get coal at 7*s.* there are many things not worth while doing which would be desirable or essential when his coal costs him 25*s.* a ton or thereabouts. Every case has to be judged on its own merits.

There are one or two popular delusions on subjects of this kind which I may mention. They resolve themselves into purely financial questions, and an engineer should not only be able to deal with them, but should also make it his business to deal with such matters. There is sometimes a great cry about the transmission of power from coalfields; it is said that we ought to be able to utilise the resources of our coalfields on the spot and transmit electric energy, say, 200 miles away. It is a very pretty idea, and there is no difficulty in carrying it out; but it is, unfortunately, entirely a question of cost. I have never myself come across a case in which it was worth while, from the economical point of view, to carry out a long transmission of that sort. Although no doubt such cases exist, they are certainly very few. You must not be led away by a scheme just because it sounds attractive; the matter is really one only of pounds, shillings and pence. A similar thing, also very much talked about, is the utilisation of water-power, and this also is really a financial matter, in which every case has to be judged on its own particular merits. The actual capital expenditure for any such scheme is always very large, and is also very nearly independent of the number of hours per day during which the power can be utilised, that is to say, very nearly independent of the load factor—the capital charges are as great if the power is only to be used for six hours per day as if it were utilised continually day and night. If the engineer has to work out an arrangement of this kind which can be worked for only eight hours a day, he will almost certainly find that the capital expenditure is the same as if the plant were to be worked three times as long, and therefore the capital charges will be enormous in proportion. You will find that all the great water-power work which has been a success has been so because it has been supplied to works where the energy could be utilised pretty nearly all the twenty-four hours, and the capital charges distributed accordingly.

After the engineer has worked his scheme out and has satisfied himself that it is going to pay, his next duty is to prepare his specifications, and that is a matter of no small difficulty. I am not going to recite to you model clauses out of a specification. But, speaking generally, the first thing is that the specification ought to be perfectly clear and perfectly complete, so that any person tendering to it may know exactly what he is tendering to and what he is expected to do. If the contractors do not do this it is quite certain that there will be trouble before the end of the work. If you have left anything out of the specification your employers will have to pay extra for it, and extras have a way of costing very much more than if they were included in the specification as a part of the original work. To avoid trouble about extras, the specification must be not only clear, but thoroughly complete. But although it must be very complete, it must on no account

* An inaugural address delivered at the City and Guilds Central Technical College by Dr. Alexander B. W. Kennedy, F.R.S.

be too detailed. If you specify the size of every bolt and nut, and so on, you take responsibility out of the manufacturer's hands, you make it exceedingly difficult for him to use his own methods and his own patterns, and in the end your employer has probably to pay more for his work, without the work itself being any better. On the other hand, you should specify what you do want with such completeness that the firms tendering may understand exactly what they have to tender for, and so that afterwards no claim for avoidable extras can possibly be made. Of course (and it may frequently happen) if you put in their specification something out of the way, something unusual that you want done, and which you have not seen done before, it is eminently desirable that you, as consulting engineers, should work out in detail some way of doing it, and include this in the specification. It is only fair to the contractor, if the engineer is proposing something new, to indicate that it has been worked out. Otherwise you may be at once met by the statement that it cannot be done—that no fellow ever did it; and this cannot be said if it is clear that you know at least one way in which it can be done.

Of course it may occasionally be necessary (I hope it may not be necessary in your experience) to issue a kind of open specification. I have seen a sheet of foolscap which purported to be a specification for three-quarters of a million worth of work. But remember that if an engineer asks a contractor to work to a "specification" of that kind he makes a very damaging admission of his own ignorance, and also practically puts himself in the hands of the contractor throughout the construction of the work.

If your scheme can be carried out, to your knowledge, in various ways by different good manufacturers, then let the specification say quite fully and clearly what conditions the work must fulfil, and say it in such a way as not to limit anything to the methods of one particular manufacturer. If you positively intend that A., B. or C. are to carry out the work you should say so at once, and not give other contractors the trouble of preparing tenders which you know beforehand will not be accepted. If you expect to get tenders in for things which can be made in different ways, equally good and equally to your specification, from different people, then let the specification be so worded that all these people can fairly and honestly undertake to do what they have been asked to do. On the other hand, you must not on any account let yourselves be persuaded by a manufacturer that a thing cannot be done if you think it can be done. A manufacturer's evidence that a thing can be done is often final, at least if he has done it already; a manufacturer's evidence that a thing cannot be done is purely negative evidence; it merely means that he does not know how to do it.

I may mention another very important point about specifications. It is very common to ask in a specification what a contractor will "guarantee." This sounds forcible, but in too many cases it really means nothing whatever. You ask a manufacturer what steam consumption he will "guarantee" for his engines, and he tells you he will "guarantee" 10 lbs. per indicated horse-power. If this is all, the guarantee is after all only so many words on a piece of paper. A guarantee, if it is to be of any use to you or your clients, must be accompanied by some conditions as to its enforcement, and also must be accompanied by information as to the experience on which the guarantee is based. I have more than once found that the only basis for a guarantee of economy was that some other manufacturer had been known to reach it, and "therefore" the manufacturer in question, being quite as skilful, could reach it also. What I particularly want to point out is that a guarantee is not a guarantee at all if it is unaccompanied by the evidence on which it is based, and by conditions for its enforcement.

Another matter, which sometimes causes difficulty, is the form of the arbitration clause which every specification contains. It is not uncommon to state in that clause that the engineer himself is to be the arbitrator, but I certainly advise you against this form. The engineer naturally believes he is right if there is a dispute, and stands up for himself as a party to the dispute, and it clearly is not fair that he should also be the arbitrator; and there have been many cases in which a manufacturer has gone to the courts under the circumstances and obtained the appointment of a new arbitrator. It is very much better to say that the engineer's decision is absolutely final on certain technical points on which he must be the only judge, but as to the interpretation of clauses or other general questions to fix on an outside arbitrator. Personally, I always use the formula that "the arbitrator shall be nominated by the President of the Institution of Civil Engineers," which insures that a competent and impartial man will be appointed.

After your specifications are out and tenders are received, your next duty is to advise as to which tender should be accepted. This is one of the most difficult, as it is also one of the most important, of the duties of an engineer. Perhaps the only general principle you can go on, supposing the tender to have been entirely open, is that you should advise that the

lowest tender among those which are absolutely satisfactory be accepted. You may often receive tenders from the most extraordinary people, people who have never done similar work before, as well as from firms who are thoroughly experienced and capable of doing it. You may have the unpleasant duty of eliminating the lowest tender, or the half-dozen lowest tenders, simply because the tenderers are not competent to do the work, and because you think your employers would lose more money by employing an inexperienced contractor than they would nominally save on the price. Every set of tenders has to be considered on its own merits, and I wish you joy of the work when it comes to you.

Now as to the position of the engineer after the scheme has been prepared, the specification drawn up and a tender accepted. The business of yourselves and your staff is, of course, to see that the work is carried out to specification; that is the first matter, and that sounds quite easy. If your specification has been really a good one it is not very difficult, but if your specification is at all doubtful on certain points your troubles are just going to begin. But assuming that you have, as no doubt anybody who has come out of this college will do, prepared a specification which is everything that could be desired, then you will find that on the whole, with a sound contractor, matters will go smoothly. But the consulting engineer must always remember that he is really to a certain extent in the position of an arbitrator between his clients and the manufacturers. He has first to see that his employers get what he has specified. On the other hand, he has to see that the manufacturers, the contractors who are working for him, are fairly dealt with; and it is not always very easy to hold an even hand in these matters. For instance, the contractors carrying out the work undertake to make it in so many weeks. But they are behindhand, perhaps because the work of some other contractor interferes with their progress, or perhaps because the weather is outrageously bad and they have to stop work. They demand a time allowance of two or three weeks; this is a point, of course, which occurs frequently. The engineer must not harden his heart beforehand and say right off that no allowance is possible. He really has to look at the matter as if he were a judge, and to consider fairly whether the contractors, in view of the terms of the contract and the facts of the case, are entitled to this allowance or not. Do not put yourselves in the attitude of always demanding your pound of flesh even if you are entitled to it. Of course there are occasions on which you must insist on absolute compliance with the specified conditions, but even in these cases your position for enforcing compliance will be much stronger if you have honestly tried to look at the matter on both sides before making up your mind. Your position as civil engineers demands that you should be absolutely just to both sides, even although one side is your own client. Of course a great number of very difficult cases come up, and you will be worried by them just as everybody else has been. You will find that the contractor has not worked exactly to specification in some of the general clauses which prescribe excellence of material and workmanship. A particular casting is not perfectly clean, perhaps not perfectly sound. If you have reason to think that the defect is a source of weakness or danger, you must reject it. But often you cannot go so far as this; the defect may be real, but may be only superficial, and the rejection may cause your clients much inconvenience by delay. Then comes your discretion as to keeping the defective work or rejecting it, a question then mostly of common sense in each case. On the other hand, you may have something not nearly so simple as this: there may be some little error in lining out or in erecting, insignificant in itself, but a potential cause of serious trouble. It is not the mere size of the defect, and not the mere existence of a deviation from the specification, that you have to take into consideration; it is the practical importance of the defect, or the possible result of the deviation, which has to determine your action in the matter.

There is another trouble which you will have to face. (Your life is going to be full of all sorts of troubles when you leave college.) Very few corporations or boards like the idea of spending money before it has got to be spent. It may, therefore, often happen that you get instructions at such a date that there is very little time for you to scheme the work, and very little time for the contractors to carry it out. You specify that everything shall be ready, say, by January 1. The contractor is late—he always is. By hook or by crook you get a portion of the machinery ready, and start working; probably you must start working. After the machinery has been in use, perhaps, six months, you find that it is by no means satisfactory. But it has actually been running, and you have had the beneficial use of it for six months. You are then I am afraid, in a dilemma. We all of us know the difficulty. You have had to use the machinery; and the contractor knows perfectly well that you cannot take the machinery down, but must go on using it. When the question comes of the terms on which it is taken over, or the deductions which may have to be made from the price, you are face to face with a matter not

easy of solution, and one which requires all your firmness of mind and balance of judgment, in order to find the right course.

I have said that I drew no comparison between the two classes of work, manufacturing and consulting—the experience of one is very different to the experience of the other, and it is as well for everybody on both sides of the fence to keep this in mind. I have not infrequently found that a manufacturer, who knew perfectly well that he could design a better machine than I could design, deduced from that the conclusion that he knew better what kind of machine I wanted than I did myself. But that does not really follow, for many reasons. Among others is the fact that as a consulting engineer I probably have to use the machines—the manufacturer does not use them, he makes them; he hears about them afterwards if they go very far wrong, but not otherwise. We have to use the machinery, and we know how it works in a way which very seldom comes within the manufacturer's cognisance. Moreover, we in our position as consulting engineers have quasi-confidential information from perhaps a dozen makers of each type of machine as to their different methods and results. This information is in our possession because we have received offers and tenders from different people for that particular kind of machine. The individual manufacturer does not always know the details of how other people make their machines. The experience and knowledge of the engineer and the manufacturer are quite different, and they must not be confounded. More than once manufacturers of the highest rank have proved to me absolutely that the things I wanted could not be done, at least not with any satisfaction, and that it was of no use asking for such things, while I have known all the time, not only that the things could be done, but that they had already been done with complete success. In this way there are many matters about which the consulting engineer may really know more than the manufacturer of the very things in question. This is, of course, no special credit to us; it is merely because the knowledge comes to us from other sources. But you must never on any account accept the negative opinion of a manufacturer as final, as I have already said. On the other hand, you must never underrate a manufacturer's knowledge of the details of what he does himself. There are some things of which I fancy I can design the details as well as any one else. (It may be only fancy.) I obtain tenders and drawings of these very machines from various manufacturers, and these tenders fulfil the essentials specified, but in such cases I have often thought that I could improve their details, and have said so without hesitation. If the manufacturer accepts my suggestion, well and good, but if (as is usual) he either points out why he has not adopted it, or simply says that he prefers to leave the thing as he has always made it, I think it is wise to accept his opinion, which may well be better considered than my own. There are probably ten different ways of making every detail, and it is really difficult to prove that any one is very definitely better than the others. I advise you never to try to make a manufacturer alter details with which he is quite satisfied merely to satisfy a fad of your own; it will not help you in the end. If you want to have a happy life as consulting engineers you must take advantage of all the knowledge and experience of the contractors who are carrying out your work, and be ready to add to this all the experience that you can get on the other side yourselves.

There are still two or three matters about which I would like to speak to you, although it is with some hesitation that I do so. It has happened in late years, especially in connection with electrical work, that a great many very young men have been fortunate enough to get into positions of considerable responsibility, with the drawback that, in the nature of things, they have not had that knowledge of engineering procedure and that knowledge of the world which is only to be bought by the misfortune of old age. I am afraid that in some cases the want of experience has led to undesirable results. In the first place, it is a very dangerous thing for you to own any patents in your own line, no matter how ingenious they are, if you are going to take to consulting work. You cannot put a patent of your own in your specifications, and you cannot use it at all without disagreeable things being afterwards said. If you are going to advise the use of things to other people you cannot, as professional men, advise the use of things out of which you are going to make money, and it is very undesirable on many grounds, therefore, that you should be the financial owners or the beneficial owners of such patents. Of course, if you are the engineers to works the matter may be different, although in every case it requires to be definitely arranged with your directors; but if you are general consulting engineers it is most undesirable for you to have patents in your own line.

If you are consulting engineers also you have absolutely no business and no right to be interested in any way whatever in any manufacturer's firm from whom you can possibly buy anything. Many of the manufacturing concerns are limited companies, and sometimes it may be very tempting to take up shares in them when you know that their work is good, but

clearly it would not do for anybody who was going to specify work to be a shareholder in a firm who might possibly tender to his specification. However free from prejudice your mind might in fact be, it is necessary for you not only to avoid wrong, but also to avoid even the appearance of it.

There is yet another matter which perhaps I ought to mention. There is a very strong temptation to a young man conscious not only of his own merits and ability, but conscious also that he wants to get married and to make money, and that as yet he is known to but few people—to, in one word, tout round for business. That is a thing which must not be. There is, unfortunately, no definite rule, as in the legal and medical professions, against it, but everybody who has done so will be sorry afterwards. It is, of course, a very undesirable thing that business should not come your way, but should go to some other fellow who is not nearly so clever or virtuous as you are. I hope that such experience will not be yours; but even at the worst, you will find it the best policy in the long run (to put the matter on the lowest basis) to do nothing in your own profession which would not be tolerated in any of the other great professions with which we wish to feel ourselves on an equality.

In conclusion, only one more word. In this profession to which we are all proud to belong, let us try to act as if its dignity were just as ample as the dignity of the Law, as if its necessity were just as great as that of Medicine, and as if its ethics were the ethics taught by the greatest of teachers and practised by the most worthy of men. If you carry out your work on that basis, after the scientific foundation which you have received at this college and the practical training which you will obtain no doubt elsewhere, our profession will be the richer, and may even be better, for having you as members, a result to which I trust we may confidently look forward.

PREHISTORIC REMAINS, STRANRAER.

THE explorations of a prehistoric settlement near Stranraer, Wigtownshire, conducted last summer by Mr. Ludovic MacLellan Mann, of Glasgow, F.S.A.Scot., and described by him preliminarily at a recent meeting of the Society of Antiquaries of Scotland, have been resumed. Mr Mann had the advantage of the co-operation of Mr. J. Graham, Callander, F.S.A.Scot. Some further noteworthy facts have been disclosed which throw a flood of light upon the method of house construction and architectural devices in vogue in the Scottish area during a very early period. No stone had been employed in the building of the houses and the dimensions of the huts were surprisingly small. The flooring had undoubtedly been many feet lower than both the present and prehistoric surfaces of the ground, and had been supported on a carefully and massively constructed foundation of pointed wooden logs placed closely together and more or less perpendicularly set. One of the houses had more than sixty of such logs in its foundation. The wood used was birch and oak, and most of the stakes had been placed in position contrary to the direction in which the branches had grown. The sharpening of the points had been done with some blunt-edged tool. Over traces of the flooring were evidences of a hearth, and many implements and utensils of stone and pieces of pottery were recovered. Unmistakable evidence of the nature of the walls was fortunately obtained. The walling had consisted of wattle-work, many of the twigs and branches being curiously placed upside down. Traces of an entrance passage, it was thought, were also observed. The woodwork was in a much better state of preservation in the lower soils owing to the greater amount of moisture there. The pottery, which is very coarse, dark and hand-made, is of the most interesting description, as it lacks the ornamentation characteristic of the Bronze Age culture, but bears a striking resemblance to the few known specimens of the ware of the Scottish Stone Age, several examples of which may be seen in Campbeltown Museum and in the National Museum of Antiquities, Edinburgh. A full report of these unique discoveries is in course of preparation.

The parish church of Boddington, Northants, an excellent specimen of well-preserved fourteenth-century architecture, has just been judiciously restored. The walls have been stripped of plaster and the joints repointed; there is a new belfry floor, and the font has been raised on steps; the bells have been rehung and quarter turned, while one has been recast; a cement gutter has been placed round the church, and the walls of part of the church have been underpinned, while new altar hangings, designed by Mr. C. A. Ford Whitcombe, of London, have been provided. The work has been executed under the supervision of Mr. M. H. Holding, of Northampton. The cost has been about 400/.

NOTES AND COMMENTS.

THE eleventh international congress of hygiene and demography will be held in Brussels from September 2 to 8, and will be under the patronage of the King of the BELGIANS and the honorary presidency of Prince ALBERT. Professor PUTZYS, of Liège, is the secretary. The subjects which will be discussed in the third section are purification of sewage, drain waters and those derived from manufactories; different systems of sewers; treatment of water derived from calcareous soils; hygiene of streets and roads; rules which should be followed in houses and cities; progress during twenty years in heating and ventilation of private and collective buildings; hygienic regulations which should be observed in the planning, aeration and interior decoration of dwelling-houses. Among the experts who will take part in the proceedings of the section are Mr. GILBERT FOWLER, superintending chemist of the sewage works, Manchester; Dr. RIDEAL, vice-president of the Society of Public Analysts, London; Mr. ALLEN HOWE, conservator of the Museum of Practical Geology, London; Mr. HORACE WOODWARD, of the Geological Survey of England; and Mr. ROECHLING, C.E., of Leicester.

THE island of Cos, or Stanco, is one of many in the Ægean Sea. It is the nearest to Budrun, or Halicarnassus. It suggests the range of efforts by German archæologists when we find that this remote island has been made the scene of their operations. But as it is referred to in the catalogue of ships in the "Iliad" it evidently must have been occupied by Greeks prior to the time of HOMER. There was a Temple of Æsculapius, so probably the original inhabitants were Doric emigrants, who allowed themselves to be governed by an aristocracy. Moreover, importance is attached to the island from the circumstance that it was at one time in the possession of the Knights of the Order of St. John, who from the beginning of the fourteenth until the sixteenth century were masters of the island of Rhodes, about sixty miles distant. The explorations have been conducted by Dr. HERZOG, of Tübingen, who is accompanied by Herr HECHT, an architect. The remains of a temple were unearthed, as well as the four strongholds of the Order, viz. Narangia, Pilli, Antimachia and Kephalos. The later works are not only less ruinous than many examples of Christian structures, but in the walls stones have been found evidently derived from more ancient buildings. In consequence of the interest of the explorations some of the German representatives of the Order of St. John have subscribed towards the expenses.

GEORGE ELIOT, when describing GOETHE'S house at Weimar, said, "One of the most fitting tributes a nation can pay to its great dead is to make their habitation, like their works, a public possession." M. PAUL MEURICE was of this opinion when he acquired the house in the Place des Vosges, a part of which was occupied by VICTOR HUGO from 1832 to 1848. In that period he was the protagonist in the contest between romanticism and classicism. In HUGO'S time the Square was the Place Royale. In 1799 it received the title of Vosges as a compliment to the people of that department who quickly paid their imposts. At one period it was a fashionable district. RICHELIEU lived in one of the houses for a time; Madame DE SÉVIGNÉ was born there, and among the residents was that MARION DELORME who was made the heroine of one of HUGO'S dramas. There have been few changes in the exterior of the house since the poet lived there. The walls of the staircase now exhibit engravings, advertisements and other documents relating to him. The first floor is a gallery of illustrations, containing drawings, lithographs, engravings and pictures of subjects derived from HUGO'S numerous works. Many French artists have been proud to offer paintings especially executed for the purpose. There is also a collection of first editions of his books finely bound. It was the second floor VICTOR HUGO occupied, and there are placed his relics. He was a vigorous draughtsman, and a vast number of his sketches and designs have been brought together. He had the Mediæval love of painted and gilded woodwork. VICTOR HUGO died at his house in the Avenue d'Eylau, in the western suburb of Paris, but the whole of the furniture of the room in which he expired has been brought to

the Place des Vosges. There is much else that is interesting, for, in addition to the portraits and busts, there are various articles recalling his life. Neither in Stratford-on-Avon nor in Weimar are so many memorials of their great residents to be seen, while at Abbotsford there is little to suggest the influence of SCOTT. The Maison de Victor Hugo, which now has its special commission, can be considered as unique.

THE select committee of the House of Commons have declared the preamble proved of the "Post Office Sites Bill." The object of the Bill is to enable the Postmaster-General to acquire four sites, three in London and one in Bristol. The sites in London are, first, a site at Paddington for the extension of the post office in Francis Street, Paddington, and that site is being acquired under an arrangement with the Great Western Railway Company. They have land adjoining their station, and the Postmaster-General has certain land also already acquired by him; and an arrangement is being made with the company by which certain exchanges will be carried out, and by that means, and by the compulsory acquisition of some houses, the Postmaster-General will be enabled to enlarge his post office there. The next site which it is proposed to take is in Blackfriars, abutting on the river, a site in a street called Upper Ground Street, Blackfriars, and the object of taking that site is to enable the Postmaster-General to construct a generating station for electricity. The third site in London is one in Southwark, the object of which is to extend the South-Eastern District Office in the High Street, Borough. In addition to the sites which it is proposed to acquire by the Bill, it is also proposed to take power to build upon certain land in Buxton which the Postmaster-General has already acquired. The land has been bought, but it is subject to some conditions in conveyances from the Duke of DEVONSHIRE made about fifty years ago, which restrict the character of the buildings to be placed upon it. Those covenants are of a kind which it is extremely difficult to get rid of by any private arrangement, but at the same time they are entirely obsolete.

ILLUSTRATIONS.

UNIVERSITY COLLEGE HOSPITAL.

CATHEDRAL SERIES: EXETER.—THE CHOIR, LOOKING EAST.

NEW ROMAN CATHOLIC CHURCH, TONBRIDGE.

WINDOW, CA D'ORO PALACE, VENICE.

AMONG the private palaces of Venice not one has been more admired than the Ca d'Oro. It no longer presents the colouring and gilding from which its name originated. But it stands amidst Renaissance buildings of the Grand Canal as the survival of a period when Eastern luxury could be expressed by beautiful Gothic curves. Even in Mr. RUSKIN'S time it was subjected to restoration, on the heroic plan in which the first step, he said, is "to dash the old work to pieces; the second is usually to put up the cheapest and basest imitation which can escape detection, but in all cases, however careful and however laboured, an imitation still, a cold model of such parts as can be modelled, with conjectural supplements." On the other hand, THÉOPHILE GAUTIER asserted the old palace of the CONTARINI was restored with the most intelligent care. But we should remember the palace was then the property of Mdle. TAGLIONI, the *danseuse* who was admired by all *boulevardiers*, and, as GAUTIER remarked, the embroidered and laced appearance, which was in a style that was Greek, Gothic and barbaric, fantastic, light and aerial, seemed to be especially adapted for the nest of a sylph. According to him, Mdle. TAGLIONI in those days was filled with pity for the poor abandoned palaces of Venice, and she preserved several out of pure commiseration for their beauty and their desertion. But restoration under these circumstances could hardly fail to be whimsical. Our illustration is taken from a fine water-colour drawing by Mr. W. J. DAVIES, of Sidcup.

ST. MICHAEL'S COLLEGE, TENBURY.

By J. S. BUMPUS.

(Continued from last week.)

LEAVING the church for the present, we will make our way along the carriage drive to the principal entrance of the college, which is by means of a graceful Pointed doorway in the Warden's private house or "lodgings." Over this doorway is a small statue in a niche, representing the contest of St. Michael and the Dragon. This, in a vesica, serves as the college crest.

On entering, a corridor or glazed cloister faces us. It runs from one extremity of the college to the other—i.e. from east to west. The three windows, of four lights each, on the south side have plate-headed tracery and pillared mullions. Folding doors of oak on the south side of this corridor give access to the library, the schoolroom and the hall. A range of cupboards, along the blank wall beyond the hall, afford accommodation for the caps, gowns and surplices of the boys. Cassocks have never been worn at St. Michael's. On the north side, immediately on entering, is a Pointed doorway opening into the warden's lodgings, and, further on, a similar door admits to a picturesque wooden cloister connecting the college with the church. Here may be noted the beautifully-kept turf of the quadrangle. At the extremity of the corridor, on its north side, are the apartments of the matron. Close by, a spiral staircase of stone, constructed in a projecting western turret, and adequately lighted by small windows, conducts us to another corridor similar in length to that below, and hung with portraits and engravings. On the south side of this corridor are the spacious rooms allotted to the organist, and on the north those of the head-master, with a classroom adjoining. The last-named jut out into the quadrangle. At the north-east end of this corridor is a door of communication with the bedrooms of the Warden's lodgings. Still another staircase in the aforementioned turret leads to a large and well-ventilated dormitory, lighted at the east by a rose and at the end by a large Pointed window of four lights, from which an extensive

view over the surrounding country may be obtained. This dormitory has accommodation for thirty-six boys. Each has a separate cubicle screened off by curtains and divided by high wooden partitions. Sleeping accommodation for visitors is afforded in what is known as the "chapel dormitory," which, under a separate gabled roof, constitutes the floor above the head-master's rooms and classroom.

Descending into the upper corridor, we find, on its south side, a door opening into the "minstrels' gallery" at the eastern end of the hall, from whence a broad flight of stone steps leads to the ground floor.

The hall is a finely proportioned room, lighted on its south side and at its western end by Early Decorated windows of two lights each, with quatrefoil heads, the effect of which would be improved by the introduction of a little heraldic glass. The walls are panelled with oak to the height of the window sills, and above the dais (on which stands the high table and a carved chair of black oak for the exclusive use of the warden, who prefaces and concludes each meal by a Latin grace) the panels are emblazoned with the arms of various head-masters and Fellows of the college. On the north is a capacious stone chimney-piece, and facing it, on the south, an unconventional wooden buttery-hatch. Down the centre runs the boys' table. The flooring is composed of Minton's tiles. Several interesting portraits adorn the walls. That of the founder will, naturally, first attract attention. It is a full-length one, and represents Sir Frederick Ouseley at the age of thirty-one in his robes of Mus.D., as the newly-appointed Professor of Music in the University of Oxford. It was presented by the Warden (Dr. Sewell) and the Fellows of Radley early in 1857, the artist being Mr. W. Florio Hutchinson, once a pupil of Fuseli, and drawing-master at Radley College. In the background may be discerned several surpliced choristers. Three other portraits are of considerable rarity, viz. those of Dr. Henry Aldrich (Dean of Christ Church, Oxford—theologian, musician, architect and logician, died 1710); Dr. John Blow (organist of Westminster Abbey and organist and composer to the Chapel Royal, died 1708); and Dr. Philip Hayes (Professor of Music



ST. MICHAEL'S COLLEGE, TENBURY. GENERAL VIEW FROM THE S.E.

in the University of Oxford, 1777 to 1797, facetiously called by reason of his enormous bulk "Fill Chaise"). A much later acquisition is a portrait of Dr. C. J. Corfe, Bishop in Corea, and an honorary Fellow of St. Michael's. Beneath the hall are spacious kitchens and domestic offices, approached internally by a stone staircase at the western end of the corridor.

The Warden's lodgings comprise, on the ground floor, a study (in which is deposited the magnificent musical library collected by Sir Frederick Ouseley), a dining-room and a drawing-room. Above are three bedrooms. The square-headed, mullioned windows of all these apartments face the college garden. In the dining-room is a painting of Sir Frederick Ouseley as a child of seven or eight years old, represented as playing on the pianoforte. The artist's name has never been discovered, but the picture is a charming one.

The library, forming the south-east portion of the college buildings, is a large and lofty room, and worthy to rank beside many of those in the Universities of Oxford and Cambridge. The books were collected by Sir Frederick Ouseley and his father, Sir Gore Ouseley (the distinguished Persian diplomatist and scholar), between them. To enumerate its treasures would take up too much space. Its great features are French and Oriental books, the latter bearing mostly on the literature of Persia. Here we find Gould's rare and magnificent ornithological monographs; Dugdale's "Monasticon," with plates by Hollar and Coney; many county histories of great rarity and value; Turner's "Liber Studiorum," and a large collection of theological treatises and divinity. More recently, the "Encyclopædia Britannica" and the colossal "Dictionary of National Biography"—gifts of the present Warden, the Rev. John Hampton—have been added. The roof of the library is of oak, panelled, and the room is lighted on the east by a large flat-headed window of four lights, and on the south by three pointed ones of two lights each. Morning prayers for the school and household are here said daily at eight o'clock.

The church may next be visited. The style is Early Middle Pointed—one much employed by its architect. The building is cruciform, with lean-to aisles to nave and choir, both of which have clerestories. One of its most striking features is its height, being 69 feet from the ground to the ridge-crest. Its breadth is proportionate; its length scarcely so, being only 122 feet. As the church is both parochial and collegiate, it might be questioned whether the term "choir" or "chancel" were more appropriate. But, architecturally, the eastern limb is a choir, being of the same height as the nave. Another well-remembered feature is the graceful polygonal apse, somewhat Teutonic in *motif*.

The author (Mr. T. Francis Bumpus) of "Stained Glass in England since the Gothic Revival" truly observes in his able and interesting treatise (originally contributed to this Journal) that the church of St. Michael "exhibits sufficient departures both in plan and detail from home traditions to raise it far above the commonplace, while it shows none of that extravagance and bizarrerie which too often resulted from attempted originality." "This is noticeable," he continues, "in the artistically-planned and nobly-proportioned masses of steep roofs which meet at the crux without a central tower, in the roses which light the transepts, in the employment of the hexagonal apse, and in the tracery of its windows, where the presence of a large trefoil, impaled, so to speak, upon the central mullion, is rather reminiscent of German work. Indeed, the thorny character of this tracery, not only here, but in other of Mr. Woodyer's churches, may have been inspired by such refined examples of Middle Pointed traceries as occur in the choir aisles of the Liebfrau Kirche at Coblenz, though it must be admitted that on the whole the churches of this architect exhibit great freedom and independence of thought, and early fourteenth-century Gothic, without ever becoming vitiated, has ever retained in his hands as great a freshness, vigour and originality as that of his master, Mr. Butterfield, besides possessing an individuality which it is difficult to mistake."

From the wooden cloister, mentioned in an earlier part of this account, a large vestry in the south-east angle communicates with the nave by a narrow covered lean-to passage outside the south transept. At the west end of the north aisle there is a deep porch, with square-headed windows of four lights, filled with painted-glass by Lavers & Barraud. The

west front is a truly fine and dignified composition. A large window of six trefoil lights in two groups, with traceried circlets, surmounts a pointed doorway, on either side of which is blind arcading—a feature repeated with excellent effect below the rose window of each transept. All three gables are pierced with two narrow lights, and in the western ones are two bells of great sonority. Internally, with the exception of the aisles, porch and vestry, the church is groined with wood for acoustic reasons. The eastern limb contains one bay westward of the apse, with a segmental arch on either side opening into the choir aisles, the dripstones terminating in angelic figures. The north choir aisle is principally used by the communicants at the early celebrations. At the distribution of the Elements here the manipule is used, a tradition handed down from the early days of St. Paul's, Knightsbridge, and St. Barnabas, Pimlico. In the south choir aisle is kept the large library of MS. and printed music used in the daily services. The fenestration of the choir clerestory comprises two windows on each side of two lights apiece. Throughout the church, with the exception of the roses in the transepts and six in the clerestory of the nave, the windows are filled with stained glass. The greater part of the glass in the choir is coeval with the consecration of the church. Finely proportioned arches on columns, with richly foliated capitals, open into the transepts. There is no choir arch, but the line of demarcation westward of the crux is well accentuated.

The east window, in Hardman's best style, represents our Blessed Lord in Majesty. At His feet is St. Michael, with the usual symbols in allusion to the dedication. This window was the gift of the Hon. Miss Georgina Rushout, in many ways a munificent benefactress to the church and college. The nave windows are later insertions, several being memorials to departed members of the college. Three in the north aisle were erected to the memory of Sir Frederick Ouseley by former pupils. The glass in the north aisle is superior to that in the south, both as regards design and colouring, but it cannot be said that any of it can be placed on a par with that in the choir.

The tracery of the great west window was given by the Rev. Sir W. H. Cope, Bart.* The glass by Hardman, which fills it, is truly superb. Rich ruby tints predominate, and, seen under the influence of the westerling sun, this window is a thing to be remembered. It was inserted in 1857 from subscriptions collected by the Rev. John Miller, vicar of Bockleton, a mile or so from St. Michael's. John Miller, a man of great ability, had been Bampton lecturer at Oxford in 1817 and the life-long friend of John Keble, both at the University and in after years.

The altar, well raised, and vested in the colours of the ecclesiastical seasons, according to the Roman sequence,† is placed in the chord of the apse. The mensa is of oak, and there is a reredos of the same material surmounted with a canopy and adorned with polychrome. The projecting wooden columns and pinnacles at the sides are meaningless. One cannot help feeling that the sanctuary desiderates warmth and colour, at least as regards its lower part. This might be remedied by the suspension, from brass rods, of rich needlework in the form of wings. The pinnacles on either side of the reredos, with their connected traceried work in the form of flying buttresses, are by no means happy. The wings would conceal these, and thus remedy a defect in an otherwise exceedingly beautiful and original design.

Above the canopy of the reredos is a tall and slender metal cross, terminating in white flowers. The super-altar supports

* The Rev. Sir W. H. Cope was librarian and one of the minor canons of Westminster from 1842 to 1853. Somewhat late in life he succeeded a distant kinsman in the baronetcy and in the possession of Bramshill, Hants, one of the most interesting houses in England, standing in a park of unequalled beauty. This inheritance made Sir William Cope Charles Kingsley's squire, and a warm friendship sprang up between the two ardent, high-minded and rather unconventional clergymen. Sir W. H. Cope preached Kingsley's funeral sermon at Eversley in 1875. He was a capable musician, and edited some valuable collections of old English anthems. He published many literary works, and an edition of Sir Anthony Cope's "Meditations on Twenty Select Psalms." He died at Lennox Tower, Southsea, January 7, 1892, aged eighty.

† Adopted by the early Tractarians long before the rites and colours of the Church of Sarum had begun to be studied.

a cross and the two *cæca lumina* as prescribed in all cathedrals and collegiate chapels. Flowers are added at festal seasons. On the north side of the sanctuary are a table of prothesis and a chair of richly carved oak, for the use of the bishop of the diocese as visitor of the college—the gift of the Hon. Miss G. Rushout.

On the south are sedilia, surmounted by a pedimental canopy, sumptuously carved in stone. The apse has a pavement of minute tesserae disposed in geometrical figures. The roof of the choir is slightly polychromed, but in the apse more elaborately, with the symbols of the Trinity and the Evangelists. An iron grille of good design separates the choir from its aisles. The stalls, placed in the crossing of the transepts, as at Chichester, Winchester, Gloucester and Tewkesbury, are of oak and perforated. There are no canopies. The stalls are in two divisions, with rather lofty finials; they are not returned, but have subsellæ and open desks of iron in front for the boys. An iron screen carried up perfectly square, with folding gates, without a cross, but surmounted by seven candlesticks, separates the choir from the nave. It is coloured ultramarine, relieved by gold.

(To be continued.)

THE ROMAN FORUM.

DURING the last few weeks, says the correspondent of the *Morning Post*, great progress has been made by the Director of the Roman Forum, Commendatore Boni, in this immeasurable field for exploration. Considerable light has been thrown on the subterranean galleries connected with the games held in the time of Cæsar in the Forum. It is now clear that there were twelve elevators, each of which was worked by four men ensconced in chambers adjoining the apertures, also twelve in number, through which the elevators were hoisted into the open Forum above. Signor Boni is confident that there was some means of communicating with all the twelve chambers simultaneously from the room in which the director of the games sat. There was probably some kind of a speaking tube or simple telephone, by the use of which at a given signal the twelve elevators could be made suddenly and simultaneously to rise from the bowels of the earth to the open Forum, and to deposit there the parties of gladiators ready for the fray. Signor Boni has had made a model of one of these elevators, instructive traces of which are still embedded in the galleries underground. Nine of the elevators have still to be freed from equestrian statues which were set up above them at a later period, and this task must of necessity take some time. The foundations of these statues are in themselves so far interesting that they afford additional proof, if such were needed, of the callous manner in which any sort of material, whether valuable statue or portion of the Lapis Niger or some other remnant of interesting history, was utilised in later Mediæval times as substructure.

Signor Boni has also just discovered the complete square basement of the Janus Medius, which used to serve as the meeting-place for the old Roman bankers. It occupies precisely the spot assigned to it by the ancient writers, near the Arch of Janus in front of the Tabernæ Argentariæ. This, too, has been greatly spoilt by the work of the builders of the Middle Ages, who sank wells and built latrine about it. In one of the wells have been found quantities of remains of animals, such as sheep's jaws and goats' horns, and also fragments of pottery. In the middle of the road flanking the Basilica Julia he has also discovered ritual graves rectangular in shape, with a length of 4 and a breadth of 2 Roman feet, and divided by a space of not more than 10 Roman feet. In them he found a quantity of vases in the shape of chalices. He believes them to be augurial graves used for expiatory libations after contamination with human blood.

While exploring under the substructure of the Heroon of Romulus he came on a nearly complete prison composed of narrow passages leading to diminutive vaulted cells with tessellated pavement, and having a very strong sub-pavement of large heavy flags of travertine to render the escape of prisoners impossible. As a further precaution perimetral walls of blocks of tuff lined with bricks were built outside. At the foot of the Palatine Hill, behind the Sacrum of Juturna and the Temple of Castor and Pollux, Signor Boni has discovered the remains of an old Imperial palace, consisting of a building with a large hall adorned all round with niches, and with a vestibule, transformed at a later date into a Christian sepulchre, used as late as the eighth century. The walls and columns are ornamented with frescoes finished in the eighth century, and covered with Greek inscriptions. In the central portion of the building is to be seen a painted representation

of Pope Paul I., who was Pontifex during the ten years succeeding 737.

In the neighbourhood there are visible traces of four different layers of plaster, each decorated with paintings. On the top of one layer of plaster, which has a red surface, is another portraying a representation of the Madonna and Child, similar to those seen in the mosaics of the time of Theodoric. This painting covers in its turn another layer which shows traces of two angels painted in the sixth century. Above these, and painted during the middle of the eighth century, is a stratum of plaster showing figures of saints with nimbus in yellow and ascetic-looking faces. On the right is a series of paintings showing the figure of Pope Zacharias, the Crucifixion of Christ, and the figure of Theodotus, uncle of Pope Paul the First, who is represented as offering a model of the church, while in the Latin text adjoining he proclaims himself to be the "assisting advocate of Santa Maria Antica." This was the name of the Christian church which existed until the ninth century within the walls of the Imperial palace. Sixteen centuries, says Signor Boni, separate the tombs of the church of Santa Maria Antica from the Sepulchrum of the pre-Romulean Septimontium, which is now being rapidly explored.

Since I last wrote on the subject of these prehistoric tombs several new graves have been found by Signor Boni. One of them was being removed during my interview with Signor Boni, and it contained a very interesting black jar, which was tenderly placed on the table in the little museum. It was encrusted with damp earth, and has yet to be cleaned and put together. Another contained a skeleton, the head of which had been distorted by the subsidence of some blocks of tuff, with which the grave had been lined. In the grave of another skeleton, that of a child, several toys were found, and in another a lovely fibula of transparent amber hollowed out underneath in order to allow of the light entering more easily for the sake of still greater transparency.

LEITH WORKHOUSE COMPETITION.

IN recent years, says a correspondent of the *Scotsman*, the architects of Edinburgh and elsewhere have had reason to complain of the treatment they sometimes receive when their services are required in connection with the erection of public buildings. The most recent example of the kind of grievance under which their profession suffers is furnished by the Leith Parish Council, who are at present preparing for the erection of a new poorhouse at Seafield. Prompted by the Local Government Board, who have repeatedly pressed the subject upon their attention, the Council have discussed the question for several years. After considerable opposition on the part of a section of the members, the Council adopted a site at Seafield. The objection urged against this site was that it could not properly accommodate a building of the character required. It was at first proposed, without further preliminaries, to ask a Leith architect to prepare a design for the new building, but in the interests of the ratepayers this proposal was rejected by a majority of the Council in favour of the more reasonable method of open competition. The conditions of the competition were regarded by architects as distinctly vague, and they were the subject of discussion by the Edinburgh Architectural Association. The Association wrote to the Parish Council suggesting certain amendments in the conditions, but the Council would have none of them. In regard to the cost of the proposed buildings, the conditions were particularly ambiguous, the only guide being contained in the following sentence at the end of one of the clauses:—"The matter of cost will form an important element in deciding the merits of the plans." Recognising, however, that something more was required, the Council or their advisers prefaced the conditions with a special note in the following terms:—"It must be understood that the following notes are general and do not describe all the requirements, but that the plans must provide for a poorhouse, well finished and complete in every respect, planned on the latest and most approved principles, and equipped with all the latest sanitary and other appliances for the efficient working thereof." There are two types of poorhouses in vogue—the corridor system and the pavilion system. The corridor design, represented by Craiglockhart and Craighleith poorhouses, is now regarded as old-fashioned and defective in the matter of ventilation and administration. So fully have these defects been recognised that where new poorhouses have recently been erected, the pavilion system has been adopted. The Edinburgh Royal Infirmary and the new fever hospital are examples of the pavilion system, which, although more expensive, has special advantages in the way of ventilation and sanitation. In view of the fact that the Leith Parish Council asked for a poorhouse "planned on the latest and most approved principles," the majority of the eight architects who sent in plans adopted the pavilion system, although the site

was so awkwardly shaped as to call for some ingenuity in the planning of the buildings. In due course the plans were sent in, and the Parish Council appointed Mr. Sandilands, a Glasgow architect and an expert in poor-house construction, to advise the Council in the selection of the best design. Mr. Reid, a well-known surveyor in Edinburgh, was appointed by the Council to advise them in regard to cost. As a result of Mr. Sandilands's consideration of the plans, four sets were set apart from the others, and to the two best of them he awarded the first and second premiums. The authors of these premiated designs were both members of Edinburgh firms. When Mr. Sandilands's report was placed before the Council, certain of the members demanded that a report should also be obtained on the four designs which the assessor had apparently not considered worthy of separate report. When the matter was discussed a few days ago at the Parish Council, a majority decided in favour of the corridor system of plan, and after a vote between plan No. 2 and plan No. 6, the latter was adopted. In the course of the discussion it emerged that the names of the authors of the plans had improperly become known to at least some of the members, and in that way the impartiality of the Council's judgment was impaired. No. 6 plan is by Mr. J. M. Johnston, a Leith architect, whose work was placed seventh on Mr. Sandilands's list of the order of merit. According to this plan, the cost of the new building is stated to be about 60,000*l.* if in stone, or 46,000*l.* if in brick, but the official measurer retained by the Parish Council to advise them, estimates the cost at 72,381*l.* for a stone building and 70,984*l.* for brick. As against these figures, the assessor estimated that the first premiated design could be carried out for something like 80,000*l.* if the cubic space per inmate were reduced to the minimum requirement of the Local Government Board. Those who have knowledge of such matters hold that it will be absolutely impossible to carry out No. 6 plan for the sum estimated. The matter is of wider importance than the claims of competing architects. There is danger that the ratepayers may be misled as to the expenditure involved, and that, as in the case of Bangour, the real facts may not emerge until it is too late. An unfortunate element in the present case is the apparent determination of a majority of the Council to give the work to a local man, irrespective of the report of the expert engaged to advise the Council. The architectural profession consider themselves badly treated in connection with these open competitions. They do not profess it to be a grievance that an expert should set aside their plans in favour of others, but they do regard it as unfair that when they have secured the award of the assessor their plans should be discarded without good reason. In such a case, the 100*l.* premium is very inadequate compensation for what, in the case of the Leith poorhouse design, involves something like six months' hard work. It is expected that Edinburgh will shortly have control of a very important competition—that for the design of the Usher Hall—and on the part of the architectural profession the hope is being expressed that not only in connection with that design but in connection with similar work elsewhere, the position of successful architects will be honourably regarded.

EXCAVATIONS AT ABYDOS.

IN a letter to the *Times* Professor Flinders Petrie writes:—The continuation of the work of the Egypt Exploration Fund at Abydos this year has given a wider view of the early civilisation, of which the general lines had been fixed by the previous work on the royal tombs and the town. The clearance of the old temple site over several acres has brought to light in a depth of about 20 feet no less than ten successive temples, ranging in age from about 5000 to 500 B.C. For the first time we can see on one spot the changes from age to age through the whole of Egyptian history. To separate these buildings was an affair of anatomy rather than spadework; the walls of mud brick were so commingled with the soil that incessant section-cutting with a sharp knife was the only way to discriminate the brickwork. Often only a single course of bricks or a thin bed of foundation sand was all that told of the great buildings which had existed here for centuries. Over 5,000 measurements were taken for the plans and levels. The main result as regards the religion is that Osiris was not the original god of Abydos; the jackal god, Upuaut, and then the god of the West, Khentamenti, were honoured here down to the twelfth dynasty. The most striking change is seen about the fourth dynasty, when the temple was abolished, and only a great hearth of burnt offering is found, full of votive clay substitutes for sacrifices. This exactly agrees with the account of Herodotus that Cheops had closed the temples and forbidden sacrifices. This materialising of history is made the more real by finding an ivory statuette of Cheops of the finest work, which shows for the first time the face and character of the great builder and organiser who made Egyptian government and civilisation what it was for thousands of years after. This carving is now in the Cairo Museum.

The discoveries of the civilisation of the first dynasty, the beginning of the kingdom, expand what we already had from my work in the royal tombs. Of Menes, the founder, we have part of a large globular vase of green glaze with his name inlaid in purple; thus polychrome glazing is taken back thousands of years before it was previously known to exist. The free use of great tiles of glaze for wall coverings shows how usual the art was then. In the highest art of delicate ivory carving there are several pieces of this age; especially the figure of an aged king, for its subtlety and character, stands in the first rank of such work, comparable to the finest carvings of Greece or Italy. We must now reckon the earliest monarchy as the equal of any later age in such technical and fine art.

Pottery of forms and material quite unknown in Egypt also belongs to this remote age; and it proves to be identical with that in Crete of the late Neolithic age. This fresh connection illustrates the trade and the chronology of that period. A head of a camel modelled in pottery takes back its relation to Egypt some 4,000 years; hitherto no trace of it had appeared before Greek times. An ivory carving of a bear extends also the fauna of early Egypt.

The great fort long known as the Shunet ez Zebib is now connected with the remains of another fort which was discovered between that and the Coptic Deir, which is in a third fort. These buildings prove now to have been the fortified residences of the kings of the second dynasty, whose sealings we have found in the dwelling-rooms.

Of a later age may be noted some large decrees of the fifth and sixth dynasties, the oldest example of iron yet known, which is of the sixth dynasty, and in the eighteenth dynasty a great memorial tablet of the grandmother of that line, and the remains of a cliff temple of the type of Deir el Bahri. These are but the salient points of a winter's work of much historical interest. The collection will be exhibited as usual at University College, Gower Street, from July 1 to 25.

Unhappily, the growing lawlessness of Egypt, which Lord Cromer noticed in each of his recent reports, has affected our work, and "a large number of offences, not very serious in themselves, but which cumulatively become serious, have been committed, and but too often have been committed with impunity." (Report, 1902, p. 40.) A statue was stolen from my house; and though the footprint of the thief exactly agreed with the very peculiar foot of one of the men who were notoriously accused in the village, and all the links were named by witnesses, yet no conviction could be obtained; 35*l.* are said to have changed hands as bribes over this. Next, my workmen from Quft were subject to a general conspired assault in the market, and each robbed of his money at once. But no redress whatever could be obtained. The police officer added to the injury by taking away one man who had been beaten to see the doctor, who did nothing but detain him till he paid 10*s.* bribe to be let go. Last year the relations of a man who died of fever were mulcted of 6*l.* by another doctor; and, on my complaining, the official inquiry resulted in giving an account which was absurdly false, to my personal knowledge.

It is impossible that the present machinery can work to elicit the truth. Witnesses are examined by petty officers, who dictate the final statement of evidence at their own will; and the witnesses are summoned through their sheikh, who is the first man to be "squared" by the offenders, and "who, they think, will assuredly sooner or later endeavour to wreak his vengeance on them." (Report, p. 36.) Such a system—dating long before the British occupation—is the most perfect for facilitating bribery and the suppression of truth. This is not the place to discuss the remedies. Happily Lord Cromer considers that "the points which most require attention are the police, the Department of Justice and sanitation." I do not touch on more personal threats to our party and being fired at, as I only wish here to refer to the failure of justice. But matters have gone so far that we must look for safety to our own resources rather than to the law, which has in each case proved to us useless.

GLASS AND MOSAIC.*

WHY or when a glass manufactory was founded in "Alsatia" I am unable to say definitely. The proximity of the river and the depreciated value of the property, owing to an evil reputation, may have been inducements to the original founder. The works must have been in existence before the end of the seventeenth century, for an advertisement of the wares produced appeared in the *Tatler* in 1710, and the manufactory must have been in a tolerably advanced condition to warrant an advertisement in such an important periodical. The advertisement ran as follows:—

"At the Flint Glass-House in White Fryars near the

* A paper read on the occasion of the visit of the members of the Society of Arts to the Whitefriars Glass Works, by Mr. Harry Powell.

Temple, are made and sold by Wholesale and Retail, all sorts of Decanters, Drinking Glasses, Crewitts, &c., or Glasses made to any pattern of the best Flint, as also all sorts of common Drinking-Glasses and other Things made in ordinary Flint Glass, at reasonable Rates."

It is about the direct lineal descendants of these "decanthers and crewitts" that I am about to speak.

All table-glass, worthy of the name, is blown glass. Every vase, wine-glass or decanter has commenced its career as a white hot, solid mass of viscous material coiled round the end of a long iron blowing-tube. A well regulated puff of breath through the tube creates a bubble, and the bubble is the embryonic stage of all table-glass.

The form of the bubble can be readily modified. Glass so long as it is hot is almost infinitely ductile, and even after it has been partly chilled its ductility can be restored by reheating. If the bubble, while still attached to the blowing-iron, is held downwards it lengthens out into an ellipse; if the blowing-iron is held vertically with the bubble uppermost the bubble compresses itself into the form of a "scone," and if the "scone" is pierced in its centre, and the blowing-iron is trundled like the handle of a mop the "scone" unfolds itself into a flattened disc. By these simple movements (which are in constant use in the glass factory) the form of the bubble is modified without the use of tools. With the aid of a primitive-looking tool, closely resembling an exaggerated pair of sugar tongs, and of a stool or chair, with two parallel projecting arms, between which the workman sits, and on which he rests and rolls the iron rod to which the glass is attached, every imaginable modification of a spherical form can be developed.

At the present time, owing to a demand for excessive regularity and excessive lightness and thinness, very many of the simple forms of table-glass are blown in moulds. This process of moulding requires comparatively little skill, and the valuable training which the fashioning of simple forms with the tool affords is being lost. If the fashion and demand for so-called "aerial" glass is long continued the skilled craft of glass-blowing will disappear.

The English glass-blower, however clever he may be with his fingers, has no talent for design. He is painfully realistic, and if asked to produce a vase, without a pattern to guide him, will make an accurate model of a man's tall hat, a pair of bellows or some other everyday piece of furniture, but will fail to create anything combining originality with beauty of outline. What technical education will do for the English glass-blower in the distant future remains to be proved.

The limitations of design are very strait. When what appears to be a fresh form or combination has been evolved, the discovery is generally made that the same has been done, and done better, ages before. Even when a satisfactory design has been produced the designer may meet with unexpected difficulties owing to the wealth of possibilities of failure belonging to the craft. The would-be designer must closely and constantly watch the phases of form through which vessels pass whilst being fashioned, and must note any outline that appears to be beautiful or novel. The most successful designs have been based on such study combined with the study of the productions of early Venetian, Dutch and German master-craftsmen.

In recent years Mr. T. G. Jackson, R.A., was one of the first to realise that a wine-glass may be something more than a bowl upon a stick, and that a graceful outline is not incompatible with utility.

About 1875 the late William Morris made several designs for table-glass, possessing, as all his work possesses, interest, beauty and originality.

Mr. Albert Hartshorne has written and illustrated a voluminous work on the evolution of drinking-glasses. The chief variation is shown to have occurred in the leg, and the variation may obviously be almost unlimited. Legs may in section be solid or hollow, cylindrical or oval, square or oblong. They may be twisted; they may be, as it were, turned, with hollows, curves and projections; they may be in one piece or in many pieces, and they may be ornamented with seals, frills, or "pinchings." Even the inside of an apparently solid leg may be decorated with plaited threads of coloured enamel, or with spiral air bubbles. These corkscrew lines of silvery air have a very simple origin. The leg is made from a small lump of viscous glass. Into this lump as many pin-pricks are made as spirals are required. The lump is then pulled out into a leg and twisted at the same time. As the leg stretches and twists, the pin-pricks stretch and twist and display themselves as spiral coils of air.

There is not the same scope for variation in the forms of decanters and jugs as there is in the form of drinking-glasses and vases. The handles of jugs may be distinctly decorative, but are always treacherous. With the view of obviating the necessity for handles, decanters have been made with flat or dented sides so as to afford a secure grip for the fingers, but public taste has demanded that even these shapes should have handles affixed.

The display of niceties of form depends in no small degree on the chemical nature of the glass employed. For this purpose the soda-lime glass, which is used in Venice, and the use of which has recently been introduced in England, although it is seldom absolutely white, and often streaky and bubbly, is better adapted than the obtrusively brilliant potash-lead glass from which English table-ware is commonly made.

The mention of the chemical nature of glass naturally introduces the subject of colour. Some thirty years ago the colours available and used for English table-glass were ruby, canary yellow, emerald green, dark peacock green, light peacock-blue, dark purple-blue and a dark purple.

About 1870 the "Jackson" table-glass was made in a light dull green glass, similar to that used in stained glass as "white," containing a wealth of bubbles and interesting irregularities. Owing to these so-called defects the glass only appealed to a very select circle. The dull green, commonly known as "pale green," was followed successively by amber, white opal, blue opal, straw opal, sea-green, horn colour and various pale tints of soda-lime glass, ranging from yellow to blue. Experiments have also been tried with a violet coloured glass, a violet opal, a transparent black, and with glasses shading from red to blue, red to amber and blue to green. Touches of colour have been added to vessels in course of manufacture by means of seals or tears of molten glass, applied like sealing-wax, or by causing vessels to wrap themselves round with threads or coils of coloured glass. By the application of a pointed iron hook, whilst the vessel and thread are still ductile, the parallel coils can be distorted into bends, loops or zigzags.

The surface of vessels may be rendered lustrous by rolling the hot glass on metallic leaf, or iridescent by the deposition of metallic tin, or by the corrosion caused by the chemical action of acid fumes. Gilding and enamel decoration are applied to vessels when cold, and fixed by heat.

Cutting and engraving are produced by pressing the surface of vessels against the edge of wheels revolving on horizontal spindles. "Cutting" wheels range from 18 inches to 3 inches in diameter, and are made of iron for grinding, stone for smoothing and wood for polishing. "Engraving" wheels are small, ranging from 1 inch to $\frac{1}{4}$ inch, and are made of copper.

It is the fashion to run down cutting as a form of decoration, a fashion which is partly due to a somewhat ill-advised pronouncement of Professor Ruskin. In appendix 12 of the second volume of "Stones of Venice," he says with regard to glass, "Durability and transparency being the two peculiar characters of glass, all work in glass is bad which does not with a loud voice proclaim one or other of these great qualities, and consequently all cut glass is barbarous."

In making this statement Professor Ruskin evidently forgot that the power of reflecting and refracting light is also a peculiar and important character of glass. It is true that the process of cutting was carried to an extreme pitch of vulgarity in the middle of the last century, but there are many specimens of English and Irish cut glass of the eighteenth century of great refinement and beauty.

The true use of engraving is to add interest to vessels by means of coats-of-arms, monograms, inscriptions and graceful outlines. The improper, but too common, use of engraving is to hide defective material.

In the Paris Exhibition of 1900 surface decoration was the prominent feature of all the exhibits of table-glass. The carved or "cameo" glass, introduced by Thomas Webb, of Stourbridge, in 1878, had been copied with varying success by glass-makers of all nations. Frequently the surface had been dulled by acid, so as to produce what is called a "satin" finish. M. Emile Gallé and Daum Frères, of Nancy, exhibited specimens of this form of decoration possessing considerable beauty. The so-called Favrite glass of Messrs. Tiffany, of New York, owes its effect in great measure to surface colour and lustre. The vases of Karl Koepping, of Berlin, are exceedingly graceful and fragile, but appear to be creations of the lamp rather than of the furnace.

I have already referred to the impetus given to the manufacture of English decorative table-glass by William Morris and T. G. Jackson. I am unwilling to allow this opportunity to pass without mentioning two other benefactors of the craft of glass-working, although their influence has only affected table-glass indirectly. To the one, Charles Winston, is due what may justly be called the renaissance of English stained glass; to the other, Sir W. B. Richmond, is due the demonstration on a large scale that English mosaicwork is a practicable form of structural decoration.

Winston was born in 1814 and died in 1864; he was a busy barrister, but devoted all his spare time to archaeology, and especially to the study of stained glass of the twelfth, thirteenth, fourteenth and fifteenth centuries. In the pursuit of his hobby he examined nearly all the best examples of ancient stained glass in England, and made a large number of careful drawings from them. He satisfied himself (as stated in his memoirs published in 1865) that "the success of a glass painting depends as much on the quality of the material as on the skill

of the artist" What he did for stained glass can best be illustrated from his own letters. Writing to his friend, Mr. C. H. Wilson, he says:—"Ever since 1850 I have been amusing myself, at no small cost, in having analyses made of ancient glass. . . . I offered to Chance of Birmingham the analyses if he would attempt to work them out, but he refused. Ultimately Powell offered to take the matter up, and erected a furnace for the purpose. It is fortunate that he did offer, for without his aid there would have been no practical result, and had his place been further from the Temple I could not have attended to the experiments as much as I did. . . . I have had two windows done in the Temple Church (the round part) to commemorate our triumph. . . . The new material is as harmonious, brilliant and at the same time solid in appearance as the old glass. . . ." Again writing in July 1854, about a window in Lincoln Cathedral, he says, "I do not see the slightest difference between it (the new glass) and the old, except the dirt. The ruby is splendid."

The coloured glass made for mosaic windows was for long known as "Winston's" glass. It was the origin of the stained-glass branch of these works, and was a cause of contact with Burne-Jones, Morris, Ford Madox Brown, Poynter, Moody, J. Doyle, Albert Moore, Jackson, Wooldridge, Holiday and other artists.

A letter written by Winston in November, 1854, forms a link between his work and that of Sir W. B. Richmond. He writes:—"Dear Powell,—I have at last got some specimens of the glass mosaicwork from Sta Sophia at Constantinople, and from St. Paul's at Rome, which I have given to Mr. Clarke to analyse, and I doubt not you will soon be able to produce the same yourself." It was long before this prophecy was fulfilled. A period followed devoted to experiments in the manufacture of enamels and in technique. One relic of these experiments is an angel's head, executed in 1865. Subsequently panels of glass pictorial mosaic were erected at South Kensington Museum, and pavements of glass mosaic were put down at South Kensington, at the Society of Arts and in several churches.

In 1884 a large panel representing the central group of Raphael's "Disputa" was put up on the east wall of the morning chapel of St. Paul's Cathedral, and in 1887 Holman Hunt's picture of "Christ with the Doctors in the Temple" was translated into mosaic for the reredos of Clifton College Chapel. Both these works were executed in what is known as the "New Venetian" method, *i.e.* they were treated as panel pictures and worked in a workshop.

In 1891 Sir William Richmond, R.A., was commissioned to carry out the decoration of the choir of St. Paul's Cathedral in glass mosaic. A study of these mosaics (all of which, with the exception of two angels of the Passion at the extreme east of the choir, were executed *in situ*) will prove the superiority of Sir W. Richmond's method of working. St. Paul's affords ample scope for comparing the two methods (the "workshop" method and the *in situ* method), for not only, as has already been stated, are there examples of English glass mosaic worked in the Venetian method, but there are important examples of Venetian work in the pendentives of the dome and on the west wall of the morning chapel. If, however, further proof is needed of the superiority of the *in situ* to the "workshop" method, a comparison should be made between some of the unrestored mosaics in Ravenna, which were certainly worked *in situ*, with mosaics in Rome and Venice which have been "restored" by the Venetian method.

Sir William Richmond has proved that mosaic must be used as the coloured surface of a structure, and not as pictorial panels fixed to a structure. If this may be accepted as an axiom, the whole process of mosaic is enormously simplified. There is no need for minute shaping or fitting of the tesserae. Indeed, so great is the covering power of gold and coloured enamels that in some positions (according to the distance from the eye) the tesserae may be placed at from $\frac{1}{2}$ inch to $\frac{3}{4}$ inch apart, and yet the whole surface is adequately coloured. There is no need of an extensive palette; every shade and tint can be produced by the contiguity of contrasted colours. By working *in situ* the ground itself, as well as every fragment and contrast of colour, can be given its full value. There is, moreover, no real difficulty in working *in situ* or of supervising the work.

It may be asked why, in a paper on "Table-Glass," I should have referred to the work of Winston and Sir W. Richmond. Their influence, however, on table-glass, though indirect, has been of considerable importance. It was the manufacture of Winston's glass that suggested the manufacture of vases and table-glass in soda-lime glass, and the preparation of the coloured golds and enamels for Sir W. Richmond's mosaics suggested the introduction of many of these colours and combinations of colours in the manufacture of table-glass. There is yet another reason for this apparent digression; stained-glass windows and mosaics, as well as opaque glass tiles and "opus sectile" thermometer tubes and pump-barrels, electric-light fittings and work in silver and in

iron are all descendants and developments from the "crewitts, decanthers" and other simple forms of table ware which were advertised in the *Tatler* in August 1710.

THE OLD CITY WALL, EDINBURGH.

A WAY down in the purlieus of the Pleasance, behind the old ramshackle buildings which had clustered round the city wall in the beginning of the eighteenth century, says a correspondent of the *Scotsman*, is a bit of the Flodden wall erected after the disastrous defeat of September 9, 1513. That lamentable encounter with the English caused the most intense excitement in Auld Reekie, and the nobility and legal luminaries who had their residences on the grassy slopes between the High Street and the Cowgate, and who were consequently outside the enclosing wall erected in 1460, were naturally clamorous to be protected in case the enemy should attack the city.

The 1460 wall of circumvallation descended eastwards from the castle, probably between the High Street and the Cowgate, until striking the line of St. Mary's Wynd it turned northwards at right angles to a junction with the Netherbow Port. The valley outside this wall embraced the sloping banks at the base of which lay the Cowgate, and was liberally sprinkled with goodly houses, the residences of the well-to-do. These were, of course, without any protection in the event of a siege, and immediately after Flodden it was decided to increase the area of enclosure.

The new wall extended southwards in continuation of the old one until it reached the Cowgate Port. This port is said to have been completed in 1516, and was at the east end of the Cowgate, and just at the head of the south back of Canon-gate and the foot of St. Mary's Wynd. The wall extended further south, up the sloping hill known as the Pleasance, until it reached the corner of Drummond Street. It then turned westwards, the point of junction being marked by a large circular bastion tower at the corner of the intersecting thoroughfares. The curtain wall between this tower and the Cowgate Port was about 350 feet long. This Flodden wall is said to have been built with incredible speed and of great strength. No doubt fear lent haste to their efforts. The idea of great strength at that time we find defined in the description of an addition made to the city wall in 1620, where it is stated that the wall was to be 5½ ells in height to the battlement (or about 17 feet 9 inches), while the parapet was to be 2 ells high (or about 6 feet 2 inches). This is taking the ell at 3 feet 1 inch. This would give a total height of about 23 feet 11 inches. From the ground to the battlement the wall was to be 5 feet in thickness, while the battlement was to be 2 feet. The parapet or battlement had embrasures to facilitate surveillance and for effective defence by the burghers of the city.

It was not probably until early in the eighteenth century, or 100 years after the Union of 1603, that buildings began to cluster outside this wall, so as to screen it from the public view, and to border the way leading down to the Cowgate Port. The strip of the curtain wall referred to was for a considerable length in existence until lately, and at a visit towards the latter end of 1901 it was measured, and found to correspond very closely with the dimensions above given. It was built on the escarpment or natural slope of the side of the hill, and was an ordinary rubble wall, such as was built in Mediæval times for the purpose of defence. It had a good stone face, and was hearted with rough blocks and lime mortar. Some portions were as hard as rock. Other portions which had not been properly protected from the water soaking down through the high soil behind had to some extent lost its tenacity, and was, through obvious neglect, in an inferior condition. The enormous weight of material in the portion taken down—about 300 tons—made it a ponderous mass, and such an interesting relic was well worthy of some attention for its preservation. Indeed, we surely owe a duty to posterity to deal reverently with old work of this description, and to exercise every care in our treatment of it.

The wall for a length of about 60 feet had, at the date of my visit, been condemned, and was in course of removal. This was very unfortunate, as another retaining wall built in the soil to the west of it, or judicious support by buttresses, or even holes formed into it and grouted up with concrete, might have preserved it for centuries to come. Many Mediæval structures in a much more dangerous condition have been preserved in this way. The wall where removed marked the boundary between the grounds of the City Fever Hospital and the low-lying land bordered by the old and new buildings fronting the Pleasance, and could only be examined by passing through the old buildings which covered this trapezium-shaped area of land.

The Ordnance Survey marks the spot as the site of the convent of St. Mary of Placentia, and in 1781 it is said that a statuette was found in the ruins of some old buildings there which were being removed. Of the history of this convent

nothing is known. It was supposed to have stood about 60 yards from the south-east angle of the city wall, near the foot of Drummond Street, and may have been in existence in the fifteenth century. Close by is also marked the site of the Blackfriars Monastery, A.D. 1230, and from the human remains found when the old city wall was being removed lately it would appear as if a portion of the ground had been set aside as a burial-place in connection with one or other of these Mediaeval institutions, or in connection with the dissecting theatre attached to the Chirurgeons' Hall.

Over the entrance door of one of the wings of the Fever Hospital buildings is the date 1697, and no doubt this was the old Chirurgeons' Hall. It is shown as a separate structure surrounded by gardens in Edgar's scale map of the city dated 1742, while at that date only three buildings existed to the east of the wall and on the west side of the Pleasance between Drummond Street and the Cowgate Port.

The parapet of the old city wall being of comparatively light masonry, and exposed to the weather on both sides, has long since disappeared, while part of the walls of the adjacent old dwelling-houses had been built on the lower portion of the wall and a new portion of wall and railing added at other parts. The lower part of the wall, however, was quite intact, and so corresponded in structural appearance and dimensions to what has been previously stated as to be of undoubted authenticity.

One cannot but regret the disappearance from time to time of here a bit and there a bit of what to the historical student is most interesting work, and I would plead for more care being taken to preserve wherever possible these links with the past. This portion which has been taken away and replaced by a new wall is about 60 feet in length and I venture to think could have been preserved without much difficulty. It was in such a position as not likely to have necessitated its removal for the development of the property on either side, as it formed a natural boundary between the high and the low ground, and was the march between the city grounds and adjoining properties of comparatively small value. These remnants of our historic past are now fast disappearing, and unless attention be called to the matter there appears to be no one in civic circles having any sentiment in the matter which would make them exercise ingenuity and skill for their preservation.

A very small bit of the old city wall now exists at this part, and one would hope that it will be better looked after than that adjoining, and not be sacrificed by the first one who chooses to dig away its natural support.

In Gordon of Rothiemay's map, dated 1647, the city wall is shown just behind the building representing the College of Chirurgeons, and although this map is a mere perspective sketch, inaccurate in many respects, it shows approximately the site of the wall at that time, bordering the Pleasance, or the "Suburbium de Plaisanc," as it is therein designated.

The ground to the west of this portion of the city wall was probably levelled up to the commencement of the battlement at the time of the erection of the wall to serve as ramparts; at least it would probably be so in parts, as such a practice was common on the interior of walls of defence. Where this was not done there were inclined access planes, or stairs, leading to elevated plateaus for the convenience of the defenders, as we see in Roman and Mediaeval examples.

What one would like to see is that the stability of these old walls, or other ancient structures of historic interest in our city, should be carefully looked after. No one would wish them "renewed" or "restored," but all would wish them judiciously preserved to lend interest to our ancient town, and so that we might be enabled to hand them on for the enjoyment of generations yet unborn.

VALUATION OF CHRIST'S HOSPITAL.

THE further hearing of the appeal of the council of almoners of Christ's Hospital, Horsham, against the assessment committee of the Horsham Union, in respect to two poor rates, one in regard to Horsham Rural and the other to Itchingfield, took place at the West Sussex Quarter Sessions at Horsham on Saturday last, before his Honour Judge Lumley Smith and several magistrates.

The first hearing took place on Thursday, June 25. It was then stated that a valuation of the schools was made by the overseers, and the gross rateable value was put at a little over 11,000*l.*, and the net rateable value at 8,817*l.* The council of almoners thought the sum excessive and objected, whereupon the assessment committee called in Mr. A. L. Ryde (Messrs. Ryde & Sons, Westminster), who raised the net rateable value from 8,817*l.* to 11,150*l.* The case for the appellants was closed at the first hearing, and Mr. Ryde, who was the first witness called by the respondents, was under cross-examination by Mr. Bray, K.C. This was now continued, says the *Sussex Daily News*, and had reference to detailed particulars as to how

witness arrived at his valuation. He did not consider there was any extravagant expenditure. His instructions were to make a moderate assessment, and this he did. There was no reason to put on an excessive figure.

Mr. Charles Frederick Jones, rating surveyor and valuer, who said he acted for over forty unions, including that of Horsham, and gave evidence at great length, was next called. His practice was, he said, not to rely solely upon the cost, and he had not done so in the present instance—in fact, he had reason in some cases to put it aside altogether. He always excluded anything of a monumental or ornamental nature. As to wasteful extravagance he saw nothing unnecessary or any over-ornamentation. The buildings were up to date with water, drainage and electric light. Externally they were very plain indeed. The art school was substantially built, with no undue embellishments. He did not consider the roof, which was 26 feet, unduly high. The science school, classrooms and school hall were not exceptionally large, and contained nothing elaborate or decorative. There was not too much air space in the dormitories. The infirmary and sanatorium were not of an ornamental character, and were not too large for the establishment. In regard to the dining-hall, had the architect adopted the suggestion of Mr. Hedley and had a lower roof, he would have damaged his reputation. In the dining-hall there would be from seven hundred to a thousand people, and it was absolutely necessary that a high sanitary state should be maintained at all times. To secure this there must be a proportionate height to the roof. The architect was to be highly commended upon the well-proportioned roof.

Mr. Boxall, K.C.: Do you think money has been injudiciously spent?—Witness replied that in his judgment all parties concerned merited high commendation for the utility of the buildings. There was no injudicious outlay. Whatever was ornamental he excluded. Regarding the suggestion that the walls of the roof were too thick, he did not believe they were, out of safety for the building.

At this juncture an argument ensued between the judge and counsel as to whether certain formalities were complied with in regard to the specified rate for Itchingfield parish, owing to the October rate being given instead of May, which latter was the rate objected to and appealed against. His Honour held that the Court could not hear the appeal, which, he said, would be dismissed. The rateable value in regard to Itchingfield, however, was stated by counsel to be exceedingly small compared with that in dispute for Horsham.

Mr. William Eve, a surveyor of forty years' standing, stated that he had valued many colleges and schools, including Oxford University. His assessment was made on the structural value, and, as at Oxford, he discarded all ornamental work. A contractor's basis was of no use as a guide.

Witness was cross-examined at some length upon the opinions which he gave in the Oxford case as to his method of valuing, and he still adhered to his views.

Mr. Boxall, for the respondents, pointed out that in a class of building like Christ's Hospital they could not fix a yearly rental such as in railway and gas companies by ascertaining the profits of the undertaking; therefore they must consider it from the view of what a hypothetical tenant would give. In the Oxford case they had to deal with buildings of remote antiquity, but in the present appeal there was no such difficulty, because they knew the structural cost, which was nearly equivalent to structural value. The almoners were trustees of immense sums of money, and they were bound to administer it for the benefit of their trusts, and built according to the provisions of their scheme, which was subject to the approval of the Charity Commissioners. This would explain that there was no waste of money. He asked the Court to give the respondents 4 per cent. on the utility value, submitting that this would be a reasonable valuation.

Mr. Bray, replying for the appellants, urged the Court to reject the contractor's basis, which was upon actual cost, and was utterly untrustworthy. They must base their rating on the commercial or market value, and exclude anything of an ornamental or monumental value. He denied that the Charity Commissioners had anything to do with the expenditure. The trustees had not the least claim upon the district, because they had bought the land and provided themselves with police, drainage, water-supply and electric light.

After the Justices had retired, his Honour said that the appeal against the rate made by Horsham Rural should be allowed, and that the figures should be reduced to gross 10,000*l.*, rateable value 7,500*l.*, and that the assessment committee should pay the costs of the appellants. The Itchingfield appeal would be dismissed owing to proper notice not being given, each party to pay their own costs. The costs will be taxed out of sessions.

The Court sat for nearly six hours.

The Brighton Town Council have resolved to organise an exhibition at the Aquarium during the autumn of Modern Architecture and Building Improvements.

TESSERÆ.

Giacomo Amiconi.

THIS Venetian painter of history came to England in 1729, when he was about forty years of age. He had studied under Bellucci in the Palatine Court, and had been some years in the Elector of Bavaria's service. His manner was a still fainter imitation of that nerveless master Sebastian Ricci, and as void of the glow of life as the Neapolitan Solimeni. Amiconi's women are mere chalk, as if he had only painted from the ladies who paint themselves. Nor was this his worse defect; his figures are so entirely without expression that his historical compositions seem to represent a set of actors in a tragedy, ranged in attitudes against the curtain draws up. His Mark Antonys are as free from passion as his Scipios. Yet novelty was propitious to Amiconi, and for a few years he had great business. He was employed to paint a staircase at Lord Tankerville's in St. James's Square, now destroyed. It represented stories of Achilles, Telemachus and Tiresias. When he was to be paid he produced bills of workmen for scaffolding, &c., amounting to 99%, and asked no more, content, he said, with the opportunity of showing what he could do. The peer gave him 200% more. Amiconi then was employed on the staircase at Powis House, in Great Ormond Street, which he decorated with the story of Holofernes, but with the additional fault of bestowing Roman dresses on the personages. His next work was a picture of Shakespeare and the Muses over the orchestra of the new theatre in Covent Garden. But as portraiture is the one thing necessary to a painter in this country, he was obliged to betake himself to that employment (for a whole length he was paid sixty guineas) much against his inclination; yet the English never perhaps were less in the wrong in insisting that a painter of history should turn limner, the barrenness of Amiconi's imagination being more suited to the inactive tameness of a portrait than to groups and expression. The Duke of Lorraine, afterwards emperor, was then at London, and sat to him. He drew the queen and the three eldest princesses, and prints were taken from his pictures, which he generally endeavoured to emblemise by genii and cupids. In 1736 he made a journey to Paris with the celebrated singer, Farinelli, and returned with him in the October following. His portrait of Farinelli was engraved. He then engaged with Wagner, an engraver, in a scheme of prints from Canaletti's views of Venice, and, having married an Italian singer, returned to his own country in 1739, having acquired here about 5,000%. At last he settled in Spain, was appointed painter to the king and died at Madrid, September 1752. Amiconi's daughters, the Signora Belluomini and the Signora Castellini, the latter a paintress in crayons, were living at Madrid in 1773. Brunetti, an Italian, who had arrived before Amiconi, and was a painter of architecture and ornaments, assisted the latter at Lord Tankerville's and other places, and painted scenes for the opera. He etched some plates of grotesque ornaments, but left England for want of business.

The "Clytie" Bust.

The fine bust in the British Museum which is popularised by plaster and parian busts owes its title of "Clytie" to Charles Townley, who purchased it in 1772 from the Laurenzano family at Naples. It was called "A Grecian Lady" and also "Isis resting on the Flower of the *Nymphaea lotus*." The heliotropium, which the petals resemble, was not known in Europe until after the discovery of America. On the Greek fictile vases of the Macedonian period female heads issuing from the calyx of a flower frequently occur. The original motive of such combinations is probably funereal. In Stackelberg, "Gräber d. Hellenen," is engraved the upper part of an Athenian *stele*, in which a veiled female bust is represented rising out of the floral decoration which forms the usual ornament of this class of monument in Attica. The bust is evidently the portrait of a Roman lady of the Augustan age. The forehead is low, which, as we learn from Horace, was then thought a special characteristic of a beautiful face. The arrangement of the hair, waved in front and falling over the back of the head, suggests a likeness to Antonia, the mother of Germanicus, but it is, perhaps, intended for Agrippina, the wife of Claudius. The type is more refined and the expression more highly wrought than is usual in Roman portraits, but seems quite in harmony with the general spirit of the Augustan age. The bosom is thrown a little forward, as if the bust had been copied from a statue seated in a chair. This bust is in the finest condition, the only parts restored being two of the leaves of the flower.

The Council of University College, London, have purchased a site facing the hospital for the erection of a clinical school. Plans have been drawn by Mr. Waterhouse for the buildings. Negotiations have been begun for the acquisition of a site for the boys' school. A sum of 40,000% is required for the building of the clinical school and 60,000% for the boys' school.



Fire Prevention Committee.

SIR,—Will you kindly announce in your next issue that I have resigned the chairmanship of the Commercial Section and membership of the Executive of the British Fire Prevention Committee, and also the title of Hon. Publications Secretary of the International Fire Prevention Congress?—Yours faithfully,
F. R. FARROW.

July 7, 1903.

GENERAL.

The King has expressed the wish that the gold ornaments which were the subject of litigation should be presented as a free gift to the treasurer of the Royal Irish Academy.

The Board of Education have arranged that the Exhibition of British Engraving and Etching, in the galleries of the Victoria and Albert Museum shall remain open until September 30 next.

The Top Stone of the central tower of Truro Cathedral was laid last week. The tower will cost 15,000%. Except for the two western towers, which are estimated to cost 7,000% each, and will not be proceeded with until the cost is offered to the cathedral authorities, Truro Cathedral is now complete.

The Votes which will be applicable for naval works during the present and the next financial year are:—Chatham dockyard extension, 50,000%; Sheerness depôt for torpedo-boat destroyers, 143,000%; naval establishment at Rosyth, 200,000%; coastguard stations and Royal Naval Reserve batteries, 50,000%; torpedo ranges, 75,000%; and electric light and power in naval establishments, 713,000%.

The French Senate adopted the Bill authorising the Government of French West Africa to borrow 65,000,000 francs for public works, with an amendment, made by the Chamber, reserving the contracts for French manufacturers.

The Metropolitan Railway Company have abandoned the intention to appeal against the magistrate's decision that railway companies were amenable to the local authority, and that the sanitary work at the Finchley Road station was irregular as no notice had been served. Mr. Curtis Bennett's decision will be accepted.

The Institution of Civil Engineers will receive applications for the Palmer scholarship. The nominee must be the son of a civil engineer, he must be desirous of matriculating and subsequently graduating at the University of Cambridge, and his circumstances must be such as to need the help afforded by the scholarship.

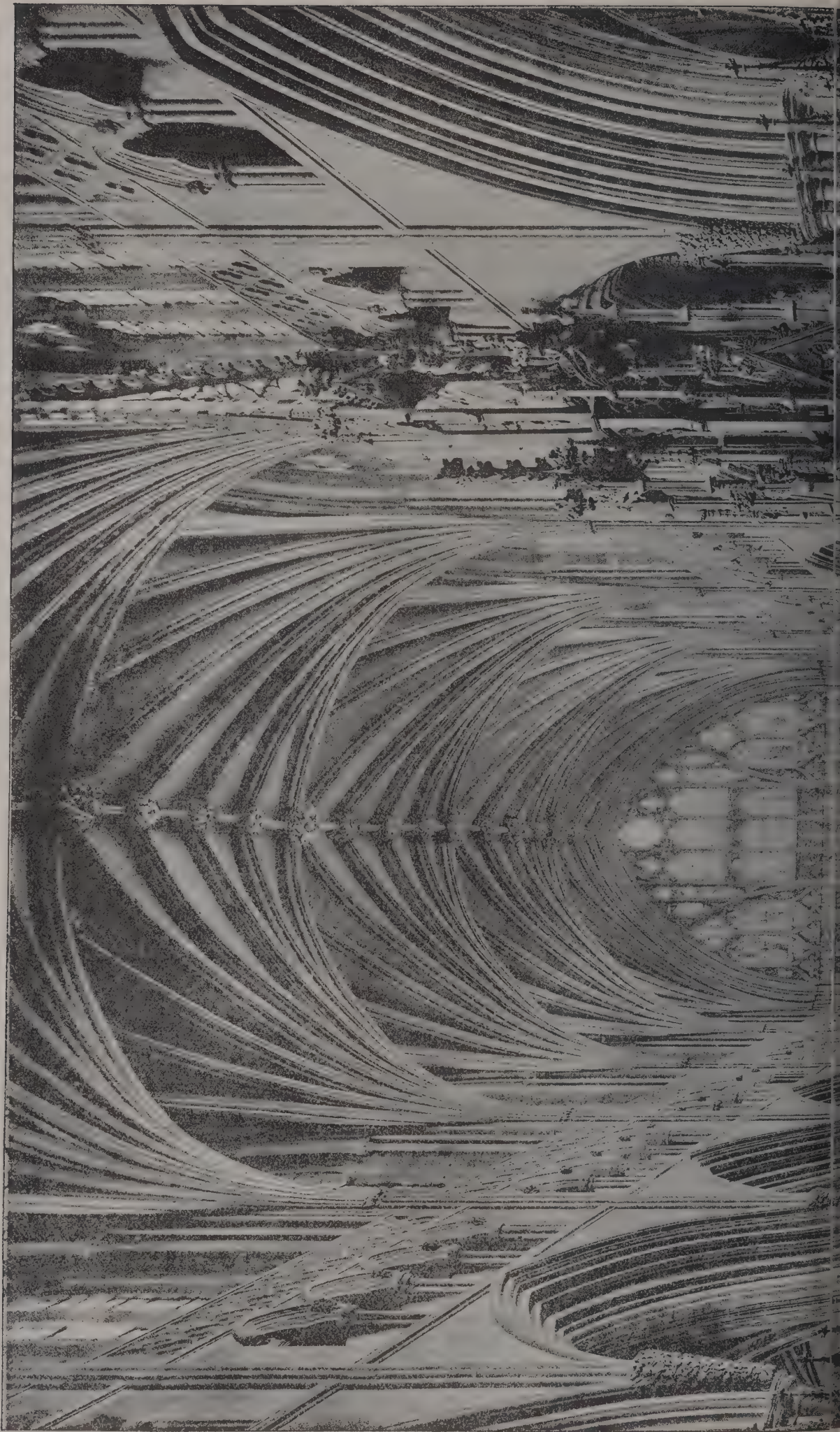
The Southwold Town Council have decided to make inquiries as to the powers of the Corporation to manufacture bricks for sale with a view to starting such an enterprise in the autumn.

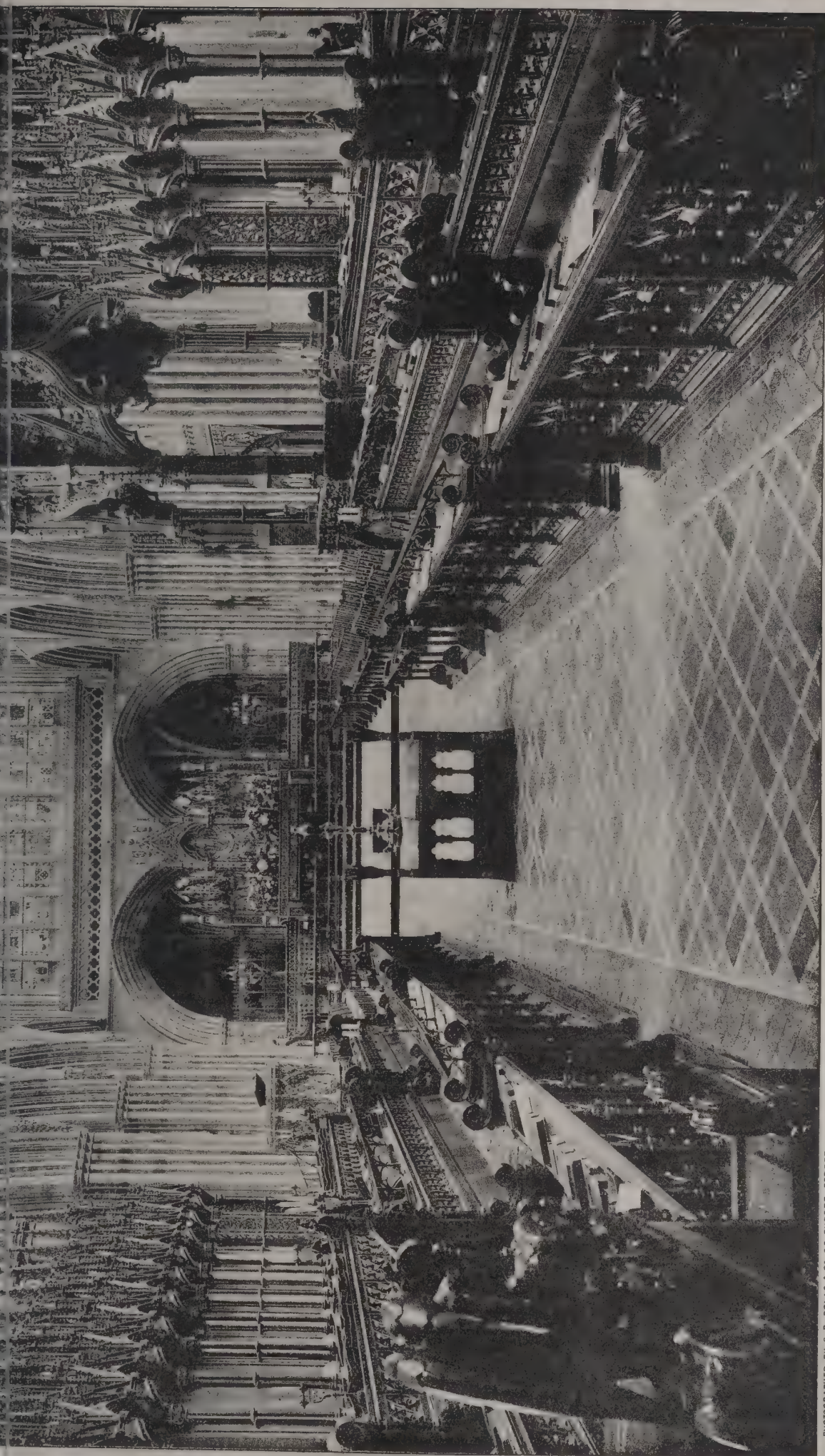
The Museums and Lecture Rooms Syndicate of Cambridge have commenced the erection of a new drawing-office for the department of Engineering. Professor Ewing, in his report, refers to the need of new workshops for the department of Mechanism and Applied Mechanics, for the erection of which about 10,000% will be required. An engineer, much interested in training men for his profession, has promised to give one-fourth of this sum if the remaining three-fourths are obtained. Subscriptions have been received amounting to 1,650%. The Professor trusts that the remainder of the fund may soon be forthcoming now that a site has become available, for the need of new workshops is increasingly pressing. The steady growth of this department continues, and the Professor sees no reason to expect that it will not go on, for there is an increasing appreciation on the part of engineers of the advantages of the training in applied science which such a course affords.

An Exhibition of mezzotints will be held at the British Museum next year. The material will be mainly derived from the recently demised collection of Lord Cheylesmore. The works will range from the time of the invention of Ludwig von Siegen down to the works of Samuel William Reynolds, Turner and Say, before the introduction in 1820 of the steel plate instead of copper.

The Westminster City Council have complied with a suggestion contained in a letter from the London County Council, stating that they were endeavouring to give effect to their undertaking to obtain possession of the premises at present occupied by lessees and required for the widening of Piccadilly, but that it was found that it would considerably assist the negotiations with the tenants if the city council would aid by putting into force, at the cost of the County Council, its statutory powers under Michael Angelo Taylor's Act. The County Council possess no such compulsory powers for the acquisition of property as those conferred on the city council by the Act in question.

The Architect, July 10th 1903.





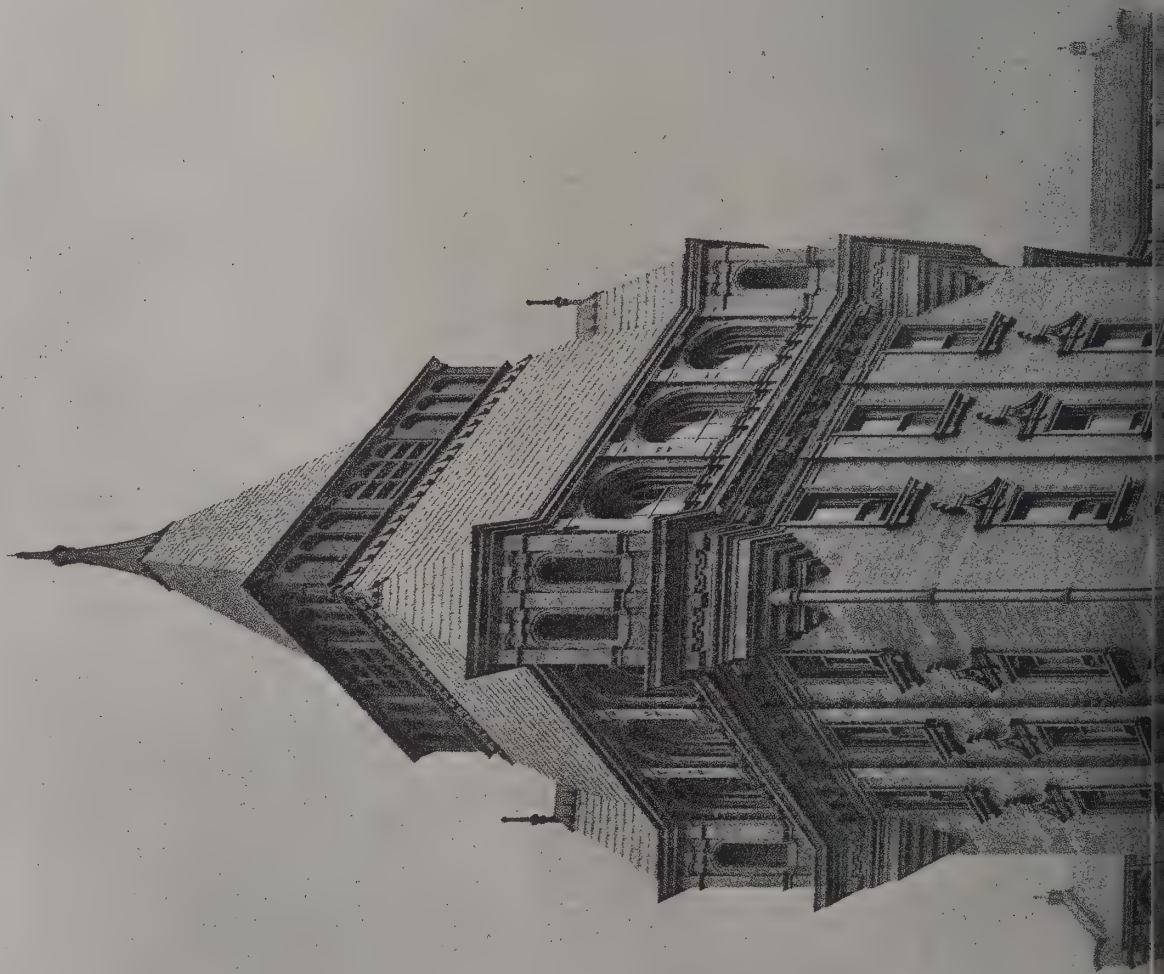
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CATHEDRAL SERIES, No. 453.—EXETER: THE CHOIR, LOOKING EAST.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

The Architect, July 10th 1903.





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UNIVERSITY COLLEGE HOSPITAL.

Messrs. A. WATERHOUSE & SON, Architects.

The Architect, July 10th 1903.



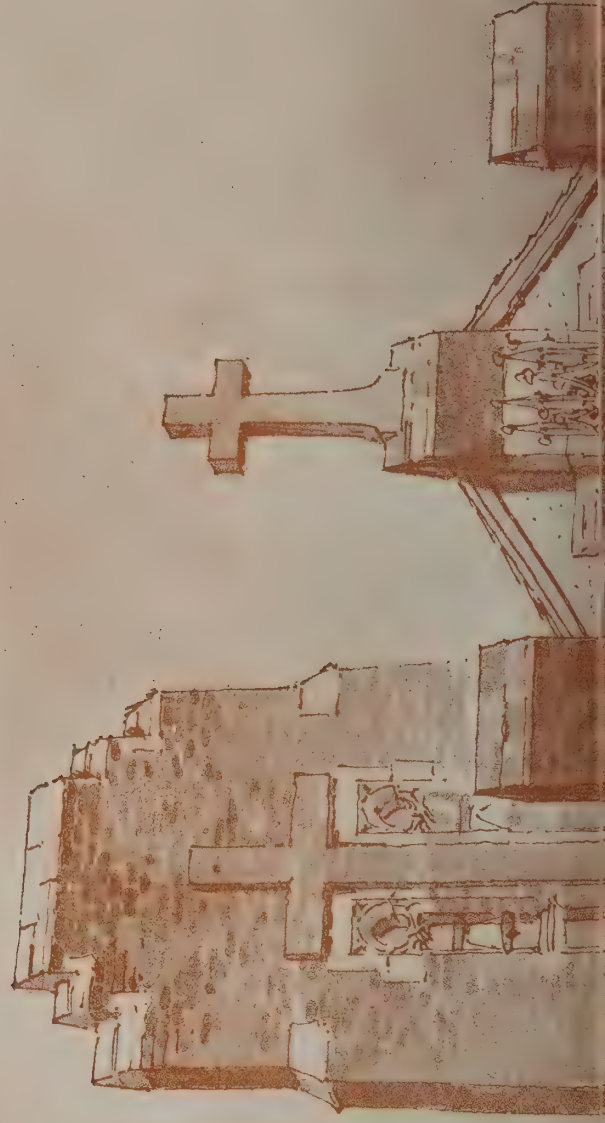


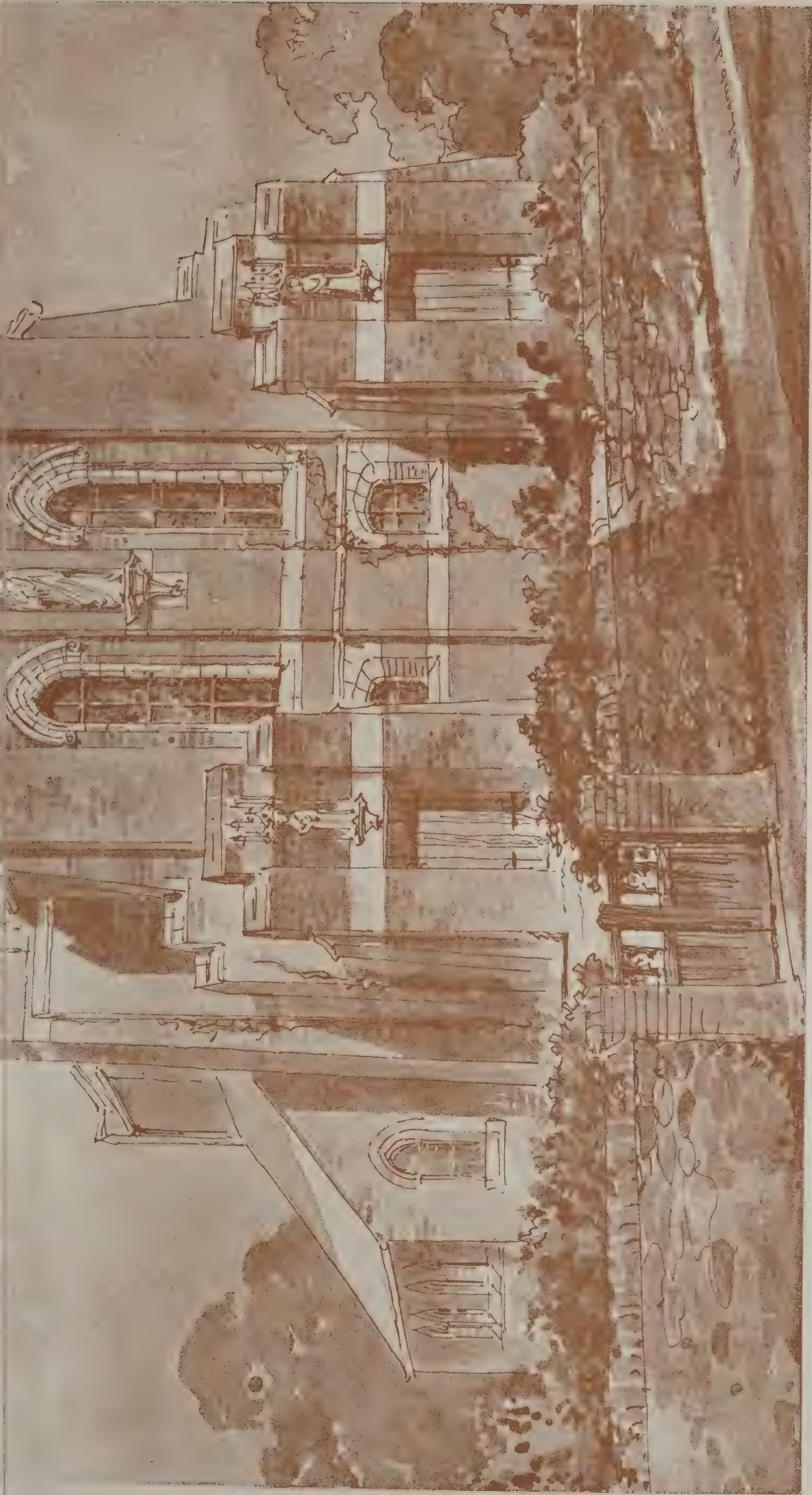
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WINDOW: CA D'ORO PALACE, VENICE.

From a Drawing by W. J. DAVIES.

The Architect, July 10th 1903.





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NEW ROMAN CATHOLIC CHURCH, TONBRIDGE

W. BARNESLEY HUGHES, Architect

THE

Architect and Contract Reporter.**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

**** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

TAUNTON.—July 20.—Competitive designs are invited for a library building to be erected in Corporation Street, at a cost not exceeding 5,000*l.* inclusive. Premiums of 30*l.*, 20*l.* and 10*l.* will be awarded for designs adjudged of sufficient merit, and placed first, second and third in order respectively. Mr. George H. Kite, town clerk, Municipal Buildings, Taunton.

CONTRACTS OPEN.

ACCRINGTON.—July 14.—For the erection of bank premises, Blackburn Road, Accrington. Mr. Henry Rose, architect, 15 Cannon Street, Accrington.

ASHBURTON.—July 18.—For additions to the grammar school. Mr. R. E. Tucker, clerk to governors, Ashburton.

BANBURY.—July 13.—For the erection of an outside iron fire-escape staircase at the workhouse. Mr. E. Lamley Fisher, clerk to Guardians, Union Offices, Banbury.

BARNSELEY.—July 13.—For the erection of two houses in Blackburn Lane. Mr. James Clarke, builder, 107 Doncaster Road, Barnsley.

BATLEY.—July 15.—For the erection of a new foundry in Bridge Street. Mr. Harry B. Buckley, architect, 85 Commercial Street, Batley.

BEBINGTON.—July 20.—For additions and alterations to the sexton's lodge at Bebington cemetery, Bebington, Cheshire. Mr. William Griffiths, architect, 5 Hamilton Square, Birkenhead.

BEDALE.—July 13.—For additions and alterations to Hopetown House, Leeming Lane, Carthorpe, near Bedale. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

BIGGLESWADE.—July 14.—For the erection of vagrants' ward, disinfecting chamber, work-sheds, &c., at the workhouse. Mr. J. Owen Jones, Shortmead Street, Biggleswade.

BINGLEY.—July 17.—For the erection of a Wesleyan chapel at Gilstead, Bingley, Yorks. Mr. Wm. Rhodes Nunn, architect, Market Street, Bingley, Yorks.

BRIERFIELD.—July 14.—For the erection of a police station and courtroom at Brierfield, Lancs. Mr. Henry Littler, architect, County Offices, Preston.

BRIXTON.—July 16.—For the erection of a pair of cottages on Sherford Farm, Brixton, Devon. Messrs. Pitts, Tucker & Sons, Barnstaple.

BROADHEMPSTON.—July 18.—For the outward renovation of the Broadhempston Wesleyan chapel. Mr. Johns, Woodbine Villa, Broadhempston.

BROWNHILLS.—July 14.—For the erection of a wing to the public buildings, Brownhills, Staffs. Mr. W. B. Chancellor, surveyor, Public Buildings, Brownhills.

CARLISLE.—July 13.—For alterations to the Crown Court, Carlisle. Mr. Geo. Dale Oliver, county architect, Carlisle.

CLECKHEATON.—July 16.—For the erection of four terrace houses, Whitcliffe, Cleckheaton, Yorks. Messrs. R. Castle & Sons, architects, London City and Midland Bank Chambers, Cleckheaton.

DALTON-IN-FURNESS.—For completing the new Carnegie free library. Mr. W. Richardson, surveyor, Council Offices, Dalton-in-Furness.

DARTFORD.—July 27.—For the erection of new wards and administrative buildings at the workhouse, West Hill, Dartford. Mr. G. H. Tait, architect, Lowfield Street, Dartford.

DEPTFORD.—July 14.—For the erection of four blocks of five-storey working-class dwellings at Hughes Fields. Particulars can be had at the Architect's Department, L.C.C. (Housing Section), 19 Charing Cross Road, W.C.

DEVIZES.—July 30.—For converting part of the town hall into public offices, and for other alterations. Plans at the Borough Surveyor's Offices, 15 Market Place, Devizes.

DEWSBURY.—July 13.—For the extension of premises at Cut End Mills, Saville Town. Messrs. C. H. Marriott, Son & Shaw, Church Street Chambers, Dewsbury.

DORSET.—July 15.—For repairing and painting the exteriors of the following police stations throughout the county, viz. Blandford, Beaminster, Bridport, Cerne Abbas, Cranborne, Dorchester, Gillingham, Lyme Regis, Portland, Shaftesbury, Sherborne, Swanage, Wareham, Wimborne, and additions to Dorchester station. Mr. Walter J. Fletcher, county surveyor, Wimborne.

EAST HAM.—July 20.—For the erection of school buildings to accommodate 1,592 children at Monega Road, East Ham. Mr. H. C. Padgett, clerk, East Ham.

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ECCLES.—July 18.—For the erection of a refuse destructor in connection with the sewage works. Mr. G. W. Willis, sewage works engineer, Sewage Farm, Peel Green Road, Patricroft.

EPSOM.—July 14.—For the erection of a coal-shed, brick wall and stone pitching at the electricity works. Mr. Herbert F. Foster, electrical engineer, Church Street, Epsom.

EXETER.—July 16.—For the erection of a lodge at Bickham. Messrs E. H. Harbottle & Son, architects, County Chambers, Exeter.

FAVERSHAM.—July 24.—For the erection of a new coast-guard station, consisting of houses for an officer and seven men and a new boathouse at East Swale, near Faversham, Kent. Bills of quantities will be supplied on application to the Director of Works Department, Admiralty.

GRASSINGTON.—July 20.—For the erection of a residence at Grassington. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

GRAYS.—July 23.—For alterations and additions at the police station, Grays, Essex. Mr. Herbert W. Gibson, deputy clerk of the peace, Shire Hall, Chelmsford.

HALIFAX.—July 14.—For the erection of two blocks of houses in Devon Street, Halifax. Mr. Lister Coates, architect, Bank Chambers, Waterhouse Street, Halifax.

HEATON.—July 16.—For the erection of a block of villas at Heaton, Yorks. Messrs. Adkin & Hill, architects, Prudential Buildings, Bradford.

HEYWOOD.—July 13.—For the erection of a theatre at Heywood, Lancs. Messrs. Sharp & Waller, architects, 32 Bradford Road, Brighouse.

HOUNSLOW.—July 23.—For the erection of a boiler-house, engine-room, battery-room, offices and chimney-shaft at the Pear Tree estate, Hounslow. Mr. H. J. Baker, clerk, Town Hall, Hounslow.

HUNMANBY.—July 17.—For repairs to the parish church of Hunmanby, Yorks. Mr. C. Hodgson Fowler, architect, Durham.

HUNSTANTON.—For the erection of three dwelling-houses on the Glebe estate. Messrs. George Fitt & Co, Ltd, architects, 50 Prince of Wales Road, Norwich.

IRELAND.—July 13.—For the erection of a church, Garvaghy, Banbridge. The Rev. David Baird, Garvaghy Manse, Banbridge.

IRELAND.—July 13.—For the erection of a creamery near Lismore railway station. Mr. William Hartnett, secretary, Chapel Street, Lismore.

IRELAND.—July 15.—For the erection of eighteen labourers' cottages on selected sites within the Lurgan district. Mr. W. W. Larmor, Banbridge.

KEIGHLEY.—July 13.—For the supply of a quantity of school furniture at Utley Board school. Mr. H. Midgley, clerk, School Board Offices, Keighley.

LANCASTER.—July 20.—For alterations and additions to the pig slaughter-house, and the erection of a shippon. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LANCASTER.—July 21.—For laying wood-block flooring and erecting a lead flat on the roof of a classroom at the Bowerham school. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEEDS.—For the erection of offices, Great Wilson Street, Leeds. Mr. Edwin Hill, architect, 13 Oxford Row, Leeds.

LICHFIELD.—July 22.—For the erection of four-bed observation wards at the workhouse, Lichfield. Mr. D. C. Marks, architect, St. Mary's Chambers, Lichfield.

LIGHTCLIFFE.—July 16.—For the erection of two seven-roomed houses in Smith House Lane, Lightcliffe, Yorks. Messrs. Sharp & Waller, architects, 32 Bradford Road, Brighouse.

LONDON.—July 21.—For the erection of a sorting office at Tooting, S.W. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

LONDON.—July 21.—For the erection of a coach-house and dormitory at the Royal Mews, Buckingham Palace. Mr. J. B. Westcott, H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—July 22.—For the erection of the superstructure of Block 3 of the new Admiralty buildings, for the Commissioners of H.M. Works and Public Buildings. Drawings and specification, conditions and form of contract may be seen on application to Sir John Taylor, K.C.B., H.M. Office of Works, &c., Storey's Gate, S.W.

LONG EATON.—For the erection of a factory at Long Eaton. Mr. E. R. Ridgway, architect, Long Eaton.

MAIDSTONE.—July 17.—For the enlargement of the head post office at Maidstone. Mr. J. W. Start, architect, Cups Chambers, Colchester.

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MANCHESTER.—July 13.—For the erection of a cash office and premises in Stockport Road, Levenshulme. Mr. J. M. M'Elroy, general manager, Tramways Department, 55 Piccadilly, Manchester.

MANNINGTREE.—July 21.—For alterations and additions to the Sunday schools. Mr. J. W. Start, architect, Cups Chambers, Colchester.

MORLEY.—July 14.—For pulling-down and rebuilding the Melbourne Mills, Morley, Yorks. Messrs. Buttery & Birds, architects, Queen Street, Morley.

MUCH HADHAM.—For the erection of a detached residence, &c., at Perry Green, Much Hadham, Herts. Messrs. Ansell & Ansell, architects, Harrow.

NEASDEN.—July 14.—For the erection of 1,649 feet lineal, or thereabouts, of brick wall, 10 feet in height, to the isolation hospital grounds at Dog Lane. Mr. O. Claude Robson, engineer to the District Council, Public Offices, Dyne Road, Kilburn, N.W.

NEWCASTLE-ON-TYNE.—For pulling-down and reconstructing boundary wall and other works at the cemetery, Westgate Road, Newcastle. Messrs. Liddle & Browne, architects, Prudential Buildings, Newcastle-on-Tyne.

NORTHUMBERLAND.—For the erection of new premises at Mickley, for the Mickley and District Social Club Company, Ltd. Messrs. W. Dixon & Son, architects, Union Buildings, St. John Street, Newcastle.

PADDINGTON.—July 13.—For painting, repairs, &c., at the North dispensary, Little Union Place, Lisson Grove, and the South dispensary, relief office, &c., East Street, W. Mr. A. Saxon Snell, architect, 22 Southampton Buildings, Chancery Lane, W.C.

PLYMOUTH.—For erection of five cottages at Steer Point. Messrs. Corderoy, Selby & Corderoy, 12 George Street, Plymouth.

PRESTON.—July 17.—For the erection of an abattoir for pigs, cattle market, Brook Street, Preston. Schedule of quantities and form of tender obtained at the office of the Borough Surveyor, Town Hall, Preston.

REIGATE.—July 15.—For extensions to the electric-lighting station near Wray Common Road. Mr. Fred. T. Clayton, borough surveyor, Municipal Buildings, Reigate.

ROCHDALE.—July 15.—For the erection of the Queen Victoria memorial in Vicarage Road, Rochdale. Messrs.

Woodhouse, Willoughby & Langham, architects, 100 King Street, Manchester.

ROTHERHITHE.—July 14.—For erection of four blocks of dwellings for the working classes on the Fulford Street area site, Rotherhithe. Mr. Fredk. Ryall, town clerk, Town Hall, Spa Road, S.E.

SCOTLAND.—July 13.—For the erection of additional fire exit and staircases, &c., at Ayr District asylum. Plans on application at Asylum to Medical Superintendent.

SCOTLAND.—July 15.—For setting back fronts and reconstructing two tenements in West Port, Edinburgh. Mr. Thomas Hunter, W.S., town clerk, City Chambers, Edinburgh.

SCOTLAND.—July 15.—For the reconstruction of Moore Street tripery, Glasgow. Mr. A. B. McDonald, city engineer, Office of Public Works, City Chambers, Glasgow.

SCOTLAND.—July 16.—For the erection of Springburn district library, Glasgow. Mr. W. B. Whitie, architect, 196 St. Vincent Street, Glasgow.

SCOTLAND.—July 16.—For the erection of a post office at Alexandria, Dumbartonshire. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Edinburgh.

SCOTLAND.—July 17.—For the erection of a refuse loading bank at Dundee Terrace, Edinburgh. Mr. R. Morham, city architect.

SCOTLAND.—July 17.—For rebuilding the United Free church at St. Cyrus. Mr. James Lyall, Roadside, St. Cyrus.

SCOTLAND.—July 17.—For the erection of new infant department at Larbert Village public school. Messrs. A. & W. Black, architects, Falkirk.

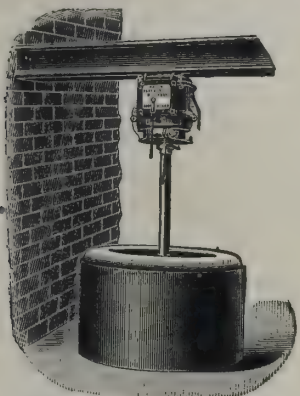
SCOTLAND.—July 18.—For the erection of Albion Road school, Edinburgh. Mr. Carfrae, architect, 3 Queen Street, Edinburgh.

SCOTLAND.—July 20.—For the reconstruction of portion of two-storey goods shed C, 416 feet in length by 75 feet in width at berth 10, north quay of centre basin, Prince's Dock, Glasgow. Mr. T. R. Mackenzie, general manager, 16 Robertson Street, Glasgow.

SEABROOK.—July 16.—For the erection of a petty sessional hall, reconstruction of the heating apparatus, and internal painting at Seabrook, Kent. Mr. Frederick W. Ruck, county surveyor, 86 Week Street, Maidstone.

SHREWSBURY.—Aug. 3.—For the erection of a covered cattle sale ring (walls of brickwork and slated roof). Mr. W.

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Chapple Eddowes, borough surveyor, The Square, Shrewsbury.

SHREWSBURY.—Aug. 4.—For the erection of station buildings and other works at Shrewsbury station, for the joint committee of the London and North-Western and Great Western Railway Companies. Mr. A. E. Bolter, secretary to joint committee, Paddington Station.

SMALLEBURGH.—July 18.—For alterations and additions to the laundry and the erection of new receiving wards and a disinfectant at the workhouse, at Smallburgh, Norfolk. Mr. John T. Lee, architect, 26 Great James Street, Bedford Row, W.C.

SOUTHEND-ON-SEA.—July 23.—For the erection of two houses for police officers at Westcliff, Southend-on-Sea. Mr. F. Whitmore, architect, Duke Street, Chelmsford.

SOWERBY BRIDGE.—July 14.—For additions to Calder Oilcloth Works, Sowerby Bridge, Yorks. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

STALYBRIDGE.—For the erection of a house, Norman Road, Thompson Cross. Messrs. Thomas George & Son, architects, Old Square, Ashton-under-Lyne.

STOKE-ON-TRENT.—July 16.—For the erection of an isolation hospital containing two pavilions, one for twelve beds and one for four beds, administrative block and laundry, &c., at Cheadle. Mr. F. T. Inskip, surveyor, Brookhouse, Cheadle.

SWADLINCOTE.—For general repairs and renovations at the Hastings Road Board school, Swadlincote, and for cleaning, painting, colouring, varnishing, &c., at the schools, Church Gresley. Mr. C. F. Underhill, architect, Bedford Chambers, Station Street, Burton-on-Trent.

TYNEMOUTH.—July 13.—For pulling-down and rebuilding premises in Front Street, Tynemouth. Mr. Wm. Hope, architect, Trinity Buildings, Newcastle-on-Tyne.

WAKEFIELD.—July 13.—For alterations at the sewage outfall works, Agbrigg. Mr. F. Massie, Tetley House, Wakefield.

WALES.—For the erection of two dwelling-houses on Parcmain building estate, Carmarthen. Mr. A. Soppitt, solicitor, Carmarthen.

WALES.—July 13.—For the erection of a new department to accommodate 400 girls at Mardy, together with a cookery kitchen. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

WALES.—July 13.—For the erection of an underground public convenience in North Road, Cardiff. Mr. W. Harpur, borough engineer, Town Hall, Cardiff.

WALES.—July 13.—For the erection of three additional classrooms at Abertillery to accommodate 170 children, with cloak-room, store-room, &c. Mr. R. A. Roberts, architect, Abercarn, Mon.

WALES.—July 13.—For the erection of a boys' department and for extending and improving the infants' department at Cwmpark school, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

WALES.—July 13.—For the erection of a dwelling-house, &c., below the site of the Caban dam in the Elan Valley, near Rhayader, Radnorshire. Mr. Edward Orford Smith, town clerk, Council House, Birmingham.

WALES.—July 13.—For the erection of a new physical laboratory to the school buildings in Bush Street East, Pembroke Dock. Mr. D. Edward Thomas, architect, Victoria Place, Haverfordwest.

WALES.—July 14.—For the erection of thirty-four houses at Bedlinog. Mr. P. Vivian Jones, architect, Hengoed.

WALES.—July 14.—For the erection of boundary walls for the extension of the Pant cemetery, Dowlais. Mr. T. E. Harvey, surveyor to the Urban District Council, Town Hall, Merthyr.

WALES.—July 15.—For the erection of a new hotel to replace the Ship Agrond, Porthcawl. Messrs. Cook & Edwards, architects, Masonic Buildings, Bridgend.

WALES.—Aug. 15.—For extensions and alteration of the Kidwelly Calvinistic Methodist chapel. Messrs. John Anthony & Sons, Anchor House.

WALES.—July 15.—For the erection of offices at Cefn Coed. Mr. R. C. Jenkins, architect, Cefn Coed.

WALES.—July 15.—For the erection of a pair of semi-detached cottages at Trelewis, Treharris. Mr. William Dowdeswell, architect, John Street, Treharris.

WALES.—July 16.—For the erection of a lodge at the sanatorium, Canton, Cardiff. Mr. W. Harpur, borough engineer, Town Hall, Cardiff.

WALES.—July 17.—For the erection of a Wesleyan church at Birchgrove, Whitchurch, near Cardiff. Mr. Edwin Seward, architect, Cardiff.

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WALES.—July 18.—For the erection of 20 houses at Aberbeeg. Mr. P. Vivian Jones, architect, Hengoed.

WALES.—July 20.—For the construction of masonry abutments, fence walls, and various street works in connection with the reconstruction and widening of various bridges over the Glamorganshire canal comprised in Contract No. 1; also for supply and erection of steel girders, flooring, &c., and other contingent works comprised in Contract No. 2, for the Pontypridd Urban District Council. Mr. J. Colenso Jones, clerk, District Council Offices, Pontypridd.

WALSALL.—July 16.—For the erection of new buildings at the workhouse, Pleck Road, Walsall. Mr. H. E. Lavender, architect, Bridge Street, Walsall.

WALTON-LE-DALE.—July 16.—For the erection of a church at Walton-le-Dale, near Preston, Lancs. Drawing and specification can be seen at the Vicarage.

WARRINGTON.—Aug. 17.—For rebuilding church, New-church, near Warrington. Messrs. Travers & Ramsden, architects, 44 Church Street, Leigh, Lancashire.

WHITEHAVEN.—July 22.—For the erection of a Sunday school, classrooms, &c., connected with Hogarth Mission, Whitehaven. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

WITHAM (ESSEX).—July 20.—For the erection of an engine-house, engine foundations, boiler-house and seatings, coal stores, chimney-shaft and water-tower. Mr. W. Bindon Blood, clerk, U.D.C., Witham.

"Holidays in Belgium and the Ardennes" is the title of a prettily illustrated brochure by Percy Lindley, which is being issued by the Great Eastern Railway. It is descriptive of inexpensive holidays, *via* Harwich and Antwerp, in Flanders and the Ardennes. A special feature has been made of the tinted illustrations, which are effective and artistic.

New Sunday schools in connection with the Independent Methodist church, Barton Road, Stretford, have been opened. The schoolroom provides accommodation for about 600, and there is a lecture-hall capable of holding about 250, besides nineteen vestries for classes. The total cost is 3,250*l*. Mr John Bowden was the architect.

TENDERS.

BARNESLEY.

For additions to girls' high school, Sheffield Road, Barnsley. Messrs. CRAWSHAW & WILKINSON, architects, 13 Regent Street, Barnsley.

Accepted tenders.

G. Rymer, Summer Lane, mason.
W. Goodyear & Son, Sheffield Road, joiner.
Dawber, Townsley & Co., Eastgate, slater.
B. Denison, Regent Street, South, plumber.
C. Dryden, Doncaster Road, plasterer.
Snowden & Son, Market Street, painter.

For street works in Havelock Street, Longcar Street and part of Westfield Street, and for the laying of sewerage work in Harrison Street. Mr. J. HENRY TAYLOR, borough surveyor.

G. F. BROWN, Park Road, Havelock Street, 375*l*; Longcar Street, 361*l*; part of Westfield Street, 229*l*. 17*s*.; Harrison Street, 45*l*. 11*s*. (accepted).

BRADFORD.

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For the erection of a shop and house, High Street, Great Horton, Bradford. Mr. SAM SPENCER, architect, Old Bank Chambers, Great Horton, Bradford.

Accepted tenders.

O. Booth & Son, Great Horton, mason.
J. Patchett & Son, Clayton Heights, joiner.
Berry & Crabtree, Great Horton, plasterer.
H. Gornall, Great Horton, plumber.

For the erection of school premises for special classes, with cookery and laundry over, in Usher Street.

Accepted tenders.

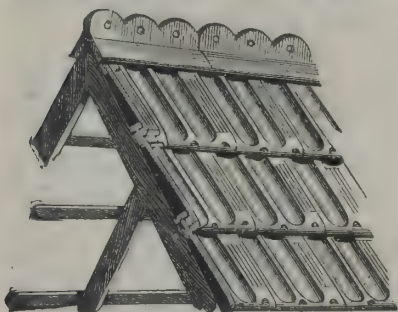
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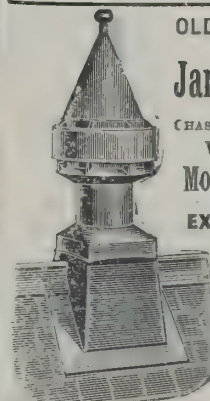
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G. Trentham	348 0 0
A. C. Hughes	334 0 0
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R. Cook & Sons	12,876 0 0
J. Longley & Co.	12,489 0 0
Rowland Bros.	11,989 0 0
KIRK & RANDALL, Woolwich (accepted)	10,933 0 0

For the erection of eight five-roomed artisans' dwellings in Elm Grove. Mr. F. J. C. MAY, surveyor.

J. & W. SIMMONDS, Ashford Road, Brighton (accepted)	£2,552 0 0
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CANNOCK.

For the construction of a road bridge over Goldie Brook, Saredon. Mr. HERBERT WHITEHEAD, surveyor, Penkridge, near Stafford.

F. Sprenger	£482 0 0
F. Williams	475 0 0
J. C. NEVITT, Stafford (accepted)	431 16 0

CLAYTON.

For the erection of a nurses' home at the workhouse, Clayton, Yorks. Mr. SAM SPENCER, architect, Old Bank Chambers, Great Horton.

Accepted tenders.

O. Booth & Son, mason.
S. Benn, joiner.
T. Nelson & Son, slater.
J. C. & A. Sunderland, plasterer.
W. & H. Pickles, plumber.
C. Jagger, painter.

CLECKHEATON.

For the construction of a new road from Whitcliffe to White-chapel Road, 500 yards in length, Cleckheaton. Mr. C. LUND, surveyor.

J. SLINGER & Co, Cleckheaton (accepted).
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DEVONPORT.

For the erection of a boundary wall to land adjoining the workhouse. Mr. EDGAR M. LEEST, architect, 14 St. Aubyn Street, Devonport. Quantities by Messrs. LEEST & ADAMS, Devonport.

R. H. B. Neal	£699 0 0
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G. H. SMITH & SON, Devonport (accepted)	499 15 0

GOLCAR.

For the erection of dwelling-houses and additions to building at Golcar, Yorks. Mr. ARTHUR SHAW, architect, Golcar.

J. Haigh, Golcar, mason.
J. Crowther, Wellhouse, joiner.
T. Allison, Ltd., Milnsbridge, plumber.
Pickles Bros, Huddersfield, slater.
W. Armitage, Golcar, plastering and painting.

HUDDERSFIELD.

For additions to stables, &c., in St. Thomas's Road. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

M. S. & J. Crowther, Birkby, Huddersfield, mason.
F. Maffin & Co, Huddersfield, joiner.
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For Index of Advertisers, see page x.



HEATON MERSEY.

For the erection of pumping station, screening wells and sewage filters at Heaton Mersey. Mr. WALTER BANKS, A.M.I.C.E., surveyor.
GREIG & STAFFORD, Stockport (accepted) . £3,310 8 7

HUNSLET.

For staining and varnishing the floors at the new workhouse at Rothwell Haigh.

A. G. Newton	£193 7 0
RONUK, LTD., Manchester (accepted)	59 17 1
C. H. Wales & Son	55 5 0
C. Hirst	55 5 0
J. Wilks	48 6 10
W. Pinder	46 0 10
A. B. Dykes & Son	41 8 9
T. G. Towers	36 10 8
A. Brett	35 5 0
E. Jones	25 0 0

ILFORD.

For supply of machinery and tools in connection with the electric tramways.

W. NEWBOLD & CO, London (accepted) . £384 5 0

IRELAND.

For the erection of a dwelling-house, shop and out-offices at Muckamore, co. Antrim. Mr. F. W. LOCKWOOD, architect, Belfast.

Kidd	£1,386 0 0
Armstrong	1,350 0 0
McClughin	1,310 0 0
Kerr	1,249 15 0
McCann	1,220 0 0
Frew	1,200 0 0
Barton	1,150 0 0

KETTERING.

For street works on the Headlands and London Road building estate, Kettering. Messrs. GOTCH & SAUNDERS, surveyors, Kettering.

F. Barlow	£2,649 0 0
W. G. Willmott	2,543 0 0
LEWIN & SON, Kettering (accepted)	2,496 0 0
Goodman & Murkett	2,490 0 0

LANCHESTER.

For the erection of house and smithy in Ford Lane, Lanchester. Mr. THOMAS E. TAYLOR, architect, Prospect House, Lanchester.

WARD & WALTON, Lanchester and Medomsley (accepted) . £312 10 0

LONDON.

For street works in Rowhill Street (Lower Clapton Road) and Swinnerton Street (southward from Mabley Street). Mr. N. SCORGIE, borough engineer.

Rowhill Street.

C. W. Killingback & Co.	£870 6 6
T. Adams	723 0 0
Grounds & Newton	713 1 11
W. Griffiths & Co., Ltd.	660 17 0
G. PORTER, 2 Arthur Street, Well Street, Hackney, N.E. (accepted)	635 17 5

Swinnerton Street.

C. W. Killingback & Co.	276 10 9
T. Adams	236 1 9
Grounds & Newton	235 8 5
W. Griffiths & Co., Ltd.	222 19 8
G. PORTER (accepted)	219 0 8

For works in reinstating lairage, &c, on the site of the old basin at the Foreign Cattle Market, Deptford.

SPENCER, SANTO & Co. (accepted) . £2,626 0 0

For additions to Ealing Park laundry. Mr. J. HUME, architect and surveyor.

W. Field	£472 10 0
J. Johnson	470 0 0
R. A. Scutt	450 0 0

For alterations and additions to villa residence, Sans Souci, Gunnersbury. Mr. J. HUME, architect, Chiswick.

Speechly & Smith	£497 0 0
Prince Bros.	451 10 0
D. D. Neath	449 0 0

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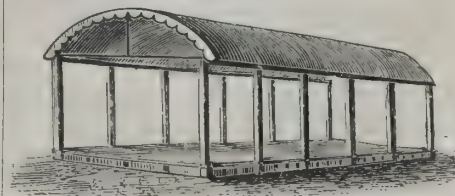
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LUTON.

For street works in Cowper Street, Hoo Street, Cambridge Street, Ashburnham Road and Lyndhurst Road. Mr. A. J. L. EVANS, borough surveyor.

G. Powdrill	£251	2	6
Free & Sons	248	0	0
VICTORIA STONE CO., Bishopsgate Street, London, E.C. (accepted)	231	10	8

Cowper Street.

Free & Sons	293	5	0
G. Powdrill	275	0	0
VICTORIA STONE CO. (accepted)	274	14	0

Hoo Street.

G. Powdrill	188	10	8
Free & Sons	186	14	5
VICTORIA STONE CO. (accepted)	174	19	5

Lyndhurst Road.

G. Powdrill	478	0	0
Free & Sons	469	7	5
VICTORIA STONE CO. (accepted)	443	19	5

Ashburnham Road.

G. Powdrill	532	10	0
Free & Sons	530	9	0
VICTORIA STONE CO. (accepted)	495	7	6

NEWARK.

For rebuilding the bridge over the Witham on the road leading from Bassingham to Thurlby. Mr. C. D. M. TRINDER, surveyor, Brant Broughton, Newark.

G. MARTIN, Norton Disney, Newark (accepted) . £280 0 0

NEWBURY.

For the erection of chemical and physical laboratories, lecture-room and workshop at St. Bartholomew's Grammar school. Mr. W. H. BELL, architect, Market Place, Newbury.

Brazier	£880	0	0
Chivers	863	0	0
Bastin	862	10	0
Musselwhite & Son	853	0	0
G. Head	842	0	0
EEMS & SONS, Pound Street, Newbury (accepted)	829	0	0

OXENHOPE.

For the erection of a house at Oxenhope, Yorks. Mr. THOMAS W. BOTTOMLEY, architect, 16 Prince Street, Haworth.

Accepted tenders.

W. Wright, Oxenhope, joiner.	
F. Row, Oxenhope, plumber.	
G. Holmes, plasterer.	
W. Thornton, Bingley, slater.	
Total £220.	

OXFORD.

For the erection of cricket pavilion for Merton College. Mr. HERBERT QUINTON, architect, 22 George Street, Oxford.

J. Peattie	£1,328	0	0
J. Parnell & Son	1,070	0	0
Mc. E. Fitt	897	0	0
Brucker Bros.	885	10	0
J. Wooldridge	854	0	0
SYMM & Co., Oxford (accepted)	777	0	0

PARKESTON.

For the furnishing of the schools at Parkeston, near Harwich. Mr. J. W. START, architect, Colchester.

W. Chambers	£409	10	0
Shannon, Ltd.	399	13	6
London School Furnishing Co.	339	6	6
W. C. Theobald	329	0	0
Fisher, Son & Weaver	317	0	0
North of England School Furnishing Co.	309	0	0
Bennett Furnishing Co.	256	15	4
G. E. HAWES, Norwich (accepted)	290	0	0
Wake & Dean	288	0	0

PONTEFRACT.

For the construction of the ferry bridge drainage and sewage-disposal works. Mr. JOHN WAUGH, engineer, Sunbridge Chambers, Bradford.

Wilson & Sons	£8,282	0	0
Coupland & Co.	6,731	0	0
Sugden	5,999	0	0
Rhodes & Crabtree	5,965	0	0
Sutcliffe	5,785	0	0
Ward & Tetley	5,750	0	0
Clements & Rothera	5,501	0	0
Dickinson	5,467	0	0
IVES & Co., Gomersal (accepted)	5,400	0	0

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322 Fawcett Road, SOUTHSEA.

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Chapel Street, St. Philips Marsh.

ROCHDALE.

For the erection of car-shed at Bridgefold. Mr. S. S. PLATT, borough surveyor.
W. A. PETERS & SONS, Crossfield, Rochdale (*accepted*).

ROCHESTER.

For repair to buildings and greenhouses at St. Margaret's cemetery. Mr. W. T. CALLUND, surveyor, 2 South Avenue, Rochester.

J. A. LEONARD, Acorn Works, Rochester (*accepted*) £95 0 0

SHEFFIELD.

For the erection of University College, Sheffield. Messrs. GIBBS & FLOCKTON, architects, 15 St. James's Row, Sheffield.

W. Hopkins £105,500 0 0
G. Carr 70,610 0 0
Willcock & Co. 68,000 0 0
J. Hutchinson & Son 67,790 0 0
Hodson & Son 65,599 0 0
T. Roper & Sons 65,095 0 0
Armitage & Hodgson 64,781 0 0
J. Eschelby & Son 64,300 0 0
Dawson & Jones 63,370 0 0
G. Longden & Son, Ltd. 61,542 0 0
Ash, Son & Biggin 61,180 0 0
Watt Bros. 61,063 0 0
Shillito & Son 61,000 0 0
J. FIDLER, Sheffield and Eckington (*accepted*) 60,500 0 0

SKELMANTHORPE.

For the erection of a dwelling-house in Commercial Road, Skelmanthorpe, Yorks. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

H. Lodge, Skelmanthorpe, mason.
G. Taylor & Sons, Shelley, joiner.
J. H. Thornton, Skelmanthorpe, plumber.
J. Hallas, Clayton West, plasterer.
G. Lindley & Sons, Shepley, painter.
G. Beard & Son, Thurlstone, slater.

SOWERBY BRIDGE.

For street works in Clay Street.

BELLFIELD & BARNES, Lord Street (*accepted*).

STOWMARKET.

For alterations and additions to the union house and laundry and drainage scheme. Mr. JOHN S. CORDER, architect, Wimborne House, Tower Street, Ipswich.

W. G. Porter £5,716 0 9
Scales & Robins 4,850 9 0
Murray & Sherwin 4,453 0 0
A. Plummer 4,451 0 0
H. Potter 4,305 0 0
W. THEOBALD & SONS, Needham Market
(*accepted*) 4,128 0 0

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For painting and papering 18 cottages at Stanton.

J. Eamer £136 17 6
T. Turner & Son 111 0 0
A. Harvey 99 15 0
A. Staley 95 0 0
W. Tebbett 92 10 0
C. Jones 88 10 0
Whillock & Gratton 85 19 3
J. A. Wakefield 79 16 0
A. Holmes 75 19 4
G. W. Mason 72 0 0
A. Brown 70 10 0
I. HOON & SON, Church Gresley, Burton-on-Trent (*accepted*) 61 4 0

SWINTON.

For sinking a well, 9 feet diameter, about 60 feet deep, in a field near the Midland Railway. Mr. R. FOWLER, surveyor.

E. THOMPSON, Crosshall Gate, Mexborough, near Rotherham (*accepted*) £185 10 0

UCKFIELD.

For carrying-out alterations to the sewerage works at Uckfield, Sussex. Mr. THOMPSON, surveyor.

J. Jackson £858 2 5
E. H. King 583 16 8
G. G. RAYNOR (*accepted*) 523 8 11

UXBRIDGE.

For the erection of a store and cart-shed and fence walls on land adjoining the waterworks, Waterloo Road. Mr. WILLIAM L. EVES, surveyor, 54 High Street, Uxbridge.

S. PRATT, Uxbridge (*accepted*) £184 0 0

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W. Thomas & Co.	£275,297	19	5	
Stephens, Bastow & Co.	264,997	0	3	
Lloyd Bros.	263,376	0	0	
Turner & Sons	244,222	0	0	
M'Cormick & Sons	242,787	0	0	
J. Allan	238,516	18	11	
D. W. Davies	237,750	0	0	
W. Williams	233,990	0	0	
H. Willcock & Co.	233,028	0	0	
W. KING & SONS, Westminster	232,390	0	0	(accepted)

WATFORD.

For laying about 1,480 yards 15-inches diameter earthenware sewer and storm-water drain, 1,140 yards 12-inches ditto, with manholes, iron pipes, &c.				
E. Iles, jun.	£4,724	6	10	
A. B. Champniss	3,480	13	0	
Bracey & Clark	2,880	0	0	
Leslie & Co.	2,832	0	0	
J. Dickson	2,686	5	0	
T. Free & Sons	2,619	13	3	
G. G. Raynor	2,378	10	0	
H. BROWN, Whippendell Road, Watford	2,297	0	0	(accepted)

WIMBLEDON.

For street works in Albany Road, Rosevine Road, Tolverne Road, Trewince Road. Mr. C. H. COOPER, surveyor.

E. ILES, jun., 54 North Road, Wimbledon, S. W. (*accepted*)—Albany Road, £209; Rosevine Road, £534; Tolverne Road, £516; Trewince Road, £512.

YORK TOWN.

For the erection of twelve cottages, Alexandra Avenue, York Town, Camberley, Surrey. Mr. W. J. HODGSON, archi- tect, Vectis, Camberley.				
F. Chinchin	£3,200	0	0	
W. W. Gale	2,994	0	0	
J. KNIGHT, Camberley	2,580	0	0	(accepted)
G. Taylor	2,565	0	0	

Received too late for Classification.

DEVON

For additions to the master's residence for the Paignton School Board. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton.				
H. DREW, Paignton (accepted).				
For additions to Hele Paper Works, for the Hele Paper Com- pany. Mr. CHAS J BULGIN, architect, City Chambers, Exeter. Quantities by Mr. VINCENT CATTERMOLLE BROWN, of Paignton				
Geo. Setter	£3,700	0	0	
Labdon & Sons	2,363	10	0	
N. Pratt	2,325	0	0	
NICKS BROS., Bradninch	2,030	6	0	(accepted)

PAIGNTON.

For alterations and additions to stables at Primley, for Mr. H. C. Belfield. Messrs. BRIDGMAN & BRIDGMAN, archi- tects, Torquay and Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.				
G. Webber	£1,375	0	0	
C. & R. E. Drew	1,350	0	0	
H. Webber & Sons	1,328	0	0	
E. Westlake	1,230	0	0	
H. DREW, Paignton	1,220	0	0	(accepted with modifica- tions)
For painting and decorative work at Primley, for Mr. H. C. Belfield. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton.				
THOMAS & CO., Paignton	£325	0	0	(accepted)
For drainage and sanitary works at Cross Cottages, for Mr. H. C. Belfield. Messrs. BRIDGMAN & BRIDGMAN, archi- tects, Torquay and Paignton.				
C. & R. E. DREW, Paignton (accepted).				
For the formation of new roadway, &c, for the estate of Mr. H. C. Belfield. Messrs. BRIDGMAN & BRIDGMAN, archi- tects, Torquay and Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.				
R. Harris	£495	0	0	
G. Webber	472	0	0	
H. Webber & Sons	461	0	0	
H. DREW, Paignton	445	0	0	(accepted)

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WINDOW, CA D'ORO PALACE, VENICE.

PAIGNTON—continued.

For new Sunday-school premises for the Baptist church. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.

R. HARRIS & SON, Paignton (*accepted*) . . . £541 0 0
Lowest of four tenders.

TEIGNMOUTH.

For new Congregational schools. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.

G. H. Marshall	£3,530	0	0
S. Blatchford	1,850	0	0
J. Mumford	1,849	0	0
H. Mills	1,815	0	0
F. C. Francis	1,795	0	0
E. Andrews	1,750	10	0
J. J. HAYMAN, Teignmouth (<i>accepted</i>)	1,745	0	0

For dwelling-house at Crosspark, for Mr. S. Lane. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton.

F. C. FRANCIS, Teignmouth (*accepted*) . . . £490 0 0
Lowest of four tenders.

TORQUAY.

For new steam bakery premises for the Torquay Co-operative Society, Limited, Central Premises, Union Street. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.

JOHN MUMFORD, Torquay (*accepted at schedule prices*).

NEW CATALOGUE.

MESSRS. ROWLAND, CARR & Co. have sent us a copy of their new illustrated catalogue of cast and wrought-iron stairs. It is a handsomely got-up volume, and abounds in designs for simple and elaborate stairs, handrails, balustrades, newel posts, &c., some of them being of considerable grace and attractiveness. A large proportion of the designs are, however, for fire-escape staircases adapted for hospitals, lunatic asylums, work-houses, factories, stores, theatres, &c. These, while for the most part of the utmost simplicity, are eminently practical and economical alike of cost and space.

TRADE NOTES.

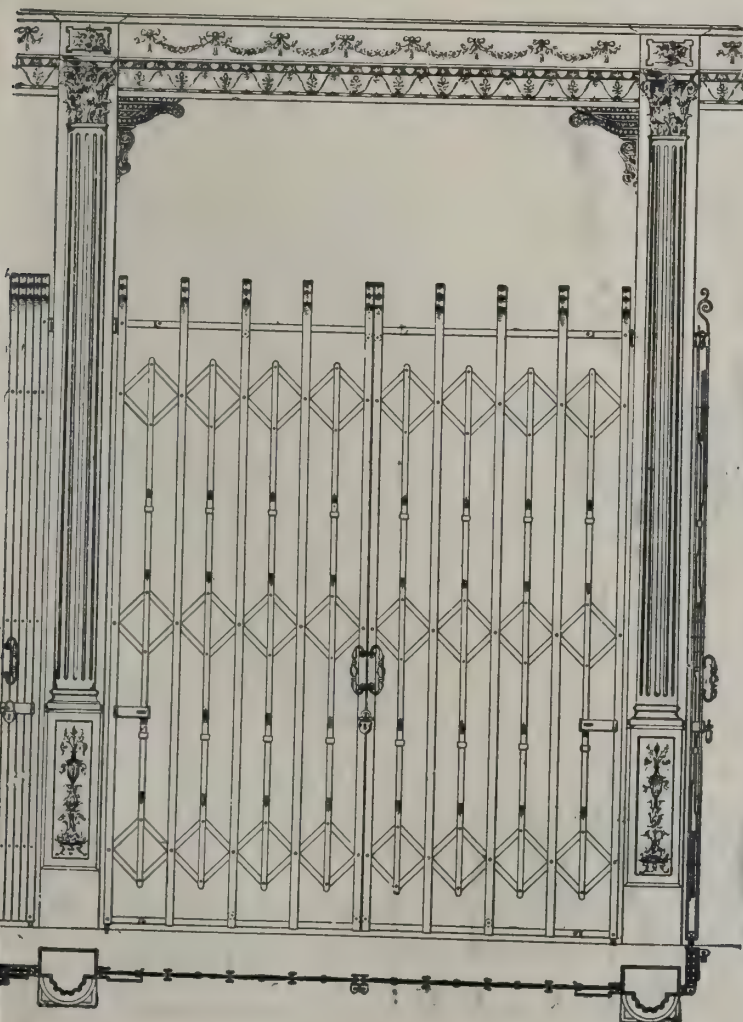
KEIGHLEY parish church, Yorks, is to have a new clock and chimes. Messrs. Wm. Potts & Sons, clock manufacturers, Leeds, have the work in hand, and it is to be completed at an early date.

THE new drill-hall at Chelmsford, which was opened on Saturday last by Lord Roberts, has been glazed with glass 10 feet 3 inches long by 24 inches wide, and for this purpose Messrs. Sam Deards', Ltd., special strong glazing bar, galvanised and lead covered, was adopted.

THE British Steam Specialties, Ltd., in addition to their head-office at Leicester, have opened showrooms and stores, &c., at 73 Farringdon Road, London, E.C., for their well-known specialties, and also for the sale of the plumbing, wood and other goods of the Exhibit and Trading Company.

THE mosaic in the entrance to the Ulster Hall, Belfast, into which is introduced the Belfast coat-of-arms, was laid by Messrs. Diespeker, Ltd. (formerly Diespeker & Co.), Bath House, 57-60 Holborn Viaduct, for Messrs. Young & Mackenzie, architects, Belfast. Messrs. Diespeker are also laying the mosaic in Purdysburn asylum, near Belfast, for Messrs. Graeme, Watt & Tulloch, architects, both these contracts having been secured in competition.

THE fifty-second annual report of the Birkbeck Building Society shows that the surplus profit on the year's working after writing off all ascertained losses is 21,197*l.* 7*s.* 3*d.*, which, added to the previous year's total of 308,576*l.* 6*s.* 6*d.*, makes a sum of 329,773*l.* 13*s.* 9*d.*; of this amount the directors have placed 25,000*l.* to the permanent guarantee fund, raising such



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fund to 250,000*l*, the whole of which is invested in Consols. These funds together amount to 554,773*l*. 13*s*. 9*d*.

It is interesting to note in connection with the Gordon-Bennett Cup race that the tents occupied by the timekeepers and route guardians were supplied by the Willesden Paper and Canvas Works, Ltd., and also that the flags—triangular and square—having direct signalling significance were made of Willesden paper. This latter was necessary owing to the curling propensities of ordinary bunting. Willesden canvas was also much in evidence in connection with car covers, &c.

ELECTRIC NOTES.

PROVOST MURCHLAND has received intimation from London that the King has given the Royal assent to the Electrical Lighting Bill promoted by the Corporation of Irvine. The order provides, amongst other things, for the lighting of the streets in the burgh by electricity.

AT a meeting of the electric-lighting committee of the Arbroath Town Council a report was submitted which showed that the cost of laying the electric light in the compulsory area under the provisional order would be 20,000*l*, and that at the end of two years it would be optional on the part of anybody outside the compulsory area to apply for its extension, which would make the cost 40,000*l*. It was moved that for financial reasons, and in the prospect of the introduction of a large scheme of water supply, the best possible terms be arranged with a company for carrying through the work. As an amendment it was moved that sectional offers be obtained before a definite conclusion was come to. The motion was carried by a majority.

THE new electricity-generating station erected by the Oldham Corporation at Greenhill, in the centre of the borough, has been formally opened. The estimated cost of the works is from 156,000*l* to 157,000*l*. The first station was erected by the Corporation in 1892, and four years later found enlargement necessary. In 1900 power was needed for the tramway service, as well as further power owing to the growth of the general demand for electricity, and the site at Greenhill, with a superficial area of 112,700 feet, was obtained. The plant installed in the engine-room at present totals 6,000 horse-power, and without additional buildings it will be possible to add another 4,800 horse-power. When required, it is proposed to add

a third bay to the engine-room to contain four 2,500 horse-power sets, while if the buildings are extended according to the present proposals, the total capacity of the complete station will be approximately 20,000 horse-power, the whole of the site being then utilised.

A MEETING of the electric-supply committee of the Birmingham City Council was held on Wednesday at the Council House, under the presidency of Mr. G. H. Johnstone, to select a candidate for recommendation to the City Council for appointment as city electrical engineer in the place of Mr. J. C. Vaudrey, who has resigned. Originally there were seventy-nine applicants for the office, to which is attached a salary of 1,000*l*. a year. A sub-committee reduced the number of candidates to eight, who were interviewed, and four were selected to come before the full committee. These four were Mr. Victor A. H. McCowen, Belfast; Mr. Francis Thursfield, Chester; Mr. R. A. Chattock, Bradford; and Mr. A. S. Giles, Blackburn. These gentlemen had an interview with the committee, and as a result it was unanimously resolved to recommend the Council to appoint Mr. R. A. Chattock, a local man, the son of Mr. R. S. Chattock, the well-known artist.

BUILDING AND BUILDERS.

THE new English Presbyterian chapel at Holywell was opened on Wednesday. It has been built at a cost of 3,000*l*.

THE foundation-stones were laid on Saturday of a new Wesleyan chapel, to seat 680 people and to cost 4,000*l*, in High Park, Southport.

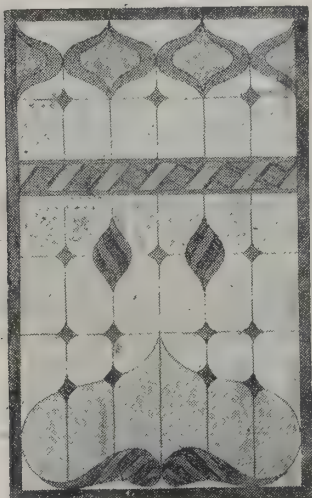
PROVISIONAL arrangements have been completed for the erection of new fire stations in Kilburn, Bayswater and Eltham.

THE ancient church at Bassaleg (Mon.) is undergoing thorough restoration, the cost of the entire work to the nave and aisles being defrayed by Lord Tredegar.

THE foundation-stone has been laid of a new church at Grangetown, Yorks. It will be of Gothic design, 108 feet in length, 50 feet in width and 47 feet in height. There will be seating accommodation for 600 people.

OWING to the refusal of the Wood Green Council to pass plans of the Artisans, Labourers and General Dwellings Company, which are not in accordance with the by-laws, no fewer than 300 men have been deprived of employment. The

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councillors argue that the company know what the by-laws stipulate, and, while being sorry for the men, they have no power to sanction plans which do not comply with the requirements.

On the 1st inst the foundation-stone was laid of a new Free Methodists' chapel which is in course of erection in Portland Street, Lincoln. The new building, which will be of brick with stone dressings, is to be both longer and wider than the present one, and seating accommodation will be provided for 320, compared with 200 in the school chapel now in use.

At a meeting held recently in Manchester a committee was appointed to deal with the question of holding a Manchester international exhibition in 1905, the meeting having first resolved that such an exhibition was desirable. Circulars have been sent out on the matter, and when the replies have been received they will be laid before the Lord Mayor with a request to him to call a town's meeting to consider the question.

SCHEDULES are now being prepared for the work in connection with the erection of new post office buildings at Alexandria, N.B. About three years ago a site was secured between the Constitutional Club buildings and the railway, but for monetary reasons the Post Office authorities delayed proceeding with the work. Now that it has been decided to get tenders for the job, it is not expected there will be much further delay.

SOME discussion took place at a recent meeting of the Dundee Town Council on a scheme to improve the central washhouses at a cost of 1,200/, proposed to be taken from the Common Good. Treasurer Ritchie objected to the expenditure, stating that the Common Good was already overdrawn to the extent of 2,000/, that the proposed expenditure would unbalance the finances, and that the system of mortgaging the Common Good meant that they had to pay overdraft interest. Various members stated that the Common Good had often been used for purposes not nearly so useful to the community at large, and that, indeed, the money had sometimes been frittered away. By thirteen votes to nine it was decided that the proposed expenditure should be made.

THE first contract in connection with the new naval establishment on the Firth of Forth, which has been entrusted to Messrs William Bain & Co, Lochrin Ironworks, Coatbridge, is for the erection of a suite of offices for the Admiralty staff, who will supervise the extensive works that have to be carried

out. The buildings, although substantial, will be of a temporary character. They are to be of one storey, and consist of a timber framework covered with corrugated iron and resting on the ordinary concrete foundation. The premises comprise drawing office, surveyors' and civil engineering rooms and other departments. Detached from the group of offices is the caretaker's house, which is to be similar in construction. The offices will be heated in the winter with stoves. A feature of the construction will be the use of uralite for lining the inside of the erections. This substance is thoroughly fire-proof, and is applied in the form of a lining of thin slabs. The new buildings will cost several thousand pounds. A representative of the firm has visited the ground to make the preliminary arrangements. It is understood that the material is already in course of preparation at the Lochrin Ironworks, and that the erection of the offices will soon be commenced. Several West of Scotland companies are offering for the construction of a branch railway line to St. Margaret's Hope.

IN February last competitive designs for a Baptist church and schools in High Street, Ilford, were received by the committee, who, after mature deliberation and on expert advice, have selected the design submitted by Messrs. G. & R. P. Baines, architects, 5 Clement's Inn, Strand, London, W.C., for the premium. Circumstances have transpired since the competition was promoted which prevent the committee from proceeding at once to build, and the matter is therefore postponed for the present. The selected design provides for a church to seat about 860 adults, with the usual vestries, &c., and a school with large central hall, with many classrooms opening into it, divided by swivel partitions, seniors and infants' classrooms, kitchen, &c., all on the most recent model plan. The whole scheme is estimated to cost upwards of 8,000/. The style is Perpendicular. The buildings are to be faced with red bricks with Bath stone dressings.

THE foundation-stones of the Wesleyan chapel at Finedon have been laid. The building, which is expected to be completed for opening next Easter, is designed to seat about 550 persons, 450 on the ground floor and 100 in an end gallery. The style of architecture is Early English. The plan is cruciform, with nave, side transepts and chancel. The choir will be in the chancel, and behind the choir will be the organ chamber. The minister's vestry and choir vestry are to be at the side, in proximity to the choir. The church will be entered by an open porch leading into a large vestibule, and on either side there will be inner lobbies containing the gallery

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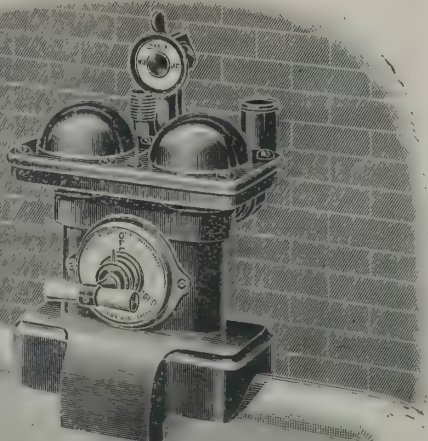
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staircases. Separate entrances are provided at the back for the minister and choir, and a cloak-room is also provided at the front entrance. The dressing-room and all the stonework will be in Bath stone. Externally the walls will be faced with Skelford pressed bricks, whilst the roofs will be covered with green slate. Internally the walls will be plastered, the wood-work being of pitch-pine, with wood-block floors. The stone traceried windows will be glazed with tinted glass of special design in leads and moulded stonework in strings. The paving to the vestibule and inner lobbies will be in mosaic. The contract has been let to Mr. R. Marriott, of Rushden, at 2,800*l*, and the architects are Messrs. H. H. Dyer, Son & Winterburn, of Northampton and Leeds.

VARIETIES.

ST. ANDREW'S, Frogna, Hampstead, a new Presbyterian church, was dedicated on the 4th inst.

THE new Prospect Hill Presbyterian church, Walthamstow, is being erected under the supervision and from the designs of Mr. J. Williams Dunford, of 1000 Queen Victoria Street, London.

MR. SELBY, architect, of 44 Chancery Lane, announces that he has taken Mr. A. V. Kislingbury into partnership, and that the practice will be carried on in future under the title of Selby & Kislingbury.

THE Southwold Town Council has, we hear, decided to make inquiries as to the powers of the Corporation to manufacture bricks for sale, with a view to starting such an enterprise.

THE Lord Mayor of Manchester (Councillor Royle) on Saturday afternoon opened the new schools in connection with the Upper Moss Lane Primitive Methodist church, Hulme. The schools provide accommodation for 750 scholars, and their cost is 4,000*l*.

THE new Wesleyan church at Girvan, which has been erected at a cost of 2,640*l*, and is seated for 430, has been formally opened. It is situated on a fine site in a central position in the town, and has a vestry and classrooms and all modern conveniences.

THE International Fire Prevention Congress having sent a telegram to the King, Lord Knollys has replied that His Majesty trusts the deliberations will lead to a further develop-

ment as to the best means to be adopted in regard to the prevention of fire and to the saving of life in cases of fire.

THE Society of Estate Clerks of Works, which embraces branches in different parts of the country, held its annual summer meeting in Liverpool and district. On Tuesday the members visited Knowsley, where, at the invitation of Lord Derby, they had lunch, after which there was a ramble through the village, with an inspection of the parish church. On Wednesday the party, numbering about ninety, went through the Liverpool docks, and also the offices of the Dock Board, whilst a visit was made to St. George's Hall. In the afternoon the Lord Mayor (Mr. W. M. Rutherford, M.P.) received them at the town hall and provided tea, the rooms of the building being thrown open for them to inspect. Later in the day the party proceeded to the Canada dock, and were conducted through the White Star liner *Celtic*. Yesterday's programme, which concluded the meeting, embraced visits to Speke Hall and Port Sunlight. The president of the Society is Mr. J. Leslie, Knowsley.

AT Preston, on Wednesday, Lieut.-Colonel Smith, R.E., held an inquiry into the application of the Lancashire Inebriates Acts Board for sanction to borrow 60,000*l* for the purposes of an inebriates' home for females at Langho, near Blackburn. Mr. Clare, clerk to the County Council, explained the scheme. Buildings had already been erected to accommodate 112 women, and without any further expenditure on administrative buildings the accommodation could be doubled. Statistics proved that there were a far greater number of habitual female than male inebriates coming before the courts of law. It was therefore decided to commence building a reformatory for women without delay. At present the county had twelve male and ninety-three female inebriates in other homes. The male and female blocks would be 400 yards apart, and the total cost of the female reformatory, including twelve houses, a chapel, sewage and other arrangements, would be 73,418*l*. Three hundred and twenty acres of thickly wooded land had been purchased at a cost of 17,500*l*, the average cost being 52*l* per acre. The land was well watered, very private, and was eminently suited for the purposes of an inebriates' home. The drainage would cost 4,000*l*, but this work had not been completed.

THE new police buildings at North Walsham were formally opened on the 30th ult. The commodious building, which is situate on the Yarmouth Road, has been erected by the County

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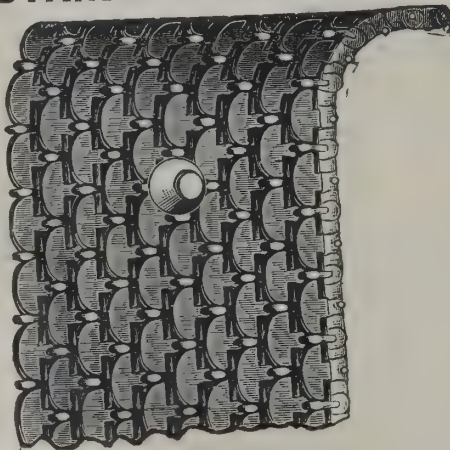
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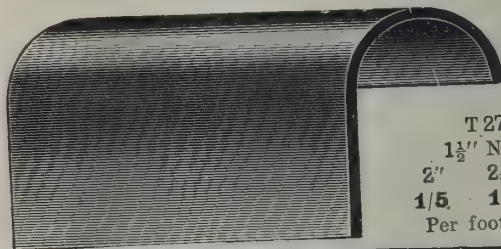
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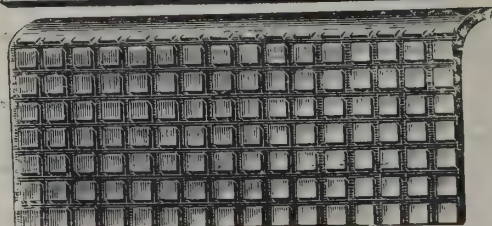
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Council at a total cost of 4,400*l.*, exclusive of the land. The whole enclosure is screened off from the road by railings mounted upon a dwarf wall. To the left, in a single block, are the residences of the police superintendent and a sergeant. To the right stands the court-house, a substantial building in red brick, with stone window dressings, and a round-headed doorway of white stone for the main entry. Passing through this portal, one finds, on his right and left respectively, rooms for witnesses and solicitors; then comes the police-court proper, with a suite of retiring-rooms for the magistrates, and further back lie the stables and the cells. The flooring is of wood blocks, upon which at one end is a low platform to accommodate the seats of the magistrates and the table of the magistrates' clerk, who has the witness-box upon his right. Immediately below the clerk are a couple of tables for counsel. Further along is a 'capacious dock, with a deck' for the gaoler, and behind the dock are three or four rows of benches for the general public. The contractors for the work are Messrs. Youngs & Son, of Norwich, who carried out the design under the supervision of Mr. T. H. B. Heslop, the county surveyor.

THE church of St. Nicholas Overstone, Northants, has just undergone a very complete restoration undertaken at the expense of Lady Wantage, who has evinced the utmost interest in its progress. The church, which is pleasantly situated, was built in the year 1803 without any regard to architectural treatment either externally or internally, and consisted of a tower, nave (with gallery at the west end), a small chancel and vestry. The present alterations and additions, which have been carried out in an excellent manner, consist of a south aisle, organ-chamber, vestry and porch. The tower, which was much dilapidated, has been reroofed and new battlements and windows provided; the bells have been rehung with an addition of one; the lower portion of the tower now forms a baptistery; a new chancel arch in stone has been substituted for the old plaster arch and brought a distance of 3 feet into the nave to enlarge the chancel and to give the required accommodation for the choir, and the original plaster ceiling and cornice in the chancel have been replaced by a new ceiling divided into panels with moulded oak ribs and carved bosses. The reredos, altar-rail, prayer-desk and choir-stalls are all in fine wainscot oak, and selected pitch-pine has been used for the seating of the nave and aisle. The glazing throughout, with the exception of a portion of the east window of the chancel, in which has been reset some very old German stained glass, is entirely new, and the chancel, baptistery, aisle

and porch have been paved with terrazzo marble mosaic, wood-block paving being used in the organ-chamber, vestry, &c. A new heating apparatus has also been provided.

FIXING STONE SKIRTINGS.

A PATENT has been granted to Mr. William Ford Stanley, of Cumberlow, South Norwood, in the county of Surrey, engineer, for improved means for fixing stone skirtings to the walls of buildings. The object of the invention is to provide means for more perfectly securing stone skirtings to the walls of buildings than heretofore. Each piece of the skirting is grooved at each end, and into this groove a metal tongue is fitted. For straight joints this metal tongue is of the width of the two grooves abutting, and when the stone, slate or marble skirtings are fitted thus together the metal tongue is not seen. Upon the wall of the building in a position where each joint takes place a metal plate is fixed, and the skirtings are screwed to this metal plate by means of a screw or screws passing through the metal tongue, and in this case the metal plate fixed into the wall is flat. For an exterior angle the metal tongue is curved so as to enter both ends of the stones which form the skirtings perpendicularly, and screws are passed through this curved tongue into the angle piece of metal to firmly fix it into the wall behind it. This tongue remains visible, and forms a semi-circular or curved termination to avoid the angle of the stones being continued to sharp corner. For interior angles the ends of the stones are mitred without any grooves, and a curved piece of metal is fitted in front, which is screwed to a metal internal angle piece firmly fixed in the wall. The object in all these jointings and fixings is to place the substance of the stone between two metal surfaces, one of which is previously fixed to the wall so as to grip the stone skirtings between the metals firmly.

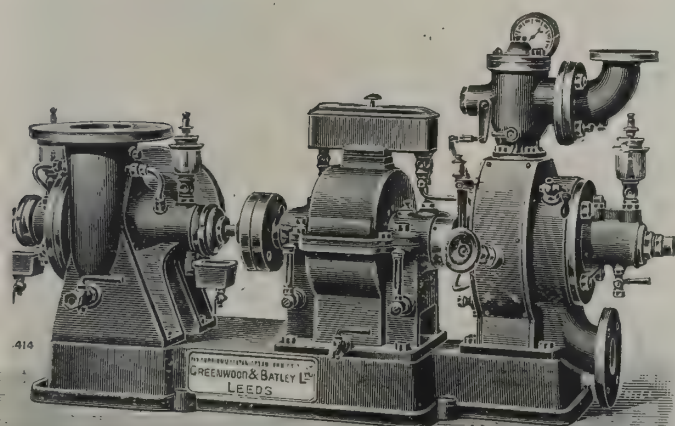
A FAREWELL DINNER.

ON Saturday evening, at the Pagan's Restaurant, Great Portland Street, Mr. H. C. Eyres, who for the last seven years has been architectural manager to the Falkirk Iron Company, London, was, on leaving to join the firm of Messrs. Longden & Co., entertained to dinner by Mr. Alsop, the general manager of the Falkirk Company. The dinner took place in the large private dining-room, after which an adjournment was made for coffee and cigars to the almost world-known

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"Artists' Room," full as it is of productions and autographs of so many artists of repute. All the chief officials of the firm were present. The toast of the health of the partners of the Falkirk Iron Company and their continued success was cordially drunk, after which Mr Alsop, who occupied the chair, proposed the health of the guest of the evening. He expressed the regret of himself and all present at the severance of a connection which since its beginning had been so very pleasant, in which he mentioned the indebtedness of the firm to Mr. Eyres for initiating and carrying through a large number of excellent designs, which had considerably raised the standard of the firm's work, especially suited for the requirements of architects. The Chairman assured Mr. Eyres that he carried with him into his new sphere the heartfelt wishes of all for a happy and successful career, and the recollection of his sojourn among his many friends in the Falkirk Iron Company would always be most pleasant. Mr. Eyres had endeared himself to all by his kindly and gentle nature, and all united in wishing him God speed. The health of Mr. Eyres was then enthusiastically pledged.

Mr. Eyres, in replying, said:—I had put into my mind a few words to say to-night, but the more than kind words of my friend and chief have so deeply touched me that I feel very unsure of myself or of my ability to find words to express my thanks. Mr. Alsop and colleagues, I need scarcely say to you that this parting of the ways marks for me a new epoch in my life. Now, frankly, to my instinctive conservatism changes of most sorts are unattractive, and the actual severance of any ties, particularly those which are pleasant ones, is a burden of the flesh to me. Thanks, however, to the ever-resourceful and kindly thought of our chief, he and you have determined that at the precise point where our roads divide there shall be set up a souvenir of your goodwill, conceived in the happiest possible manner, a manner dear to the heart of Englishmen in the form of this reunion. I am deeply touched, and I am sincerely grateful to you for the great honour you have thus done to me, and I trust that the future may have in store for us many other opportunities for the exchange of friendly thought. I am proud to think that my life so far has been spent in the service of two such companies as the Coalbrookdale and the Falkirk Iron Company, and to know that I have retained the real friendship of the good men and true who have kept both companies in the premier positions they still hold. Long may they flourish. For our own, I am glad to know we have recent proof of its progress. To have

doubled the turnover of the company in fourteen years, as has been the case with the Falkirk Iron Company under the general management of my good friend Mr. Alsop, who we are glad to see in such excellent form to-night, is very gratifying, and we all wish the firm continued success with the large extensions and improvements they have in hand for early execution, and which there can be no doubt will be attained. Mr. Alsop and friends all, I thank you from the bottom of my heart, and I shall carry with me into my new environment the happiest possible recollections of this happy evening, and of you who have made it so.

A most delightful evening was brought to a close by the health of the chairman being proposed by Mr. Lemaire, who occupied the vice-chair, and cordially responded to by all present.

SANITARY INSTITUTE.

THE Congress which was opened at Bradford by His Worship the Mayor of Bradford on the 7th inst. promises to be a great success. The exhibits are fully up to the standard, and there are many sanitary improvements worthy the attention of our readers. The following list of awards have been made by the judges:—

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Bronze Medals.

Ames Crosta Sanitary Co., for trapped drain box for tramway rails; Ames Crosta Sanitary Co., for stoneware conduits for electric cables; Ames Crosta Sanitary Co., for surface-water gullies; Anti-Vibration Incandescent Lighting Co., for anti-vibration incandescent gas lamps of various patterns; Burn Bros., for square gully plug; Burn Bros., for "Times" drain plugs; Joseph Cliff & Sons, for "Newcliff"

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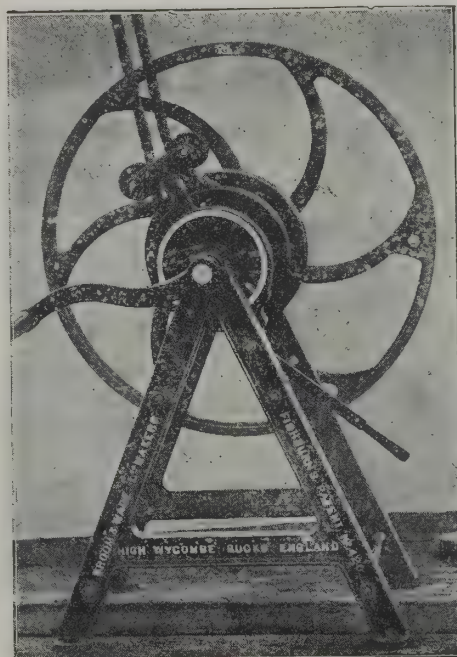
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PORTLAND CEMENT TESTS.

A REPORT was submitted by the committee on standard specifications and tests for Portland cement at the last annual meeting of the Canadian Society of Civil Engineers. It recommends that all experiments shall be carried on as nearly as possible at a uniform temperature of 65 degrees

Fahr, except when tests are being made for the purpose of ascertaining the comparative strength of cements required for winter use. All proportions shall be determined by weight. A maximum residue of 10 per cent. shall be retained on a sieve of 10,000 meshes to the square inch, and the whole of the cement shall pass through a sieve of 2,500 meshes to the square inch. A mechanical sifter, working automatically by jig motion, is recommended. In the case both of hand and mechanical sifting the process shall occupy a definite time, depending upon the weight to be sifted and the diameter of the sieve. For example, with a weight of 10 ounces of cement and sieves 8 inches in diameter, the sifting shall be continued 2½ minutes on No. 120 sieve, 1 minute on No. 100, ¾ minute on No. 80, and ½ minute on No. 50. The introduction of small weights into the cement, while being sifted, is to be deprecated, as they tend to push an undue proportion of the cement through the mesh, to stretch the wires, and to increase the grinding. The sand for standard tests shall be quartz, crushed so that the whole can pass through a sieve of 400 meshes to the square inch, but sufficiently coarse to allow of the whole being retained by a sieve of 900 meshes.

The specific gravity test is to determine the degree of calcination with certainty, and is therefore of great importance. The specific gravity of a Portland cement shall be at least 3.09, and shall not exceed 3.25 for fresh cements, by "fresh" meaning cements not more than two months' old. The gravimetric system is recommended. Portland cement improves with age, provided it is properly stored and kept in air-tight bags or barrels. Specifications therefore should not prescribe only fresh cement.

The hot-bath test for detecting free lime, &c., shall be carried out in the following manner:—Mortar pats, prepared of neat cement and thoroughly worked, shall be trowelled upon ground glass plates (carefully cleaned, preferably with acid) about 5 by 2½ inches and ¼ inch thick. The pats shall be about ½ inch thick in the centre, and worked off to sharp edges on the four sides of the plate. They shall then be covered with a damp cloth and allowed to remain in the air until set, after which they shall be placed in vapour in the Fajja bath tank, in which the water is to be heated to a temperature of about 130 degrees Fahr. After remaining in the vapour for six hours, including the time taken to set in air, they are to be immersed in hot water for eighteen hours. Upon their removal from the bath, the samples should not be curled up, should not have fine hair cracks nor be distorted, and should not have large expan-

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HUGH DORRAN, Yacht Builder.

Nimsquarter, Kirkcubbin, Co. Down, June 24, 1901.

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C. SMEDLEY BECK, Architect.
11a, Prince of Wales Road, Norwich, Jan. 21, 1903.

ARCHITECT.

I am exceedingly pleased with the result of the Velure I had last year. Our doors look and feel like ivory, and show every appearance of great durability. I find that they keep very clean, and do not take the dirt.

A. E. PURDIE, F.R.I.B.A.
Meadow Grange, Blean, near Canterbury, Jan. 2, 1902.

IN A STEAM DISINFECTOR.

I am pleased to state that the Velure has been a perfect success so far. It has been subjected to great heat, steam pressure, and withstood the expansion and contraction of the iron, and there are no cracks or flaws to be found, the surface being perfect. It was applied by unskilled labour, the hospital porter doing the work.

J. BROOK, S.I.C., A.S.I., Surveyor, R.D.C.,
Stratford-on-Avon, 5th December, 1902.

UNDER WATER.

Velure gives a beautifully smooth surface, which remains hard under water, and does not foul easily.

JOHN MACKENZIE, Sail Maker.
Sandbank, Argyllshire, Sept. 26, 1901.

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sion cracks. The samples should break with a sharp crisp ring. Cements when very finely ground, even if slightly over-limed, are not so liable to blow.

The time of setting shall be determined by noting the time required for a sample to bear a needle of 1-12-inch diameter loaded with one-fourth of a pound, and 1-24 of an inch diameter loaded with one pound, the mortar under test being of the consistency of rather stiff plaster. The percentage of water used shall be stated in the report. For more accurate determination a brass or rubber mould, 10 centimetres in diameter and 4 centimetres high, is filled with neat cement, mixed to such a plastic consistency that a plunger of 1 centimetre diameter and loaded with 300 grammes penetrates to a point 6 millimetres from the bottom. Setting commences when a needle of 1 square millimetre section first refuses to sink entirely through "the mould." Setting is complete when the needle rests upon without penetrating the surface.

Tensile and compressive tests of neat cement, except where fineness, specific gravity and hot-bath blowing tests are also made, are misleading. Briquettes of neat cement, in which these characteristics have been found satisfactory, shall bear a tensile stress of 250 lbs. per square inch at the end of three days, 400 lbs. at the end of seven days, and 500 lbs. at the end of twenty-eight days. All briquettes shall be one day in damp air and submerged in clean water for the remainder of the time. Any cement which shows a decrease in strength on or before the twenty-eighth day is to be rejected. The decisive tests shall be considered as the average of five briquettes, although for ordinary practice two or more briquettes may be sufficient, and in the latter case only the highest test of the group is to be taken as the strength of the cement. In determining the tensile strength the area of the broken surface shall be measured with great accuracy, as errors exceeding 10 per cent. are otherwise possible.

In sand tests, the sand and cement must be thoroughly mixed dry. After the water has been added, either for neat or sand tests, the mortar shall be thoroughly mixed for a uniform time; suitable periods being two minutes for machine mixing and five minutes for hand mixing. Briquettes made of one part cement and three parts sand shall bear a tensile stress of 125 lbs. per square inch after submersion for six days, and 200 lbs. after twenty-seven days. At the end of the same period the minimum compressive strength of a mixture of one part cement to three parts sand shall be 2,000 lbs. per square inch. The tensile strength of briquettes, mixed in the propor-

tion of three to one, or of other sand briquettes, shall not show a decrease either on the twenty-eighth day or subsequently. In every case the quantity of water used in mixing shall be stated in the report. The quantity of water to be used in neat tests varies with the kind of cement, fineness, &c, the correct method being to bring all mortars to the same degree of plasticity. An apparatus, similar to Vicat's, and consisting of a needle having an area of 0.4 square inches, weighted to about 11 ozs. may be used.

A simpler method for determining the standard consistency for neat cement tests is to mould a ball of mortar in the hands to a plastic state and drop the same about 20 inches on to the table. If the ball neither flattens appreciably nor cracks the consistency is satisfactory. This process corresponds practically with the previous method. The water for standard consistency of three to one briquettes shall ordinarily be 10 per cent. of the sand and cement by weight. If the amount of water for standard consistency of neat cement of any particular brand be less than 20 per cent, then the amount of water for standard consistency of three to one briquettes for this particular brand shall be one-half of the amount used in neat tests.

In preparing the neat briquettes by hand the mixture of cement and water shall be thoroughly worked together (preferably in a Faija's mixer) for five minutes. The moulds shall then be filled well above the rim, so that the mortar presents a convex surface. With an iron trowel the mixture shall then be patted, commencing at the side, first gently and then harder until it becomes elastic and water appears upon its surface. No after addition of the mixture shall be allowed. The superfluous cement shall then be removed and the surface smoothed by means of a knife or sharp-edged trowel. The briquettes shall then be placed in a damp chamber (zinc lined) furnished with a lid (also zinc lined) to prevent the irregular drying of the briquettes. After twenty-four hours the briquettes shall be laid in water and kept completely submerged during the whole period of hardening. In preparing the sand specimens five pieces of blotting paper, soaked in water, shall be laid upon a metal or glass plate, and upon each piece of paper there shall be placed a mould, also moistened with water.

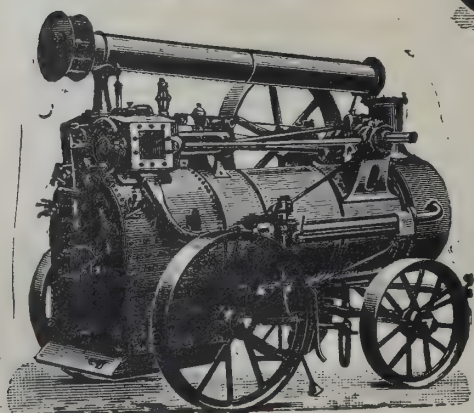
If possible, briquettes, prepared as above, shall be subjected to a uniform specified pressure (say, for example, 20 lbs. per square inch) by means of a ram of the same gauge as the moulds, or a Bohmé apparatus may be used. In this case the moulds shall be filled with about 4 lbs. of mortar, and shall be placed in the machine; 150 strokes shall then be applied to

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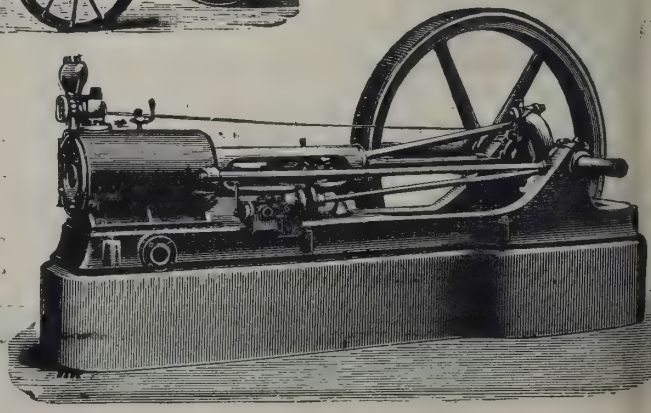
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the core with a hammer of about 4½ lbs. in weight. After removing the mould and the core the briquettes shall be smoothed off, taken off the subjacent plate and treated as if hand-made. Doubtful cases should be invariably decided by machine-made briquettes.

Testing machines shall be of the positive lever automatic type, so arranged as to apply the loads quietly and uniformly at the rate of 200 lbs. per minute. Clips with adjustable rubber or paper composition rollers are found to work satisfactorily, and should be used.

Chemical tests and full quantitative analyses are strongly recommended, and preference will be given to cements of which analyses are furnished by the manufacturers. Any cement containing adulteration shall not be accepted as a Portland cement. If there is found to be more than 2 per cent. of sulphuric acid, or 3 per cent. of magnesia, the cement should be rejected. The silica cements are in a class by themselves and need special specifications.

The net amount of cement, deducting the weight of the package, shall be 350 lbs. per barrel. The manufacturer shall give a written certificate with each shipment of cement, stating (1) the date of manufacture; (2) the tests and analyses which have been obtained at the manufacturer's laboratory for cement taken from the day's grinding of which the shipment forms a part; (3) that the cement does not contain any adulteration.

TECHNICAL EXAMINATIONS.

The following are the reports of the examiners of the City and Guilds of London Institute on the building trades:—

Carpentry and Joinery.

It is with regret that we have to again observe that the general standard of the candidates' work leaves much to be desired. The paper was easy, and the candidates were only permitted to answer ten of a total of fifteen questions. In previous years they were allowed to attempt as many of the questions as they could. The innovation was made with a view to preventing hurry and to give a wider field of choice. The arithmetic was better than in most papers of recent years, but was still not good. The plane geometry was by no means good. The simple question in solid geometry was the most commonly neglected of all, and where attempted was generally

very badly answered. The drawing was on the whole distinctly poor. It was inaccurate and showed ignorance of principles. The construction of a plane scale was commonly understood to mean a mere copy of a scale. The drawing of a cupboard front was frequently not attempted, and where it was made was badly drawn. Many who appeared to know what was wanted failed to make the drawing correctly simply because they could not draw. There has been a steady deterioration for some years past in this drawing, and it would appear that elementary mechanical drawing is not satisfactorily taught in by any means all our schools. Too much teaching is attempted with insufficient exercise with the drawing tools.

The grading of the candidates was rather remarkable. Good papers were in sharp contrast to bad ones, and the number of average candidates was comparatively small. This indicates apparently poor preparation in the classes, and the evidence of the papers of many of the failures confirms this view. In many cases it is surprising that candidates should have presented themselves at all. The work of the better candidates shows that at least some very good teaching is given, and the chief fault of the remainder is that they show signs of "cramming" rather than of steady preparation.

Ordinary Grade.

There was a sharp contrast between the good and the bad candidates similar to that noticed in the preliminary, but not quite so marked.

Draughtsmanship was bad. Candidates appeared to know what was wanted, but to be unable to give expression to their knowledge in drawings.

Question 3—The proportions of the mortise to the style of a door were very defective. The joint is of the utmost importance to a joiner, and as nearly all candidates attempted it, this question affords a very sound test as to the thoroughness of the training of the candidates. So badly were the proportions chosen that in a large number of cases no thought at all seems to have been exercised in deciding this important matter. The position of the lock in the answers given frequently involved cutting away the strongest part of the joint made, and consequently weakening the joint in an altogether inadmissible degree.

Question 7. (Six leading joiners' joints.)—Frequently all carpenters' joints were chosen, and where good joiners' joints were taken the proportions of the parts were very faulty. It would be well if teachers would carefully distinguish carpenters'

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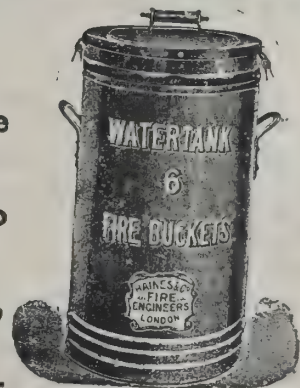
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from joiners' joints and make their pupils realise their general principles and objects. This is of the greatest importance in a workshop and would render later teaching easier, while at the same time affording opportunities for good drawing lessons.

The sash and frame (sash hung on centres) in Question 6 were frequently correctly made and the whole answer spoiled by the manner in which the beads were cut. Windows made, as too frequently drawn, could not be opened. The simple geometrical problem in this question was clearly not understood.

Questions 13 and 15.—The trusses and bracing in the answers to these questions were used in impossible places, and in actual work would be decidedly detrimental rather than achieving the object of their introduction.

Some 25 per cent. of the papers were, however, really good, and a number of excellent ones were amongst these. Generally the work was better than that of last year, but the old fault—helplessness when deprived of the aid of text-books—was apparent.

The questions were naturally not devised to enable the candidates to perform a feat of mere memory, but to test their intelligent realisation of the principles of the study they had made, or should have made, of the subject.

Honours Grade (Practical).

The specimens of work submitted were as a whole very good, and amongst them were some very fine ones.

The old fault of making small models of large pieces of work was still apparent. These specimens, while they make good teaching models, are not good tests of hand skill.

Preferably candidates should make some detail of work, such as they have to make in a workshop.

Many sent workshop rods with their work, and for the honours stage this custom is better than that of rendering a drawing. The practice is strongly commended.

The practical test contained a difficulty which was left entirely to the candidates' judgment to solve, and on the whole they did well. For a time test the work was of a high character. The draughtsmanship was very good, and a steady improvement has been noticeable during the past few years in this respect.

Honours Grade (Written).

The results of the written examination in the honours grade were in many respects satisfactory, the answers to questions on joinery being rather better than those to questions on carpentry. The drawings were, generally speaking, well

executed, and showed familiarity with the preparation of working drawings.

The tendency to draw and describe what can be got out of text-books in preference to that which would be learned from actual work by an observant craftsman is, unfortunately, too prevalent in the greater number of these papers. For example, the use of timber beams to carry floors over wide spaces has been completely abandoned since the introduction of girders of steel or iron, but in answer to a question on the construction of floors, candidates have constantly shown such beams, and not more than two or three have added that they are now obsolete, while a very small number indeed have shown the method which they must see being pursued in every building of any importance on which they work.

Other answers to questions dealing with centring, with timber partitions and with a timber roof of large span, such as might be used over a drill-shed, include mistakes of the same nature, though it must in fairness be added that these answers also include good honest intelligent work.

Answers to a question inviting the candidate to describe some failure of a piece of carpentry or joinery which had come under his personal observation, and to point out how the defect might have been avoided, brought out, together with some trivial cases, descriptions of serious failures, and shown keen observation and a very intelligent grasp of the situation. Another question referring to dry rot and its cure showed generally a correct knowledge of the proper remedies, but many of the average candidates failed to grasp the very formidable nature of this disease and the great thoroughness with which it must be combated.

Turning to the joinery questions, most of the candidates showed a familiarity with the geometry involved in questions of setting out work (including one piece of somewhat difficult hand-railing) and with the modes of framing joinery and securing it in place. Curiously enough, the greatest variation occurred in answering the simplest problem set, viz. the construction of a set of bookshelves to fit a recess. Some of the answers to this were remarkably imperfect.

The best answers were elicited by a question requiring an important door with its appendages to be drawn, and the process of constructing it in a modern workshop to be described. In answering this question, especially the latter part of it, the candidate had to rely mainly upon his own observations, and the result has been on the whole very satisfactory.

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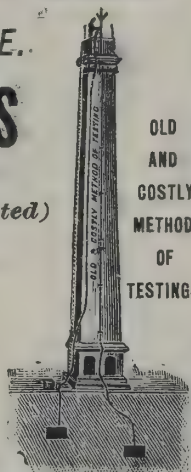
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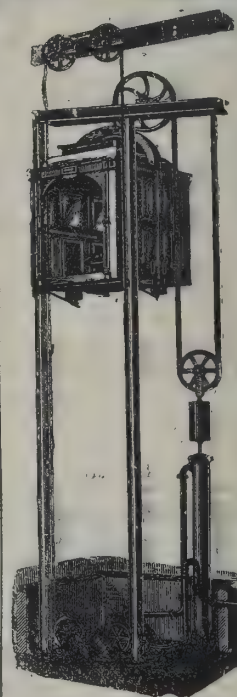
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In conclusion, it is fair to add that the above remarks, so far as they are of a disparaging nature, apply chiefly to the work of candidates who failed to pass and of those who obtained low marks, rather than to that of the men who are well placed.

Many of the successful candidates are to be congratulated upon having done work which is not only free from any serious defects, but is excellent in its nature and very intelligently set forth both by writing and by drawings.

Brickwork.

In the ordinary grade there was a decided improvement upon the papers of previous years. There were very few candidates who had not attempted at least some of the questions. The honours grade still gives cause for complaint, and it would scarcely seem that the candidates had received the necessary careful instruction.

We again ask that the candidates should be more particularly requested to state where they gained their experience, as this is of great assistance in fairly judging the papers. This is equally necessary in brickwork and in masonry.

Masonry.

The answers in the ordinary grade were very satisfactory. The candidates displayed intelligence and did good drawings. The honours papers were again of a low standard, and it is difficult to imagine that the candidates had previously passed the ordinary grade.

Brickwork and Masonry.

We are sorry to find that so few candidates presented themselves for examination, and recommend that more encouragement should be given to practical men to induce them to endeavour to gain these certificates. With few exceptions the candidates examined did not appear to have been thoroughly prepared. We would urge the necessity of more general training in setting out. Before a student, either in brickwork or masonry, attempts to cut a piece of work, he should, without the aid of the teacher, be able to prepare his own templates, moulds, &c. We found that two institutes went to the trouble of forwarding to the examination centre complete sets of tools for the use of their own candidates. We wish that other institutes would follow this good example, thus enabling their students to take the examination under more favourable circumstances.

Plasterer's Work.

The number of candidates in the ordinary grade is slightly in excess of the number entered last year, and there is a decided improvement in the general knowledge of the trade, as shown by the answers.

With regard to the honours grade I was pleased to find a marked improvement in the answers compared with last session. There were three creditable examples of practical work, but the others were not up to the average.

There seems to be a tendency on the part of the students, or perhaps the instructors, to confine their work to modelling, instead of the more practical and everyday class of work, such as making models of cornices, arches, pediments, columns, panelled ceilings, raking mouldings, piece moulds, &c.

Painters and Decorators' Work.

Ordinary Grade.

The papers are up to the average, although there is distinct evidence in many cases that the students have had little or no practice in writing answers. Teachers are again urged to give exercises in writing answers to questions on practical subjects, so that a candidate who possesses a knowledge of how a particular piece of work should be executed may be able without difficulty to write an answer that will render it clear to the examiners that he actually possesses such knowledge.

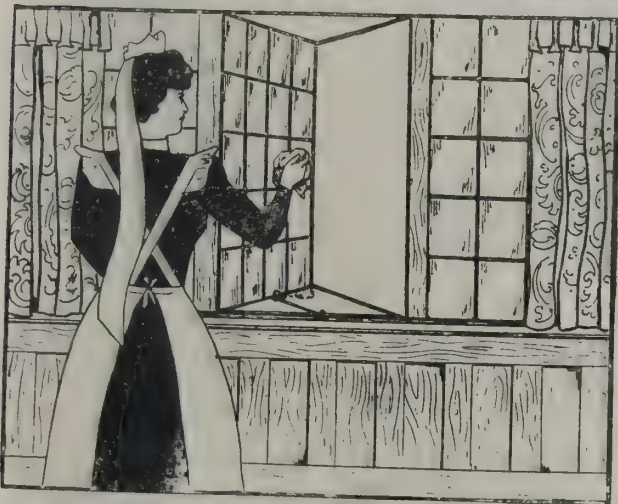
Honours Grade.

The written answers to questions this year show a marked improvement, some excellent papers being sent up. The practical work, however, is in many cases far from satisfactory. As more time was given to the preparation of the practical work this year it was expected that considerable improvement would be noticed, but this is far from being the case. The brushwork is in many cases poor. The preparation of stencils does not appear to be properly understood, many of the students having failed to put in sufficient ties to hold the parts of the stencil together. The relief material which was decorated was in many cases most imperfectly done, the worst features of a design being frequently emphasised and the effect produced being decidedly bad. In a few cases the design of the relief material had been carefully considered before decorating it, but this was rather the exception than the rule. Perhaps the most conspicuous fault in the work submitted when considered as a whole was the very poor selection of colours when such selection was left to the students. A room

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finished in the colours shown in some of the panels submitted would be far from pleasing in appearance. Most of the students evidently need considerable instruction and practice in the selection of colour combinations for plain work. Some excellent examples of glass gilding were submitted; the lettering was fair and the graining generally good.

AN ABANDONED RAILWAY.

IN the June number of the *Railway Magazine*, a well-illustrated article by Mr. T. R. Perkins describes the condition of the Potteries, Shrewsbury and North Wales Railway.

Passing through Shrewsbury last autumn, after an absence of several years, Mr. Perkins says:—I broke my journey there and visited the remains of the deserted line. I found the Abbey Station buildings converted into a stable, while the space between the platforms has been filled up, and the whole is now used as a coal-dealer's yard. The girders of the old bridge over the Rea brook now lie in the water, while the newer one of brick, built at a higher level to replace it, is already showing signs of dilapidation, and part of the parapet has fallen or been pushed into the stream. The locomotive shed has been demolished, and no trace of the railway is now visible in its vicinity. Halfway up the incline the original permanent way appears, but for some distance the metals have been torn from the sleepers and lie on their sides, still attached in many cases to the chairs. Beyond this the track is complete, and continues so throughout its length.

At Kinnerley, the junction for the Briedden line, the signal-box, close to which is a fallen signal-post, contains fourteen levers, and both it and the water-tank opposite are in a sad state of decay. As for the branch line, which here bears away southward, it has become such a wilderness of trees and bushes that it is almost impossible to trace it. A haystack stands under the road-bridge adjoining the station. Fences have long disappeared, and the whole of the track is thickly covered with undergrowth, so that no rails are visible. In its course of 6 miles the branch runs almost entirely on the ground level, the district being practically flat. At Malverley, 3 miles from Kinnerley Junction, the first station was situated, and here a haystack stands right across the metals. Between this station and the next (Crewe Green) the Severn was crossed by a wooden bridge, the railway passing over it from England

into Wales. This became unsafe before the closing of the line, and afterwards grew rapidly worse, until it finally dropped to pieces and was carried away by the stream, the only portions now remaining being a few upright posts. It being impossible to approach the southern end of the branch from Kinnerley, I left that portion for another opportunity, travelling one bright November morning to Middletown, the nearest station to Criggon, on the Welshpool line. This station stands on the boundary between England and Wales, and is within a few minutes' walk of the cottage where old Parr, the celebrated centenarian, was born. The Briedden rises abruptly above the village, and the walk to Criggon necessitates a stiff climb. The view from the ridge, however, well repays the trouble of the ascent, while the descent into Criggon, which nestles at the foot of the hill on its northern side, is by a precipitous path through a wood, amid surroundings of great beauty. In the centre of a pasture-field stands the little station, the rails emerging from a dense thicket at the end of the platform; in fact, the railway appears like a thick hedge, so dense is the undergrowth which has accumulated through twenty years of neglect. An amusing feature of the scene is the presence of crossing-gates, which, as there is now no fence to the line, stand in an open field, and look most ridiculously out of place. As an instance of the unkept condition of this section, it may be mentioned that in one place, where the high road crosses the railway by a bridge, there are actually growing between the metals trees whose tops reach above the parapets. At the station still stands the little shed which once did duty as booking-office, &c.; but as it has now neither door nor windows it probably serves the purpose of providing a shelter to the cattle feeding in the meadow. The gatekeeper's cottage is now the village post-office.

Such is the story of the unfortunate "Potteries" Railway, which never reached the place from which it took its name, and met a fate without parallel in the railway history of Britain. Judging from the experience of the past, it seems hardly likely that it will ever be quickened into life again, for as yet no "foreign" locomotive has gained admission to Shrewsbury, the stronghold of the two great systems who laid their plans so well more than forty years ago, and who evidently intend to keep their hold upon the traffic of the district. To them the derelict line would be of no use, as every point on its system is within easy distance of one or other of their own stations, and the Cambrian would be hardly likely to risk the friendship of its great "feeders" by seeking to oppose their interests.



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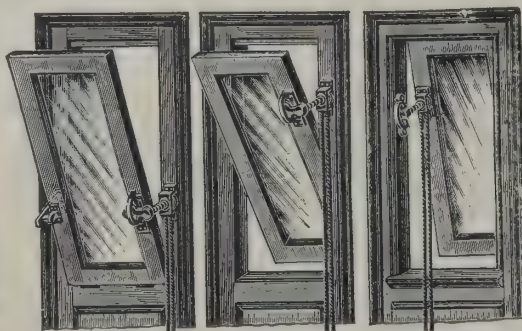


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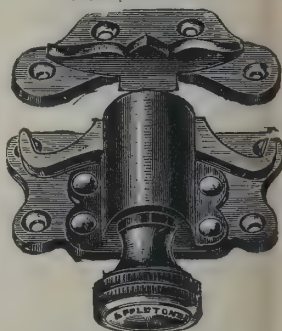
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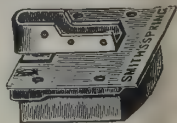
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The Architect.

THE WEEK.

THE report of the Royal Victorian Institute of Architects is an interesting document. There are now 108 members, of whom fifty-one are fellows. Only seven students have as yet been attracted. The Minister for Home Affairs having expressed a favourable opinion of competitions for public buildings, the Council communicated with other State institutes, and letters were sent expressing appreciation of the proposal. One of the public boards issued regulations for hotels and boarding-houses, and as it was believed few of the existing buildings could be reasonably altered to suit them, the Council forwarded recommendations to the Board which were favourably considered. The desire is expressed to consult with public bodies for the purpose of drafting conditions of competition for proposed works. A conference was held with the Builders' Association on the subject of trade discounts and commissions, when it was resolved "that we cannot interfere with the purchasing power of the contractor according to trade custom." Messrs. OAKDEN, D'EBRO and LITTLE have been appointed to represent the Institute before the Royal Commission on the University of Melbourne. The usual note of discord is suggested by the statement that the inauguration of the Australian Institute, which it was hoped would take place by January 1, 1903, at the latest, has been delayed by the undue period taken by the Institute of Architects of New South Wales to determine its attitude towards the constitution which all the other four Institutes have agreed to. A statement was circulated among the members of the Institute in New South Wales with the result that by a large majority it was decided to hold aloof from the proposed Australian Institute. The attitude of isolation thus assumed is to be regretted. As its decision is known, matters may soon move from the passive to the active condition in the other four State Institutes. The Melbourne people, who will test the importance of the Institute by its balance-sheet, may not be impressed. But it is well to know that the balance at the bankers, which at the end of 1901 was 126%, has increased to 185% owing to the large number of members who paid their arrears.

ON Saturday the French Minister of Commerce inaugurated the new homes at Versailles, which M. CHAUCHARD has erected. Having purchased the "Pavillon de Madame," with the beautiful grounds, he contemplated the conversion of the building into a gallery to which his splendid collection of pictures could be removed. Then he remembered the claims of his employees in the great warehouse of the Louvre and resolved to erect several dwellings for them. Two avenues have been laid out, and along the sides are about one hundred semi-detached *maisonnettes*. In each there are a salon, dining room, kitchen, three bedrooms, with offices, and a garden. Aged assistants whose salary never exceeded 5,000 francs a year are eligible for admission as occupants. Those who have had a higher salary will be granted sites, but must erect their homes out of their savings. In the arrangements M. CHAUCHARD has taken care to avoid any diminution of the self-respect of the assistants, and the experiment is one of the most interesting solutions of the housing problem.

WHILE large sums of money are being expended in the hope of educating certain classes of students in technical subjects, it should be remembered that many young men who possess ability are deprived of opportunities for attending classes. They can take consolation in what CARLYLE says about a library being the truest modern university, and his words are as applicable to technical science as to literature. But then it is necessary for library committees and librarians to recognise their new duties. It would be well if in other parts of England the example of Newcastle-on-Tyne were more often imitated.

The Public Libraries Commission have not only secured the best books of all kinds, but they enable the public to realise how extensive are the means for instruction by publishing catalogues at a cheap rate, which are better adapted than any with which we are acquainted for students' purposes. The latest, by Mr. BASIL ANDERTON, the librarian, deals with books on the useful arts. It includes such special subjects as, among others, engineering in all its departments, chemical technology, manufactures and building. It is evident that preference is given to the latest works in each section. The technical student desires to possess the knowledge which is required to-day, and historical inquiries have to be left to times of leisure. DEWEY'S system is adopted in the classification. Like the other catalogues of the Newcastle-on-Tyne Library, the utility of the volume is not confined to inhabitants of the northern city.

THE church of Saint Germain l'Auxerrois, which is opposite the Louvre, derives its chief attraction in the eyes of many English visitors from its connection with the slaughter of St. Bartholomew's Day. From the tower the signal was given for the attack on the Huguenots. The church has many interesting features. In the porch remains can be seen of frescoes which are commonly supposed to be Mediæval work. But they are of no older date than the reign of LOUIS PHILIPPE. They were executed by MOTTEZ, one of the pupils of INGRES. He employed a golden ground as well as very brilliant colours. His paintings were at first so remarkably brilliant it was considered necessary to paint the masonry near them in grey in order to diminish the violent contrast. But MOTTEZ' colours were not adapted to resist time. The question lately arose about the manner of dealing with them. The Municipal Council have the responsibility. Some members propose restoration, while others advocate the removal of the fragments. The cleaning to which they were subjected was entrusted to the Pompes Funèbres, and in that way the destruction was hastened. At present the frescoes are deceptions, for few people have realised they are little more than a half-century old. It would be well for the sake of truth in art to clear them away. Then, if painted work is necessary, let new frescoes be executed which will bear the mark of the century. For such an undertaking there is no more fitting artist than M. OLIVIER MÉRSON.

THE bequest of the late W. H. COPE to the Victoria and Albert Museum, South Kensington, has been arranged in the Cross Gallery adjoining the Indian Section, and forms a most valuable addition to the Oriental collections. Many of the specimens were acquired at the dispersal of the works of art of well-known collectors. Attention should be directed to the examples of carvings in jade, crystal and other stones from China and India, which fill the first case; amongst them may be noted a crystal bowl and a crystal teapot, enriched with stones in gold and flowers composed of rubies, emeralds and diamonds. On the top shelf in the same case are a pair of dark green jade candlesticks, carved with flowers. The mandarin's rosary suspended at one end is a beautiful work of art. The next case is devoted to a miscellaneous collection of lacquer work, Chinese enamels and Japanese netsukés. The third case contains a collection of glass, amongst them being some tall Venetian wine-glasses with remarkable stems, which Mr. COPE acquired at the Magniac sale. In this case likewise are some dark blue glass flagons with painted ornament, formerly in the Bernal collection. Specimens of Chinese porcelain fill the two remaining cases. There are examples of biscuit-body vases of the *famille verte*, and wine pots in the form of mythical lions; bottles and jars with blue and white decoration; vases with splashed glazes hitherto unrepresented in the Museum; a very rare powdered blue bottle in the form of a triple gourd, enriched with polychrome flowers in white panels, and a very considerable collection of egg-shell cups and saucers and plates of the Chien-lung period (1736-1795) delicately painted with flowers and figures.

THE BRADFORD CONFERENCE.

IT is a common weakness to praise the past rather than the present time, in the belief that men have become inferior to their predecessors. There may be some arts in which there has been a decline owing to the greater attention obtained by other classes of production. In sanitation, however, there can be no doubt of modern superiority. The descriptions of the condition of cities and towns in old days make us wonder not so much at the appalling plagues and death-rolls, but at the vitality which allowed any of the inhabitants to survive the visitations.

We can see from the statutes there was no enactment affecting sewers until the reign of HENRY VI., when commissions for the purpose were ordered to be appointed. But they were only temporary in duration and restricted in operation. HENRY VIII., from an Act passed in 1531 concerning the reparation of walls, streams, ditches, banks, calcies, bridges, trenches, &c., might be supposed to have resolved on sanitary as on religious reform; but when we find that all he was ambitious to perform was an extension of "the laws and customs of Rumney Marsh, in the county of Kent," to other parts of the kingdom, it is evident the improvement of the country, and not of towns, was aimed at. The state of London long afterwards is by itself enough to show the fear of kings and Parliament to interfere with the supineness of citizens in whatever concerned public health.

There are reformers who are still convinced, in spite of all the Acts treating of hygiene which have been adopted during the past sixty years, that there is a lack of power to combat the evils which exist. The desire for more restrictions was exhibited in many of the addresses at the Congress of the Sanitary Institute which was held last week at Bradford. The appointment of a Minister of Public Health was advocated as requisite. It was explained that the law is insufficient to deal with adequate force in nearly all classes of subjects which relate to sanitation. Bakehouses especially are believed to escape the control which is required owing to the duality of the authority which governs them, for it is partly local and partly general. Retail establishments can be supervised by the medical officer of the sanitary authority; wholesale bakeries come under the cognisance of the factory inspector. Another class of buildings which engaged attention at the Conference of Medical Officers of Health was nursing homes. The owners were invited to take the initiative in obtaining the legislative measures which are inevitable. In all new homes ample cubic space, the best sanitary arrangements, including heating and ventilation, are demanded. The need of disinfectants in such buildings and several others is sometimes urgent. But in spite of the wide control which now prevails over many things connected with illness, disinfectants are supposed to be such blessings they are exempted from officialism, and preparations are made and sold which "are not only worthless but actually dangerous." All that is necessary is that the bottles containing them should differ in shape from ordinary medicine bottles. One of the obstacles to a remedy is the difficulty of securing agreement among specialists about a bacteriological test, "for investigations have led to glaring discrepancies."

As a rule, the desire is to make regulations more stringent. But in one important division there was a suggestion that they might be relaxed. A by-law is generally adopted which prohibits the erection of a new building "upon any site which shall have been filled up with any material impregnated with any animal or vegetable matter, or upon which any such matter may have been deposited, unless and until such matter shall have been properly removed by excavation or otherwise from such site." The removal is not always possible, and is the land to remain unprofitable? The Cardiff Corporation have had the question investigated by their bacteriologists, Dr. W. G. SAVAGE and Mr. J. H. SUGDEN. After a long examination they have arrived at the following deduction:—"The refuse as deposited contains a very large number of organisms, many of which are in the main different from those met with in ordinary soil. These made-soil organisms, as they may be called for convenience of reference, rapidly diminish in number under the conditions under which they are placed. This diminution goes on for the first two or three years. After two or three years

however, the ordinary soil organisms begin to invade this material, and apparently thrive abundantly in the rich organic material available to them. This causes a marked increase in the total number of organisms present in the soil, and the total number remains large, until in quite old soils a diminution is again met with. These soils begin to lose their special bacterial content after two or three years, and from that time begin to take on the characters of ordinary soil." The result is one of the most satisfactory of the Congress, for although it may lead to a premature use of made soils, it will remove apprehensions by nervous people when they discover the nature of the ground on which their houses are raised. Evidently nature is not so inimical to man as other researches seemed to warrant.

The foregoing case may be taken as a warning against edicts which do not admit of exceptions. It is not, however, enough by itself to support the views of those who believe we have a sufficient number of laws relating to sanitation. To many it will be counterbalanced by the statement of Mr. W. H. MITCHELL, a manufacturer, who believes that "The Factory Acts have helped employers to success by compelling them, as a whole, to do what the most enlightened of them were always anxious to do—turn their attention from the old wasteful and ruinous methods of trying to obtain large production by long hours of work and economy by low wages, to the only way of obtaining these results satisfactorily, by means of improved machinery, better management and more efficient workers." He concluded by saying:—"Never was our production so large, never was the work we turn out so good as it is to-day. There are those who say that the best thing the State can do for the industries of a nation is to let them alone. The factory legislation of Great Britain is a standing proof of the fallacy of this position." Mr. MITCHELL's words sound like a knell of the *laissez-faire* policy. But from what is known of their working it is evident that the Factory Acts were drafted with the expectation of interfering as little as possible with the prejudices of people who are unlike Mr. MITCHELL, and in consequence there is an encouragement of patching and whitewashing as palliatives of evils which are only to be remedied by the reconstruction of many buildings.

The new arrangements by which the School Boards were superseded cannot be fairly judged without further experience of them. It is not to be anticipated that County Councils will regard expenditure with the blandness of their predecessors. To exercise authority to the extent of, say, a shilling in the pound, is very different to demanding payment of that shilling besides several more for other purposes, as has now to be done. There is consequently hesitation about laying out the money which is needful if schools are to be in a proper condition. On that account there was some misgiving expressed at Bradford as to the satisfactory state of school sanitation. More cubic space per child was said to be required, as well as an increase of heating power in order to insure more efficient ventilation. Lighting was alleged to be deficient, for the irreducible minimum should be 1 foot of glass for every 5 feet of floor-space. There are defects in the eyes of many children which no fenestration can alter, and Dr. ANDREW LITTLE asked why they were not remedied? His answer was:—"Simply because the educational authorities fail to vote the necessary amount of money to pay properly qualified ophthalmic surgeons to do the work, and through not doing so, force the children to submit to education which, instead of preparing them better for the position of trustees of the destinies of this great empire, leaves them ophthalmic cripples, a burden to the empire instead of a help, penny wise and pound foolish." It was not anticipated when the first Education Act was passed that expenses of that kind could arise, but with modern notions of public policy it is hard to see how they can be avoided.

We cannot expect from each of the Sanitary Congresses the announcement of one or more discoveries which seem to be destined to revolutionise the practice of those who endeavour to promote an increase of public health. Sanitation is one of those subjects in which progress has to be slow, and it may be only fractional. But from the large number of eager workers who are satisfied with being allowed to take a share in the work there is no doubt evils will be subdued as the years pass.

COUNTRY AND SUBURBAN HOUSES.*

ENGLISHMEN who have lived abroad or in the Colonies for several years, and who have to depend on ordinary journals for information concerning life in England, must often be puzzled about the character of modern buildings. At one time they will read condemnations of the showiness and the excess of manufactured ornament which has been introduced. But in a week or two they may come across philosophical reflections about the desire of Englishmen to go back to the simplicity adopted by their ancestors for their homes. There is so strong a belief that only one principle can prevail at a time, it is accepted with difficulty that the two classes of building can be in favour simultaneously. A large body of men who some forty or fifty years ago would think it necessary to inhabit a supposititious imitation of a Mediæval fortress or a still more strange compound of incongruities which was accepted as an improved Italian villa, now believe it is an essential for repose to live in a two-storeyed structure (with attics), for which the nearest prototype is an old-fashioned country cottage or an ancient secluded mansion. During the day the same man may be an occupant of a commercial establishment which has a great deal of vulgarity about it, while in the afternoon he returns to a quiet domicile and hopes visitors will think he is keeping up family traditions in the character of his country house. There is no doubt some incongruity exists between the two styles which can gratify an individual. But after all, inconsistency in the manner of judging structures is not a grievous fault.

Among the architects who have been successful in meeting the prevailing demand for one class of country-house is Mr. ERNEST NEWTON. He has now selected several examples from those he has erected in different parts of England, and has published them in a volume which can be made suggestive to other architects as well as instructive to people who contemplate building, but are without definite ideas about what they wish to achieve. Exterior views and plans are given in most cases. There must always be a limit to what an architect should offer, and Mr. NEWTON has presented only four interiors, one being a room which is enough to create a desire for more. The remarks which Mr. NEWTON offers on the subject of planning in his introduction form the explanatory key to the illustrations. He writes:—

The planning is without doubt the most important thing in the designing of a house. "To be happy at home is the ultimate result of all ambition." No one can be quite happy in an ill-planned house any more than in ill-fitting clothes, and although "the cut" and "style" are much, they count for nothing in a garment which pinches and annoys the wearer in a hundred ways. The most commonplace little wants in a house must be considered, and the planner must not have such a soaring soul that he is unable to bring himself to consider them. But although house-building is very much a practical art, the practical requirements may be met gracefully and pleasantly; there is scope for dignity, humour and even romance. The house-planner must, however, recognise his limitations; building is only plastic to a certain point, and we are much compelled by the natural use of materials; our choice is not restricted now as it was when transport was difficult and costly, but this is not an unmixed advantage, for while it widens our range it destroys "local colour," and the exigencies of the materials ready to hand, together with the ingenuity displayed in fitting them to their needs, developed many varieties in our house-building. It would be affectation to insist nowadays on the use of local materials only, but it is, I think, legitimate to take the district into consideration. Materials foreign to the countryside are often imported for no better reason than that the architect has a habit of design and an inelastic mind. We must, too, get rid of the idea that we can compel materials to assume any shape we like, in defiance of their idiosyncrasies. Our house-building ought to develop naturally. In the animal world abnormal variations are considered as apart from the general scheme of progress, and are popularly called "freaks," and the

conscious breaking away from normal lines of development so conspicuous in much of the building of the last few years, especially on the Continent, may perhaps be not unkindly called "Freak architecture." A natural architecture is a rational healthy builder's art expressing itself soberly through the medium of masonry and carpentry. This "New Art" was no doubt originally the outcome of a genuine if somewhat perfervid enthusiasm, and of a desire to shake off all unnecessary restrictions. But it has mistaken liberty for license, has abandoned all reserve, and threatens to retard, if not to destroy, the growth of a sane and reasonable architecture.

The character of the houses is to some extent dependent on the materials prevailing in the neighbourhood. Brick, hanging-tiles, rough-cast and rough local stone are exemplified. As a rule three plates are assigned to each subject, but in some cases the number is increased, and a house in Berkshire has five. Importance is attached to the plans, and they are shown on a scale which makes them easily understood by novices. All through there is a breadth of treatment and an absence of fussiness of which architects at least will approve. The book embodies the results of ability, experience and good sense, and should be a welcome addition to architectural libraries, for those who have adopted a similar style can appreciate Mr. NEWTON'S efforts.

Mr. C. R. SNELL claims that in his "Modern Suburban Homes," he has submitted eighteen distinctive designs, affording material for an infinite number of variations and combinations. They are derived, he tells us, from large and varied experience of his own and a critical inspection of the executed works of others. Evidently Mr. SNELL has practised in the Colonies, where more liberty can be exercised than is always possible in England. He admits a partiality for balconies, verandahs and porches, acquired "through a somewhat prolonged residence in a sub-tropical climate," and he is of opinion that even "in the more chilly climate of England they are not to be despised if employed in moderation, and especially where care is taken to avoid undue interference with the light into any of the rooms." The misfortune is that in this country, owing to the greed which turns every yard of land on a property into a building site, there is nothing to see from any of those points of view which can give much pleasure. In country towns we find small plots which could easily be converted into pleasing objects to the advantage of people near, devoted to buildings which, from the limitations of the site, have to be awkward in shape. As the suburban homes shown in the plates are not costly, the occupants would be unlikely to have any voice in the manner of laying out the building estate. The designs are for detached and semi-detached houses. They are unpretentious, and the author does not suppose they will be exactly followed. The windows are large, the rooms are well arranged, and Mr. SNELL believes they can be adapted to the requirements of occupants.

One of the differences between English and Continental Gothic churches is to be observed in the narrowness of English doorways as compared with the capaciousness of those abroad. It might easily be imagined that in the English buildings it was intended to suggest the difficulty of entrance into religious practices and to inculcate the necessity of humility by bending the body. But there is no such contrast in the mansions. It was long accepted in England that the doorway could be made an outer sign of hospitality and the welcome awaiting visitors. A narrow entrance looks ill, while a doubled doorway imparts dignity. Shrewd builders in some suburban terraces know this, and allow space to be sacrificed for the sake of the expression which can be derived from an opening that would serve for a small church or assembly-room. Several of the houses from which Mr. GALSORTHY DAVIE has taken his materials for "Old English Doorways" depend for their interest mainly on the character imparted to the entrance. The seventy plates include examples of the sixteenth, seventeenth and eighteenth centuries. They begin with one of those found in the majestic ruins of Cowdray, near Midhurst. It has a flat arch with sculpture above. Some were of larger span, and therefore more suggestive. Another early Sussex instance is from the Middle House, Mayfield, which is remarkable for the abundance of the mouldings. The Butchers' Guildhall,

* (1) *A Book of Country Houses*: Illustrated on sixty-two plates reproduced from photographs and drawings, accompanied by plans of each. By Ernest Newton. (2) *Modern Suburban Homes*: A series of eighteen distinctive designs for small and medium-sized houses. By C. R. Snell. (3) *Old English Doorways*: A series of historical examples from Tudor times to the end of the eighteenth century. By W. Galsworthy Davie and H. Tanner, jun. (London: B. T. Batsford.)

Hereford, suggests a transition from the Tudor arch to the lintel. In the Gatehouse, Kenilworth, we see Classic influence in the arches, niches and pilasters. More severity is displayed in the doorway of Sackville College. The example from the north wing of Cobham Hall shows how much was gained by treating the doorway as the lower storey of a lofty projecting structure in fine stone, while the rest of the building was in brickwork. There are other examples from the same building. The two doorways from Hatfield House suggest two degrees of importance, one for state occasions, one for ordinary use. The doorway from Abbot's Hospital, Guildford, from its width becomes an ecclesiastical institution. There are also a couple of fine examples from Aston Hall. The porch at Capmill, Painswick, is dated 1678. The gateway at Castle Ashby is one of the finest in England, although the niches are vacant. The doorway of St. Helen's Church, London, dated 1633, has nothing that is especially ecclesiastical, unless it be two feathered heads. There are several doorways from private houses and vicarages in various places. The columns may be elongated, and not minutely exact in the details. But they are evidence of a desire which could not be resisted. In Longbridge House, Farnham, the surface of the brickwork over the doorway has been cut away in order to allow of a curved outline in which two fleurs-de-lis are introduced. One of the doors from Queen Anne's Gate, Westminster, recalls houses which depend for much of their interest on the carving of the woodwork, which appears to be as sharp as when executed two centuries ago. There is so much resemblance among the eighteenth-century doorways, the details might have been supplied from a common centre. There are occasionally features introduced which recall monumental sculpture, as if both classes of works were derived from the same source. Mr. DAVIE'S photographs are taken with great skill. Although only fragments of buildings, they have sufficient completeness to satisfy us, and even when only a part of a doorway is shown we can realise that we have all that is of value. By restriction to one subject more or less monotony might be expected, but so much judgment has been exercised in the selection, no two doorways exactly correspond, and there is a variety which could not have been anticipated.

Mr. TANNER'S notes form a monograph on the subject, which is illustrated by sketches of his own, and which will be read with interest and profit. Doorways have been favourites of late years with sketchers. But the class is one which is almost inexhaustible, and happily there is a growing demand for new examples which will retain some of the characteristics of old English work.

ARCHITECTURE AND HYGIENE.

AT the Sanitary Congress a lecture was delivered in the Technical College, Bradford, by Mr. J. Slater, F.R.I.B.A., before a limited audience.

Mr. Slater said he should endeavour to bring before the Congress some of the points of contact between hygiene and architecture, taking each in its broadest aspects. About four-and-twenty years ago, in a paper read before the Royal Institute of British Architects, mention was made of an architect of some eminence at that time who had built a house for a client, and four months after its completion this architect was asked to come down and inspect the house because some of the drain-pipes were stopped and there were difficulties with the plumbing arrangements. The architect was most indignant, and simply told the client to send for his plumber. He doubted whether any architect, however much he might be imbued with an exalted idea of the high artistic nature of his profession, would now take up a similar attitude, as we have learnt to appreciate the fact that however beautiful may be a building, its main purpose is to be lived in or worked in, and that unless it is constructed with due regard to health, it will be but a whitened sepulchre. Hence the necessity for close supervision of all details of construction, however small or apparently unimportant. But there is a wider aspect of the question which has not often been dealt with, viz. how far the purely artistic side of architecture is concerned with hygiene. This consideration might possibly carry them rather far afield. It was impossible to believe that the ancient building nations—the Egyptians, the Assyrians, the Persians, the Cretans, the Greeks and the Romans—all of whom, in addition to erecting buildings which had been and still were the admiration of all

who saw their remains, held in the highest esteem physical health and physical development, could have been altogether neglectful of sanitation, though they were doubtless ignorant of the scientific principles on which it was based. In the Middle Ages sanitary arrangements were of the most primitive kind; but, at any rate, primitive as they were, the winds of heaven exercised their cleansing influence freely, and he firmly believed it would be difficult to find in any Mediæval city worse conditions than prevailed in many of the London theatres, as detailed in a paper read before the Institute some few years ago, or in bakehouses, factories and workshops all over the country. The fact is, people sometimes forgot how very modern sanitary science was. The insanitary survivals of old-fashioned methods of construction in this country were found more particularly in the smaller houses for the working and middle classes, with which the defects were to be associated. In a nobleman's mansion, where there is a large staff of servants, cleanliness is generally attended to, though even here the servants' quarters often leave much to be desired; but in smaller houses the one aim should be to construct them in such a way as to make the very minimum of attention necessary to keep the places clean, because they might be sure, in many cases, that minimum would never be exceeded and often not reached. The amount of money expended in England and in all the more civilised countries on the cure of disease is simply enormous. The greatest care possible was taken to insure cleanliness and to minimise opportunities for the propagation of microbes, and there could be no doubt that since the principles of sanitation had been known and carried out, the percentage of cures of all kinds of diseases had enormously increased. And yet, how much better was prevention than cure? Every year, in the outskirts of all our large towns, acres and acres of new sites were covered with houses for the lower classes, which, even when they were new, were scarcely sanitary, notwithstanding local by-laws, and undoubtedly, in a few months, became foci, if not of disease, yet of poor health, and the inmates of such houses became increasingly unfitted to struggle against disease. A great advance had been made in artisans' dwellings, which now had attention given to their construction, but as soon as one got just above the artisan class, the poor struggling clerk or the shopman and the small tradesman, one would find that the dwellings themselves were not one whit better than they were fifty years ago, and the surroundings of these dwellings were infinitely more confined than used to be the case. The methods of construction which were good and necessary in a hospital were equally good, and, to his mind, almost as necessary, in an ordinary dwelling-house, and they could be provided in the latter at a very small extra outlay beyond what was generally spent. The fact was that of late years the working man had monopolised the attention of the benevolent and the charitable. Mr. Slater said he should like to see some capitalist take up the cause of the lower middle classes and start a company for the erection of middle-class dwellings at reasonable rents, and as municipalities are going in for commercial speculation, they might find this not one of the least profitable. The Artisans', Labourers' and General Dwellings Company, which has gone on these lines, has always managed to pay a dividend. Local by-laws had done much to rectify flagrant abuses, but one could not frame by-laws to meet all small details. The fact was, we wanted fewer hard and fast lines laid down, and literal specification of requirements in our Building Acts and by-laws, but more discretion left in the hands of those who had to carry out these legislative enactments. This opened up one of the most important questions relative to the health of the people; he meant the standing and qualifications of inspectors and other officials, who had practically the whole matter in their hands. What did we see all over the country? A local builder, who had failed in business, got some kind friends to propose him as building inspector, or perhaps even surveyor, to the local council. Were he as honest and painstaking as possible, how could such a man enforce to the full regulations which he had been for years trying to evade as far as he could, and of the necessity for which he is probably very doubtful? He would inevitably incline to leniency, which would soon become laxity. In his opinion, the appointment of every health officer in the country, and the amount of his salary, should be subject to the approval of the Local Government Board, and then they might make the Acts themselves which have to be carried out much more elastic. The lecturer having given a description of the manner in which attractive-looking suburban houses, letting at from 20*l.* to 30*l.* per annum, were sometimes built, said that in many of these, as soon as cases of infectious disease had been nursed in them contamination commenced, and in a few years, it was his firm belief, such houses became what in a hospital ward would be termed permanently septic, and it was almost impossible to get them sweet. In the past dozen years or more much that he had said had been urged at hygiene congresses and sanitary institute meetings all over Europe, and yet so little had been

done; and why? Expense was generally considered the great obstacle, but he could not help feeling that there was a greater one, which was this: the people who built the houses were so rarely those who dwelt in them, and there was so little fixity of tenure. The lecturer said he was no Socialist, but he could not shut his eyes to the fact that the improvement of the dwellings of the people was a question which was intimately bound up with that of the ownership of the land on which they are erected, and until we can get rid of the middle-man in the shape of the speculative builder, who only cares to put up his buildings at the lowest possible cost, we shall never improve the separate small dwellings of the people. How this speculative builder can be abolished is a question of political economy which scarcely comes within the scope of this paper, but when we see what is being propounded in Ireland as a cure for all the ills from which the peasantry of that country are suffering we get a hint of a possible solution. He saw no reason why the lower middle classes of this country should not be trusted to fulfil their obligations as well as those in the Sister Isle, and he would not be surprised if in the next generation the Government were to take up the question of loans to small householders for the purpose of helping them to buy their own freehold sites and build their own houses, and if this were done we should soon see a vast improvement in the construction of the people's homes. Discussing the question, How far is the health of a people affected by the artistic or æsthetic side of architecture, by matters which are not constructional, but are connected with site, arrangement of plan, surroundings, style and design? the lecturer said that it was the opinion of an eminent oculist that a great deal of the defective eyesight which was annually becoming more and more prevalent in towns was due to the fact that these urban dwellers looked so seldom on the pleasant restful green of the woods and fields and so constantly on dull bricks and mortar, and if this opinion were well founded it might undoubtedly make us give more consideration to the prominent tints which we use for both the insides and outsides of our dwellings. Just as light caused us to feel cheerful and warmth made us feel comfortable, so he believed it would be found that colour in soft graduated tones had an immense effect on our well-being. Staring, garish, inharmonious tints must have a somewhat similar effect through the eye on the brain as loud, cacophonous sounds have through the ear. Mr. Slater urged that wall-paper should be selected with due regard to the aspect of the room, and he particularly insisted on the value of sunshine. He would be sorry to see huge blocks of artisans' dwellings multiplied in the heart of our great cities. The object should be to get the workers away from their work when it is finished by increasing the facilities for quick and cheap transit. With the startling development of electric traction, he did not think the time was far distant when it would be the exception and not the rule for the workers to live in close proximity to their work, when this was performed in crowded areas. Concluding, the lecturer said it was impossible to over-estimate the good which had been done in the last thirty years by the Sanitary Institute, by its examinations, its publications, and not least by its congresses, but there must be no cessation of activity. An excellent foundation had been laid, but the superstructure had yet to be erected. It could not too often be dinned into the ears of the governing bodies that upon the health of the people depended the wealth and well-being of the nation.

ARCHITECTS' FEES.

AT the Lincoln Assizes an action was heard in which Messrs. W. Watkins & Sons, Lincoln, claimed payment from Curtis & Mawer for professional services as architects. Mr. Stanger stated, says the *Lincolnshire Mercury*, that the defendants had premises in Silver Street, opposite Messrs. Watkins's offices, and in 1898 they decided to make considerable alterations. The first idea was they should rebuild, and they naturally went to Messrs. Watkins and employed them as architects. Some three or four months afterwards preliminary plans were sent, and then Messrs. Curtis & Mawer changed their intention, and decided instead of rebuilding to have extensive alterations made. Further plans were prepared, and eventually, instead of a plain scheme, an elaborate scheme was adopted. During 1899 some conversation took place as to the scale of remuneration, and Messrs. Mawer asked if Messrs. Watkins would undertake the work of architects at 3 per cent. on the lowest tender. Of course, Messrs. Watkins could not entertain that. The usual sum payable on contracts over 1,000*l.*, and this was something like 6,000*l.*, was 5 per cent., which included the preparation of the plans and the superintendence of the work. Three per cent. was altogether too low, but the plaintiffs considered the matter, and having regard to the fact that the premises were just opposite Messrs. Watkins's offices, and the building, according to the plans then prepared, was to be plain and almost of the warehouse type, they agreed

to accept 4 per cent. No reference was then made to any expenses outside the ordinary professional charges, nor was any reference made to taking out the quantities. In course of time the defendants instructed the plaintiffs to invite tenders, and the lowest was received from the defendants' cousins, Messrs. Mawer Bros., of Louth. Four tenders varied between 7,500*l.*, 7,600*l.* and thereabouts, but Messrs. Mawer's came to 6,756*l.* After a time the defendants changed their intentions and ceased to employ Messrs. Watkins, not because of any fault—that would not be suggested for a moment—but because they thought they could dispense with the services of an architect. The ordinary charge for taking out quantities was 1½ per cent. or 2½ per cent., and if the plaintiffs had continued as the architects they would have been entitled to 4 per cent. on the lowest tender and 1½ per cent. or 2½ per cent., but when their employment by Messrs. Curtis & Mawer ceased, they charged 2½ per cent. for their plans and 1½ per cent.—the lowest charge—for getting out the quantities. There were a few extras (7*l.* for interviewing other architects, &c., with reference to adjoining ancient lights, and 12*l.* for lithographing the quantities), and that brought the total to 289*l.* 11*s.* 9*d.* This was sent in in November 1900, and it was not until then that the plaintiffs learned the defendants contended there was a special bargain for 4 per cent., including everything, if the work proceeded, and 2 per cent. if not. It was preposterous, however, to think the plaintiffs would ever consent to such an arrangement. They were not young architects anxious for employment, but were well established, having been in the city forty years; further than that, nothing was said about the charge in the event of the abandonment of the work, for such a contingency was never dreamt of.

Mr. W. Watkins, J.P., gave evidence to that effect, and in cross-examination said he could not state that anything was specifically mentioned about the extra charges for getting out quantities, but Messrs. Curtis & Mawer thoroughly understood there would be that charge.—Mr. Young: You were the architect for the late additions to the County Hospital at Lincoln?—Witness: Yes.—And your commission was 5 per cent.?—Yes.—Did you get anything in addition for taking out the quantities?—Yes, 2½ per cent.—In addition to the 5?—Yes, certainly, on the buildings alone, but not on the engineering work. There was about 2,000*l.* worth of building work, and I got 2½ per cent. on that in addition to the 5 per cent.—There was a great discussion on the cost of the works, was there not?—Yes, one gentleman wanted to know what I was being paid.—Did you then say your charge was 5 per cent. on the cost of the work and money out of pocket?—Yes; and let me add that the gentleman who raised the question asked me the direct question whether “I got anything for quantities,” and I said “Yes.”—Mr. Young: I don't see that in the paper, but if you say so I accept it.—Mr. W. G. Watkins gave evidence as to the arrangement, and Mr. D. Matthews (London) and Mr. Bromley (Nottingham) spoke as to the practice of the Institute of British Architects. The usual charge for taking out quantities was 2 to 2½ per cent.

Mr. Young, in defence, argued that the question for the jury was not how much Messrs. Watkins were entitled to charge had there not been a special bargain, but what they actually agreed to charge. He acknowledged quantities had to be taken out, and that that was necessary work, but the plaintiffs knew that work was necessary, and if they said in their capacity of architects they would do all there was to do for 4 per cent. on the lowest tender, he submitted they were not entitled to charge more. Messrs. Mawer went to them and said, “We want to know exactly what you are going to charge,” and if in answer to a question like that they said “4 per cent.” it was not fair for them to turn round afterwards and say there was another 2 per cent. behind it.—Mr. Fred Mawer said it was distinctly arranged 4 per cent. should include everything, and that if the tenders proved prohibitive and the work was not carried out the charge should be 2 per cent. The witness was cross-examined at some length respecting various conversations, and as he kept looking at his cuff Mr. Stanger eventually asked what he had got upon his sleeve.—Witness: Some notes.—The Judge: You ought to know better. You didn't take those notes at the time of the conversation I suppose, and therefore you have no right to refer to them.—Mr. Stanger: Have you a diary?—Witness: No.—Mr. Stanger: Then from where did you get your notes?—The Judge: Up your sleeve, I suppose.—Mr. Hy. Albert Mawer (Wragby) said he went with his brothers and asked what would be the cost, and Mr. Watkins said, “The usual charges.” He pressed to know what those were, and Mr. Watkins said 4 per cent. In reply to other questions he said he should charge 2 per cent. if the work was not carried out.—Mr. Young: Did you know anything about the charges for taking quantities?—Witness: I did not know then what quantities meant.—But you knew the difference between 4 per cent. and 6½ per cent.?—Yes.—Mr. Stanger: You have nothing up your sleeve?—Witness: No.—Did you ever think of the work not being carried out?—Yes.—Why? Because the plans kept getting more elaborate.—But Mr. Watkins fol-

lowed your instructions, didn't he?—No, we had to follow him.—If the plans were getting more elaborate than you wished why did you not complain?—We daren't, I suppose.—You dare ask him, however, to reduce his charge by one-half, but daren't tell him to make plainer plans.—Well, we didn't.—Mr. J. G. Mawer, auctioneer, Wragby, also spoke as to the conversation at the interview, and Mr. Alfred Puckeridge (another partner) said he was told afterwards the result of the conversation. He did not think, however, any definite arrangement was made; there was simply conversation as to what the charge would be.

Mr. Stanger, in addressing the jury, said Messrs. Watkins had given their evidence in a manner which better recommended it to the jury's acceptance than that of the Mawers, and that theirs was infinitely the more probable story of the two.

The Judge pointed out circumstances which seemed to favour the plaintiffs, and the jury found for Messrs. Watkins for the amount claimed. Judgment was entered accordingly.

LIBELLING THE CITY SURVEYOR OF MANCHESTER.

AT the Manchester Assizes on Monday, before Mr. Justice Bigham, Edward Birks, aged 54, a surveyor, formerly in the city surveyor's department of the Manchester Corporation, surrendered to his bail on a charge of maliciously publishing a defamatory libel on Mr. T. de Courcy Meade, the Manchester city surveyor. The prosecution was conducted by Mr. H. G. Shee, K.C., with whom were Mr. Overend Evans and Mr. F. Brocklehurst. Mr. M'Keever, Mr. Wingate Saul and Mr. Sandbach appeared for the defence. The alleged libel was contained in a printed document drawn up by Birks and sent to various people in an unsealed envelope. Amongst other passages from this read by Mr. Shee the following, says the *Manchester Guardian*, were relied upon to establish the case for the prosecution:—"I am prompted by no feelings of animus towards the city surveyor, my great anxiety being to clear my name from the foul stain upon it, and at the same time to try and compel the city surveyor if possible to speak the truth." Referring to a difference in some estimates for work done, and in which an outside surveyor differed from Mr. Birks, he wrote, "It was a deliberate trap laid for me by the city surveyor, and I refused to fall into it." In other passages it was said:—"Thomas de Courcy Meade, upon his appointment as city surveyor, may have suffered great anxiety as to how to perform his important duties. He determined to sweep clean the department of all officials of known ability by any means, fair or foul, he cared not; and, with few exceptions, he has been allowed to do so. . . . The baths committee have also paid hundreds of pounds in arbitration and surveyors' fees—utterly wasted, and the amount ought also to be charged to the city surveyor, occasioned by his unscrupulous scheming to injure myself and deprive me of my position. . . . If the city surveyor can produce the nine final measure bills and certificates . . . I am guilty; if he cannot—and I say he cannot, for seven out of the nine do not exist, or ever have, except in the malicious mind of the city surveyor—then I say this man ought to be criminally prosecuted by the Corporation for knowingly and wilfully deceiving the committee."

Of the libellous character of the statements, Mr. Shee said, there could not be the slightest doubt. It appeared that some time ago, when Birks was in the employment of the Corporation, Mr. Meade had told him that he was not strong enough to deal with the contractors, and after several difficulties had occurred Birks was given three months notice. This appeared to have soured his mind, and he had taken the action complained of.

Mr. Shee was proceeding to comment upon the libels in detail when the Judge asked: Why go into all these? They are distinctly libellous. The question is, Can they be justified?

Mr. Shee concluded his address with the remark that his client could not overlook the matter, as it undermined his authority in the office, but the last thing in his mind was to persecute Birks.

Mr. Meade then went into the witness-box, and the Judge asked why.

Mr. Evans: So that he may be cross-examined.

For two hours Mr. Meade was under cross-examination by Mr. M'Keever. He said that he had had to complain of acts of insubordination on the part of Birks when Birks was employed under him, as, for instance, his taking accounts before the committee without his (Mr. Meade's) knowledge. He had never suggested that Birks was corrupt either in his quantities or prices. The fault he alleged all through was that Birks was too weak to deal with the contractors.

After further cross-examination, the Judge said to Mr. M'Keever: I regard this, and I do not mind telling you, as a

great waste of time. We have had a great deal of it—over two hours, and it is a great waste of time.

A little later the Judge asked: How long are you going to be?

Mr. M'Keever: A considerable time.

The Judge: Half an hour, or two or three days?

Mr. M'Keever: An hour or two.

The Judge: What, with this witness?—Yes.

"Then, gentlemen," said the Judge, "we will adjourn for luncheon."

On the reassembling of the Court after luncheon Mr. M'Keever said that he had given due consideration to certain remarks which had fallen from the Judge, and having regard to the difficulty, if not the impossibility, of justifying the allegations that had been made, he had advised his client to alter his plea to one of "Guilty." Birks's only intention in writing the letter was to get a hearing by the committee with regard to the grievances under which he felt that he was labouring. He now left the matter in his lordship's hands.

Mr. Shee said that Mr. Meade had no animosity whatever against the defendant, and he had never, at any time, alleged that Mr. Birks had been guilty of any corrupt practice or intention. All he had done was to express the opinion that Birks was not strong enough for the position he occupied. There was a passage in the report of one of the inquiries in which Birks said he did not think that Mr. Meade was desirous of getting rid of him. He wished to add that this matter had been ventilated in the City Council, which had decided that the city surveyor was entitled to a continuance of the confidence and esteem of the council. Provided that the Judge could secure that there should be no repetition of these libels, Mr. Meade would be perfectly satisfied. As to whether that course would meet the ends of justice, that was a question entirely for the Judge.

The Judge said he thought the defendant had been very well advised to alter his plea to one of guilty. For his part he had heard nothing in the course of a long cross-examination to give any ground for the serious reflections which had been made upon Mr. Meade in the libel. Whether a prolongation of the inquiry would have elicited anything further he did not know, but he suspected that if two hours had failed to elicit anything of a material character, another full day's inquiry would probably have had the same ineffectual result. He could not see that anything Mr. Meade had done furnished cause for saying that he had done more than his plain duty to and for the benefit of the Corporation. He had no doubt that the defendant thought—mistakenly—that Mr. Meade had acted unfairly towards him in some way, and it was perhaps desirable that the defendant's counsel should have had an opportunity of cross-examining Mr. Meade. He hoped by this time that the defendant was satisfied that Mr. Meade was actuated by no motive other than that of duty. He need say no more about it, except to order the defendant to enter into his own recognisances in 50*l.* to come up for judgment when called upon. If he repeated these libels in any way at all he might be quite certain that he would be so called upon.

ONSLOW FORD MEMORIAL.

ON Monday Sir L. Alma-Tadema, R.A., unveiled a memorial to the late Onslow Ford, R.A., which has been erected in St. John's Wood, at the junction of Abbey Road and Grove End Road, within a few minutes' walk of the sculptor's studio. It is in the form of an obelisk; on one side it is adorned with a replica of the Muse at the base of the Shelley memorial at Oxford, and on the other by a medallion portrait of Mr. Onslow Ford. The whole is protected with railings and lamp-posts. The inscription on the memorial is as follows:—"To Edward Onslow Ford, R.A., erected by his friends and admirers." As chairman of the committee Sir L. Alma-Tadema, before unveiling the monument, said that Onslow Ford's work was so remarkable, his nature so lovable both as a man and as an artist, and he was so dear to them, that it became their wish to erect a small monument to his memory near the place where he had lived, loved and worked. The borough of Marylebone had in every way facilitated their task, and they thankfully accepted that as a sympathetic proof of the esteem in which their friend was held. Appreciation of Onslow Ford's work was lacking neither in this country nor in France, where he was corresponding member of the Institute. English art lost in him a sculptor second to none, and the Royal Academy schools a great teacher. His career was cut short in his prime; he might be said to have died in harness, for he felt ill after addressing the students at South Kensington, at a time when he was still putting the final touches to his beautiful *Snowdrift*, and his illness lasted but three days. Familiar to all was the long list of his splendid portraits, from the statue of Sir Henry Irving in the Guildhall Museum to the bust of Paderewski exhibited

at the Royal Academy last year. The delightful youthfulness of his *Peace*, the grace and refinement of countless exquisite figures must recur to them as their memory made silent review of his achievements. They would remember also the many works with which he enriched England, India, Khartoum. It was from, perhaps, the noblest of these, the monument of Shelley now at Oxford, that they had chosen the sorrowing Muse to adorn that memorial; not merely as a reminder to all who passed Onslow Ford's beautiful work, but because nothing could be better placed there than that symbol of a silent and noble grief. They would not cease to mourn him, nor to feel the void of his absence; but their pride and delight in his memory would also know no end. Therefore they were glad to have succeeded in raising that small token of a great regret, and they had chosen that spot for their memorial, not merely because St. John's Wood was the place where Onslow Ford was most beloved and lamented, but because they wished to accentuate the fact that St. John's Wood was a centre of art, and that they believed that healthy and beautiful neighbourhood, so dear to them through countless memories, deserved to be esteemed, embellished and protected rather than to be singled out for wanton and wasteful destruction. They were particularly indebted to Mr. John Simpson for designing the memorial and superintending its erection; to Mr. Lucchesi, who so kindly claimed the right to execute the medallion portrait of his master; and to the borough for having laid the necessary foundations.

The Mayor of Marylebone accepted the memorial on behalf of the borough.

ANCIENT EARTHWORKS.

A PROVISIONAL scheme for a systematic record of ancient defensive earthworks and fortified enclosures in this country has been prepared by the committee appointed at the Congress of the Archaeological Societies on July 10, 1901. The committee suggest that secretaries of the various archaeological societies, and other gentlemen likely to be interested in the subject, should be pressed to prepare schedules of the works in their respective districts, in the hope that lists may eventually be published. The list should be confined to defensive works, omitting burial barrows and boundary banks. Though record should be made of any "finds" indicative of period of use of the forts, no effort need be made to assign a definite period of construction, excepting in those cases in which the age is beyond question—e.g. camps and fortified settlements of undoubted Roman origin, or enclosures of proved Neolithic, Bronze or Iron Age. The committee now consists of the following members:—Professor Boyd Dawkins and Professor B. C. A. Windle, Mr. W. J. Andrew, Mr. A. R. Goddard, Mr. I. Chalkley Gould, Mr. W. H. St. John Hope, Mr. J. Horace Round and Mr. W. M. Tapp. It is hoped that other gentlemen willing to work towards the object in view will join the committee. The committee ventures to hope that the issue of the provisional scheme will enlist the earnest co-operation of archaeologists and observers in all parts of the country, and thus serve towards the preservation from mutilation or destruction all these priceless relics which no laws protect.

It is proposed that defensive works be classified, so far as may be, under the following heads:—(a) Fortresses partly inaccessible by reason of precipices, cliffs or water, additionally defended by artificial banks or walls; (b) fortresses on hill-tops with artificial defences following the natural line of the hill, or, though usually on high ground, less dependent on natural slopes for protection; (c) rectangular or other simple enclosures, including forts and towns of the Romano-British period; (d) forts consisting only of a mound with encircling ditch or fosse; (e) fortified natural mounds, or artificial mounds, with traces of an attached court or bailey, or of two or more such courts; (f) homestead moats, such as abound in some lowland districts, consisting of simple enclosures formed into artificial islands by water moats; (g) works which fall under none of these headings.

In every case in which masonry is used for defence, whether wholly or in part, the fact should be mentioned. The existence of mounds or tumuli within defensive enclosures should be noted. When a fortress is provided with more than one rampart or wall the fact should be recorded, as also when the enclosed area is divided by transverse banks. It is specially desired that the position of each work be indicated by noting the number of the sheet of the O. S. (6-inch scale) in which it appears and by giving the name of the nearest town or village. Plans traced from the 25-inch O. S. maps should, if possible, be sent. Ramparts and ditches should be clearly indicated, as well as the O. S. levels, and accurate sections will be of great service. Although plans and sections will be welcomed it is to be borne in mind that the main object of the committee is to obtain lists of defensive earthworks and enclosures throughout the kingdom. Though not strictly within the scope of this

inquiry, it is suggested that all Mediæval castles should be included in the schedules, since many of them originated in earthworks of Class E. Assistance will be duly recorded in the report which the committee hopes to present to a future congress of archaeological societies.

BRICKLAYING IN WINTER.

IN his report upon the trade and commerce of Stockholm during 1902, Mr. Stewart MacGregor, the British Consul, remarks that in winter time one hears much about the want of employment for bricklayers and others in the United Kingdom on account of frosty weather. Yet anyone residing in Stockholm during the winter months can see bricklaying carried on in hard frost as an everyday occurrence. This, from a British point of view, is so unusual and important that he has obtained particulars as to how it is done. He includes in his report, therefore, a description of Mr. P. Graham, a fellow-countryman long resident in Sweden, of the system adopted, adding that the art of building stands very high in Stockholm, much of the work done being both ornamental and of excellent quality. It is explained that a few years ago a series of experiments was carried out, the results of which proved that, without any special precaution as to material or labour, bricklaying can be carried on in Stockholm at a temperature as low as 14 deg. Fahr. For lower temperatures it is necessary to heat the sand and water used in making the mortar, and for this purpose very simple apparatuses are employed. The mortar should be made in a room where the temperature is kept well above freezing. This temperature should naturally be regulated according to the frost that has to be counteracted. Generally the builders here make a room of this kind by roughly boarding in a part of the scaffolding, simplicity and cheapness being the prominent characteristics of all the arrangements. When building in frosty weather the following precautions should be observed:—(1) In laying the bricks care should be taken to avoid shifting them after they have once been set in the mortar. (2) Never use old or stale mortar, but arrange supply to correspond with demand. (3) It should be understood that the brick used here is of a light or porous character, which readily absorbs the moisture from the mortar. Hard-pressed or calcined bricks and stonework generally are not suitable for building during frosty weather, but edgings or ornaments, &c., of such material can easily be dealt with by slightly warming them before bringing them into position. (4) Although brick building can thus be carried on safely under any of the temperatures already named, this does not apply to plaster or cementwork, which should not be done at or below freezing point unless proper heating arrangements are made. Whereas in Stockholm fifteen or twenty years ago almost all building was broken off during four to five months every winter, it is now the exception that such operations are hindered by frost more than a few days or a few weeks annually, and this though there is much more stone and ornamental work in the buildings now being erected than in those of an earlier period. What twenty years ago was considered practically impossible has now become everyday practice.

GREEK HOUSES.

WHEN there is scarcely a vestige of many of the temples, stadia, theatres and odea which once adorned the country of Greece—and, perhaps, equalled in design the Parthenon, Erechtheion and Apollo Epicurius—no very extensive remains could reasonably be expected of the elegant villas and other buildings of less durable construction; but the desire arising upon this subject, so valuable and interesting, is gratified with an ample knowledge of the designs of Grecian villas by the fortunate discovery of several bas-reliefs which exhibit in a beautiful manner this style of building, and by the pleasing description of palaces and villas given in the earliest authors. The villas and minor buildings of the Athenians no doubt partook of the same purity of style and elegance in design with their public edifices; for the same feeling for honour and reputation which animated Ictinus to the accomplishment of his distinguished designs of the Parthenon at Athens and Apollo Epicurius at Phigalia, would also direct him and other eminent architects in buildings of less magnitude and costliness, though of equal importance to their fame in architecture. The ambition of display of decorations in the private dwellings of the Athenians even excited the wit of Aristophanes, who says, "Your houses shall be as temples, the roofs shall be triangular and represent a spread eagle."

The Colchester Town Council have resolved to accept the tender of an American firm to lay the rails for the Colchester electric tramways for 35,035/.

NOTES AND COMMENTS.

It may be remembered that the most serious accident which arose in connection with the Paris International Exhibition was caused by the fall of a "passerelle," or foot-bridge, leading to a supplementary show in which the celestial globe was presented on a large scale. Litigation followed, and it was with difficulty the various degrees of responsibility were determined. With all its power, the city of Paris has not been able to escape liability. A civil action was commenced by five children, whose parents were killed, against the city as well as against the contractors. After deliberation the judges have decided it was the duty of the civic authorities to withhold the concession until a detailed plan of the structure, with the calculations of strength, had been submitted and tested. The works were allowed to be commenced and carried on without any official superintendence, and no steps were taken to insure public safety. The first care of the authorities was therefore neglected. The city was accordingly condemned to pay an indemnity of 2,500 francs to each of the five children. The contractors will have to give 600 francs a year to the two youngest until they have attained their majority. The catastrophe was the more remarkable as the municipality of Paris has at command a large body of experts, but, as elsewhere, they are occupied with alleged defects which are without the least danger to the public.

THE Wiltshire County Council having declined to commence a law-suit against the owner of Stonehenge for interfering with the public access to the great stones, the Commons and Footpaths Preservation Society have decided to take up the case. It is considered that a sum of 2,000*l.* will be necessary to meet the expenses, and about one-half the amount has been guaranteed. It is recognised that the owner is desirous to preserve the monument and that the money obtained for entrance within the barbed-wire fence is partly applied to pay the wages of a guardian. It would have been easy to have the monument preserved at the cost of the country if Stonehenge were allowed to be recognised as an ancient monument—an arrangement which was proposed when the Ancient Monuments Act came into operation. The Society now appeal for guarantees or donations for the amount of 1,000*l.*, and then it will be possible to test the public right of access to the monument in the law courts. It is well to have the rights of private owners recognised, but it is astounding that in order to vindicate those rights so venerable a monument should be treated as a place of exhibition, like one of the natural or artificial grottoes found in so many holiday resorts. Sir EDMUND ANTROBUS is willing to sell the stones and eight acres of land for 50,000*l.*

THE "Manual of Library Economy," by Mr. J. D. BROWN, of Finsbury (SCOTT, GREENWOOD & Co.), treats of whatever relates to the founding, arranging and working of a public library. It is needless to say that in so comprehensive a work, in which American as well as English practice is described, there is much that will be found useful by architects. Mr. BROWN's theory is that buildings should bear some proportion to the funds available for maintenance. He works out one of the results in this way:—"A library with an income of 1,000*l.* may spend 250*l.* a year in annual repayments of the principal and interest of loans. For this it can borrow something over 4,000*l.* Allowing 1*s.* per cubic foot as the cost of building, and 10 per cent. (or 400*l.*) for the cost of furniture, we get 72,000 cubic feet of contents, which is equal to a space 96 feet by 50 feet by 15 feet, or, leaving out the height of the rooms (15 feet), is equal to an area of 4,800 square feet. On a site this size it is possible to erect a building of one storey, possessing the great advantage of having every department on one floor, which will accommodate about 34,000 volumes, 140 newspapers, magazines, &c., and about 200 readers and borrowers at one time." Mr. BROWN considers that utility is often sacrificed to exterior appearance, and, in consequence, the fittings have to be of the cheapest kind. Another point to be considered is

whether the outlay on bookshelves, screens, &c., is to be regarded as furniture, or as fixtures forming permanent parts of the building. Open competitions for plans are recommended, but before issuing the instructions a properly qualified officer should be called in as adviser. The author is disposed to limit the number of works which can be considered as having enduring interest. Where the income is 500*l.* provision for 20,000 volumes is sufficient, and when from 1,000*l.* to 2,000*l.*, 40,000 volumes. The author is no faddist, and the experience he has derived from his official position as a librarian in London is cheerfully imparted, and the book can be recommended for clearness and fulness of information.

ILLUSTRATIONS.

CATHEDRAL SERIES: EXETER.—THE CHOIR SCREEN.

LAST week we published a view of the choir of Exeter Cathedral in which the Bishop's throne appeared, a work which used to be ascribed to Bishop BOTHE, but which is now considered to date from the episcopacy of Bishop STAPLEDON (1308-26). The screen we illustrate in this number is also to be credited to him. In the Fabric Rolls of 1318-19 and subsequent years there are various entries of columns, marble and iron for "la pulpytte," which some have asserted was intended for sermons delivered outside the building. There can be little doubt "la pulpytte" was the screen at the west end of the choir. According to the late MACKENZIE WALCOTT, the form of the old rood-screen in France and Belgium was altered to serve instead of ambones for the use of the epistoler and gospeller, and for reading of pastorals. The bishop gave his benedictions from the loft. The "rood" or large crucifix is supposed to have been placed on an iron bar above the screen. Archdeacon FREEMAN explains the use of the word "pulpytte" instead of screen in the records by saying:—"It is manifestly, from first to last, a French idea, newly imported from France, and carried out in the main by French workmen. It is always 'la pulpytte,' the vaulting under it is 'voutura,' not 'voltura,' and when a statuary is sent for 'from London,' to make some additional statues 'by the desire of the Treasurer' (who had perhaps quarrelled with the Frenchmen—certainly there is no record of his giving them anything *ex curialitate*) special mention is made of the fact as something extraordinary." The side openings served as chapels. In one was an altar dedicated to the Blessed VIRGIN, in the other an altar of St. NICHOLAS. The openings to the choir are modern, for the back walls were covered with tracery. The panels above are filled with oil-paintings. JOHN BRITTON stated the subjects were "Adam and Eve in Paradise," "The Deluge," "The Destruction of Pharaoh," "Devastation of Solomon's Temple," "The Angel Appearing to Zacharias," "The Nativity," "The Baptism of Christ," "The Taking down from the Cross," "The Resurrection," "The Descent of the Holy Ghost." The organ was originally built by JOHN LOOSEMORE, of Exeter, in 1664-65, but has been subjected to several changes.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.:
MANAGER'S ROOM.BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.:
MANAGER'S ROOM TO FIRE-PLACE.

UNIVERSITY COLLEGE HOSPITAL.

HOUSE AT ROEHAMPTON, SURREY.

THIS house has lately been completed, and stands in the Nepean Road, Roehampton, on the Spencer Lodge estate. The walls are finished in white rough-cast, and the roofs covered with red sand-faced tiles. The whole of the details are kept very simple throughout. The house contains a large hall and staircase, drawing and dining-rooms, and all other offices, with six bedrooms. Mr. E. D. HOBBS, of Thames Ditton, Surrey, is the builder.

ST. MICHAEL'S COLLEGE, TENBURY.

By J. S. BUMPUS.

(Continued from last week.)

THE whole of the north transept is used as a baptistery. The font, on a cross-shaped platform, is of Caen stone, with green panels of Egyptian marble. It has a lofty spiral canopy of oak 22 feet high, richly carved, which is raised by means of a windlass. An arched recess contains a stone desk for the registry, and a special well in the north-east corner supplies water for the font and also for cleaning the church. The whole appointments of the baptistery, with its raised font and aspiring cover, as also those of the altar, with its striking canopy, testify to that prominence which the Church assigns to her two Sacraments.

An eagle lectern of brass is placed outside the screen. The litany desk, or faldstool, of a graceful design in carved oak, stands *in medio chori*. It was the gift of the late Mr. A. Trevor Crispin, of the Treasury, one of Ouseley's lifelong friends. Mr. Crispin was also the donor of some handsomely bound books for use at the altar, and of a large, rough calf-bound Book of Common Prayer for the organist. To Mr. Crispin Ouseley dedicated his set of six anthems, composed at Rome in 1851, and published in his collected cathedral music in 1853.*

The pulpit, of Caen stone, octangular, with figures of angels at the corners, stands at the north-east angle of the nave. It was the gift of Captain E. J. Otley (d. 1871), an able amateur musician, 'cellist and composer, and another of Ouseley's most intimate friends.

Mural crosses of brass are fixed in the walls near the pulpit and lectern, to the memory of Sir F. Ouseley and the Hon. Miss Georgina Rushout. They form prominent features in the view from the west door.

* Mr. Crispin published in 1873 (Macmillan & Co.) "A Christmas Carol"—a small folio containing a series of illuminations illustrative of scenes in connection with the Nativity. Some of these illuminations were original, while others were drawn from ancient missals and service-books, mainly in the possession of Captain Otley.

The nave consists of three full-sized bays and a smaller westernmost one. A low stone *septum*, running from north to south, fences off this small bay, which is left unbenched. The piers, whose capitals are carved in natural leafage, are of blue stone from the Forest of Dean. The clerestory windows are of two and three lights each, cinquefoiled, and the aisle windows of four lights, trefoiled. The western windows of the aisles and two in the porch are square headed. In the south clerestory a beginning of stained glass has been made. A small door facing the porch opens into the quadrangle. The nave is seated partly with movable benches and partly with chairs. Gas not having yet been introduced within the precincts of the college, the lighting of the church is effected by hanging oil lamps of polished brass.

The south transept is filled with the organ, an instrument of great sweetness and power. It is so raised above the *decani* stalls that the pedals are on a level with the stallbacks. The front pipes are all polychromed, and painted with figures and mottos relative to the dedication of the church. In Ouseley's later years certain of these front pipes, instead of projecting in their original fan-like Spanish form, were placed upright, as we now see them. There were good reasons, no doubt, for the change, but not a little has, perhaps, been lost to the eye in artistic effect. The organ which was in the church at the consecration in 1856* was built by Flight, of St. Martin's Lane, London, after a design furnished by Sir Frederick Ouseley. It had four manuals and a pedal organ, forty-eight stops and seven couplers. This instrument, after having been in use only eleven years, was succeeded by another and larger organ of sixty-five stops, by Harrison, of Rochdale, opened on December 8, 1868. Sir F. Ouseley's fine eight-part anthem, "Great is the Lord," was composed for and sung on the occasion. This instrument also proving unsatisfactory, the present magnificent one, which still contains much of Flight's work, was erected by "Father" Willis, and

* It was only half-completed by the opening day, but Dr. (afterwards Sir) George Elvey, who played on the occasion, is said to have "done wonders" with it.



ST. MICHAEL'S COLLEGE, TENBURY. INTERIOR OF THE CHURCH, LOOKING EAST.

finished in 1874. It has been improved since then, and now possesses four manuals, sixty-four stops (including twelve on the pedal organ), nine couplers, viz. three to swell, four to great and two to pedal. It has pneumatic action, and the pedals are concave and radiating. A remarkable feature about this organ is that it contains the largest bellows, used for light pressure only, ever made by Willis. Organ-building on the scale of Ouseley's tastes must have been very expensive work, but with his devotion to high aims he grudged nothing in the cause of sacred music. The present organist, Mr. Edgar C. Broadhurst, is a perfect master of his instrument.

The visitor for the first time is recommended to enter the church by the north porch. The *coup d'œil*, as seen from that point, is very striking. Perhaps the effect from the corresponding corner at the south-west is even more so, for here one is much astonished at the air of height which the architect has contrived to give his building. The north transept with its clerestory of lancets, seen athwart the pillars and arches of the nave, is almost cathedralic in appearance. On a bright, sunny day the effect is further enhanced by the stone, which has preserved all its original freshness, undimmed by smoke and dirt, and by the brilliant tints of the stained glass. The choir screen, the pendant brazen lamps, the diapered organ pipes, the polychromed reredos, the needlework on the altar and faldstool and the tiled pavement are all important factors of colour in this truly fascinating interior.

One should not fail to notice the pretty peep of the meadows on the opposite side of the road, as seen from the church, when the door of the north porch is open, especially on a fine morning.

The material used in the construction of the church and college is sandstone, dug upon the site, grained and chased with Bath stone. The roofs are composed of Delabole slate, and a blue stone from the Forest of Dean was selected for the several columns and shafts.

As may be seen from the photograph, the college buildings form a most pleasing group, especially when viewed from the south-east corner of the grounds. The south façade is quite an object-lesson in fenestration. Altogether, one sees in the simple forms of the building the assurance that practical sense not less than uncurbed taste for the picturesque presides over the conception, and that while the beautiful never faded from Woodyer's eyes, he was incapable of sacrificing internal comfort to the seductive picturesqueness of a broken outline.

Twice daily in term time, at 9 A.M. and 6 P.M., matins and evensong, with the accompaniment of the choicest music, are as reverently and punctiliously performed in this remote spot as they would be in the midst of a crowded city. On Saints' days the morning service is at 11 A.M. On all such days, and on certain Sundays, matins are followed by a choral celebration of the Holy Communion. The selection of music is large and representative, and comprises the finest specimens of the English School of cathedral music from the period of Tallis to the present day.

It seems to be thought by many that St. Michael's is merely a musical school. No supposition could be more erroneous. Certainly, it was Ouseley's primary desire to train up boys for Holy Orders by a sound public school preparatory education, and who would add to this course such a knowledge of Church music as would extend the use of the choral service on intelligent lines, and improve the tone of Church music throughout the land. Stress, however, must be laid on the fact that many boys, on leaving the school at the breaking of their voices, gain scholarships at the great public schools, and that they have proceeded thence to the Universities and are now filling responsible positions not only in the Church but also in the army, the navy, and many other departments of life.

The daily musical routine comprises an hour and a half in church and an hour's vocal practice in the hall with the warden and choirmaster, the Rev. John Hampton. There is a rehearsal with the full choir in the same place every Wednesday evening.

There is schoolwork each weekday morning from 7 to 8 and from 10 to 12; in the afternoon from 4 to 5.30; and again, in the evening from 7.45 to 8.45. Saints' days are half holidays from schoolwork. Boys who are taking lessons on the organ and pianoforte attend the organist after morning school at 12. So from this time table it will be clearly seen that musical work does not preponderate, and that in the

course of training music is a prominent but by no means an indispensable feature. Examinations are held at Christmas. In school work the Rev. Vincent Cooper, M.A., precentor of Durham and late scholar of B.N.C., Oxford, is the examiner; that in music being Dr. George Robertson Sinclair, organist of Hereford Cathedral.

The boys have excellent cricket and football fields, a fives court, playground, gymnasium and a good school library. Recently, under the régime of the present head-master, the Rev. W. A. Renwick, a carpenter's shop has been started, and has proved a great source of interest. There is adequate accommodation for bathing in a large pool, formed out of Cadmore Brook—a narrow stream dividing the county of Hereford from that of Worcester, just below the cricket field. Attached to the college is a foundation for eight choristers, to which boys are admitted only as vacancies occur after having served as probationers. The choristers receive their board and education gratuitously. Probationers are elected after a competitive trial of voice and ear—a preference being given (*ceteris paribus*) to the sons of clergymen. They receive their education at an almost nominal cost. A certain number of commoners, or boarders, are admitted on much higher terms. All boys wear the academical cap and scholar's gown in hall and the surplice in church. The last named, however, is only worn by the commoners on "surplice days," i.e. Saturday evenings, Sundays, Saints' days and eves of Saints' days.

The adult portion of the choir is composed of the warden, the head-master, the second master and four professional lay clerks resident in the neighbourhood. The educational staff of the school consists of the head and second masters, both in holy orders; the organist, for instrumental music, and masters for French and writing. The vocal training of the boys is in the hands of the warden. To his long experience and careful tuition is due the admirable and natural way in which the boys produce their voices and pronounce their words. Their uniform excellence of conduct and sobriety of demeanour in church are very noticeable. The adult members of the choir (clerical and lay) sing with thoroughly artistic feeling, and with that hearty love for their noble art which alone makes it possible to produce such music adequately.

The Visitor of the college is the Bishop of Hereford, and there are twenty honorary Fellows, non-resident. These include several names of eminence.

The late Rev. Francis Tebbs Havergal, prebendary of Hereford and vicar of Upton Bishop, gives in a letter written to Miss Hackett,* from St. Michael's, May 20, 1873, a pleasant glimpse of the college:—

"I am spending a day or two at this delightful place of Sir Frederick Ouseley's. Doubtless you know all about his sixteen choristers. It is a goodly sight to see them when at meals in the hall—but to hear them sing, I know nothing like it; so refined are their voices that I never hear the like elsewhere. They are very carefully trained and taught, and their behaviour is remarkably good also. Sir Frederick sends his best compliments, and desires me to inquire whether you have seen his 'Essay on Cathedral Choristers,' in the volume published last year by Dean Howson, wherein he acknowledges, with the deepest obligation, the great and valuable interest that for so many years you have taken in the choristers of England."

The Dedication and Commemoration services are held annually at Michaelmas, and now, as in years past, there is always an array of old friends and former pupils, clerical as well as musical, all bent upon enjoying the occasion, while doing honour to the college and its founder.† This, as

* This amiable and patriotic lady spent the whole of her long life (she died in November 1874 at the age of ninety-one) in inquiring into the education and generally ameliorating the condition of cathedral choir boys all over England. Once in every three years she paid a visit for this purpose to each cathedral. For over seventy years she constantly attended the services at St. Paul's Cathedral, the chorister of which were the first, in 1811, to engage her attention.

† The Rev. Dr. J. B. Dykes, of Durham, who is known far and wide as the composer of some of our finest hymn tunes and other Church music, noted in his diary the great enjoyment he had at one of these Michaelmas gatherings—that of 1867. He was one of the selected preachers, another being the Bishop of Oxford—Samuel Wilberforce. Dykes's impressions will be found in his "Life," edited by the Rev. J. T. Fowler, hon. canon of Durham (John Murray 1897).

recent writer has truly observed, will convey some notion of the attraction which the *genius loci* has for its former members and those who have been in any way connected with it, and those who know the high character and excellent tone which characterise the school, the exceeding beauty of the surroundings, and the bracing healthiness of the situation, will heartily join in the wish that it may long flourish and prosper.

(To be concluded.)

A HOSPITAL WARD.*

THERE are several instances known in new wards constructed upon the latest principles of failures which have been absent from the older and entirely out-of-date buildings, and the reasons have been—in the cases with which I am personally acquainted—not far to seek. The old wards were known to be dangerously unclean, and special precautions were therefore taken to counteract this condition. The new wards were so very bright and clean that anything but perfunctory cleaning was scarcely thought necessary. In the old wards the windows were kept open, and the very walls, innocent of plaster, were porous enough to be an assistance to ventilation. In the new, it appeared that the provision of air inlets in the walls was thought to obviate the necessity of opening the windows.

Another example of this neglect of well-worn principles occurs to me, although it is not directly connected with a hospital ward. The drainage of a certain building was relaid upon modern principles with manholes at every branch and change of direction. The old drains were always well-flushed periodically, and thus kept fairly clean. The new drains were supposed to act for ever without such assistance. Five years after they were laid, when superintending some repairs, &c., at the building, I made a general examination of the system, and was compelled to use a crowbar to open up the covers of the manholes, which had never been touched since the drains were first laid. The building owner in this case had not realised that manholes were merely constructed for more easy access to and inspection of the new drains than was possible with the old.

One other example—and this was in connection with a ward. The whole of the inlet ventilators were expensively constructed with pipes glazed internally. On revisiting the hospital a year later I found these flues black with dirt. They were never cleaned.

Are not we who build hospitals apt at times to forget the principles upon which we design certain details? It is an accepted principle, for instance, that all angles, internal or external, should be well rounded, yet not many years ago I remember an architect drawing the attention of a class of students to the hollowed skirting between the walls and floors of his wards; then proceeding to point out an arrangement he had devised for preventing the beds being pushed against the walls. This consisted of a square fillet nailed to the floor within half an inch of the skirting—i.e. he had carefully done away with one internal angle to the floor and added two.

I have heard, too, of air inlets constructed as I have described above, and closed at one end with a fixed grating, which effectually prevented any cleaning.

After all, the great principles to be kept in view in the details of a hospital ward are few and simple, and one of them—not the least important—is the avoidance of all sharp internal angles, deep-cut mouldings, and other not easily cleaned lodgements for dust and dirt, those harbours of disease germs and a source of pollution to the air of the ward. It will be sufficient, in so short a paper as this, to deal mainly with this principle.

Floors.

It may be taken for granted that whatever difference of opinion there may be with respect to the walls, we shall all be agreed that the floor of a ward should be laid on a solid foundation, and that the surface should be as impervious as it is possible to make it. Also that it should be smooth and free from holes or crevices likely to retain dirt or dust. For this reason no one thinks nowadays of using plain jointed soft wood floors, because in addition to being absorbent the material is bound to shrink, and thus leave any number of crevices for the secretion of dirt and dust. Floor sweepings well wetted and impregnated with soap make a horrible compound.

Modern floors are of several kinds, which vary according to the fancy of the particular architect or the managers of the building. They comprise the following, viz. hardwood block floors, hardwood tongued boards laid in narrow widths, secret

nailed and polished; asphalte, terrazzo, patent composition floors such as Eubœolith, &c.

The hardwood floors are most frequently made of oak or teak. Hitherto I have myself adopted kiln-dried maple in very narrow widths. In addition to being an exceedingly hard and unwearable floor, its light colour shows up dust much more easily than dark woods, and this, to my mind, is an important detail. It would seem to be very desirable that dirt should always proclaim itself, but those who are immediately responsible for the cleanliness of the floors are, it is to be feared, not always of that opinion.

The most usual finishing to wood floors is beeswax and turpentine highly polished. I believe that if this is regularly wiped over with a wet rag and as regularly polished, it is a very good surface; though no doubt it is desirable to have the surface entirely cleaned off and renewed at intervals.

Terrazzo floors are much advocated on account of their supposed impermeability. I do not think them quite so impermeable as they are supposed to be. After all, the main part of the material is cement, and it is well known that both cement and marble chips are fairly absorbent materials. Indeed, the comparative impermeability of this floor is due to the high polish it receives when first laid, and that is very soon worn off. Perhaps these floors are best treated by being polished with beeswax as for wood floors. Even so, they are very hard to the feet, and the mottled colour too easily conceals dirt.

Asphalte is, no doubt, the most impervious of floor materials, but it is of a dark, uneven and bad colour, and is therefore seldom used.

My experience of patent composition floors has not hitherto been so fortunate as to enable me to commend them highly. They have some undoubted virtues, however, and the material is more impervious and less subject to the action of acids than any I know. Unless very carefully laid, they appear to be liable to swell and crack. The material can be coloured, and when polished the surface is excellent.

Skirtings.

The skirting, if it can be so called, to the floors should be rounded so as to form a good hollow. The most usual radius is from 2½ inches to 3 inches. Latterly I have used 1½ inch only, which is quite sufficient for its purpose, and can be carried round projections more easily than is possible with the larger radius. All that appears to be necessary is to have such an angle as will permit of the whole surface being easily and rapidly cleaned and prevent stagnation of air. It is best formed of the same material as the floor. I have, however, seen hollowed glazed bricks used, but there are too many joints, and the edges of the bricks are not generally even.

Wall Surfaces.

There are practically two opposite principles which govern the material of which the wall surfaces should be composed, and these are derived from views on that much-vexed subject—ventilation. It would be rather trenching upon this subject, which is large enough for separate treatment, to attempt to discuss whether the walls should be porous or not.

It is safe, however, to assert that at the present time, for hospital ward walls, at least, impervious walls are mostly in vogue. If we adopt this principle, the next most important consideration is that the surface of the internal faces should be easily cleaned and kept clear and free from dust. In some modern treatment of walls we have, I think, somewhat overlooked this principle, although on the surface it appears to have been carefully studied. I refer to the growing practice of lining the ward walls with tiles. The use of tiles has no doubt given us a more impervious and even surface over a large area, but it is discounted by the numerous joints which no care nor skill in the fixing can make smooth, except in a limited way. The ideal surface would no doubt be an unbroken and polished surface such as obtains on tiles, affording no ledges for the lodgment of dust; but this has been fairly well achieved by the use of enamel paint upon hard trowelled cement surfaces.

It is scarcely possible to obtain a more generally smooth surface than with trowelled cement—Keene's or sirapite, for instance. These can be brought to a polished surface. It is difficult, if not impossible, however, to obtain a really even colour. Although enamel paint can be used with decorative effect, pictures would still be required to decorate the walls, and the ordinary framed picture is a veritable dust trap. Therein tiled surfaces have the advantage of painted walls, as they can be decorated with permanent pictures painted on the surface. It would be, of course, too costly to renew pictures every time the ward walls required to be repainted.

It would be possible to cover permanent wall-paintings with glass let in flush with the wall surface, and I am not sure that this has not been done.

Ceilings.

There can be no question that ceilings should be non-porous, and they are best painted.

* A paper read by Mr. A. Saxon Snell, F.R.I.B.A., in the Section of Engineering and Architecture at the Congress of the Sanitary Institute, Bradford.

Windows.

As to the best form of window for a hospital ward, there appears no general agreement. The most usual is the ordinary sash window with a hopper above opening into the ward, with spandrel sides to prevent down-draught. It would appear, however, that its forms and construction involve the many angles, crevices and hidden voids which in other parts of the ward we strive so much to avoid. Casement windows with solid frames are at least not open to this objection, though no doubt their advantages in other directions may be questioned.

At Willesden parish infirmary I have used casement windows brought down to within 12 inches of the floor, and with hopper next the ceiling. The casements open inwards, and thus form a protection for the bed. It is possible also by opening the windows to their fullest extent to fairly flood the wards with air.

At Charing Cross Hospital, I am adopting a form somewhat similar to what I believe is known as the "Middlesex" window, owing to the alleged fact that it was first used at that hospital. There are five sashes of equal size in the height of the window, all of which (excepting the lowest) are hung on centres and controlled by one rod and lever. The sashes close one upon another, and there are therefore no transoms. The lowest sash is separately hung on the bottom rail. It is obvious that a window so constructed can be opened to a much larger extent than is possible with the ordinary sash window. I should add that all except the controlling lever of the opening apparatus is fixed on the outside of the window.

If it is possible to fix the glass of the sashes quite flush with the inner surface of the sashes, a great advance will be made.

Doors.

Nothing much can be said with respect to doors in a ward. They should be made wide enough to allow of the passage of a bed. It is desirable that the upper panels should be glazed with clear glass, and that because of a principle to which I shall refer later on.

The whole question of the material for joinery might be considered here. Hardwood throughout is generally adopted, where the question of cost is not vital—hardwood oiled or French polished. Its comparative freedom from material shrinkage, and its harder or less absorbent surface, are great advantages; but here again I think that enamel paint is not much, if at all, inferior.

I am hoping in time to obtain what I may call solid joinery, *i.e.* built up without panels with the inevitable sharp internal angles which can only be kept clean at the cost of great labour. Of course, it is possible to have solid or flush panels, but shrinkage soon shows up the joints, which then become dust-traps impossible to clean.

There are some Canadian doors now made of which the principle of construction could, no doubt, be applied so as to successfully overcome this difficulty. They are made up of quite small sections of wood very closely fitted together, and sheathed with hardwood beautifully dovetailed on, and the whole is pressed and almost welded together by hydraulic pressure. At present they are made to imitate the ordinary panelled door, but one is being made for me now—as an experiment—of solid soft wood, sheathed all round in oak.

Furniture.

It is in the furniture and fittings of wards, for which the architects are responsible, that there is a general falling away from the principles of construction we are considering; although I am bound to add that some very notable improvements have been made in late years in the construction of chairs, tables and bedside lockers. The last-mentioned especially call for consideration if only because they are less under observation and control than the furniture which stands out in the open. The tops are now usually of glass or marmorite, and if it were only possible to get rid of the closed cupboards it would not be difficult to design them generally so that every part could be readily and easily cleaned.

The mention of cupboards reminds me that these fittings are generally objectionable and should be as far as possible banished from the ward. One at least is, of course, necessary for holding surgical and medical appliances, lint, medicines, &c., but this should not, as is frequently the case, be placed or built against the wall. It should stand out in the centre of the ward, and should be constructed of hardwood, framed and glazed all round and on top and fitted with glass shelves. I am not certain that such a fitting commends itself to all nurses. Some time since a nurse complained to me that it cost her much labour and trouble to put away anything in these fittings, because, in effect, anything in the nature of disorder, or want of absolute cleanliness, could not be concealed even from her own sense of order—not to speak of the doctor on his rounds. I am sure that you will agree with me that therein lies its great virtue.

Fixed or heavy tables and chairs are to be avoided. It is quite possible to make a light table rigid.

Stoves.

I collect every reference in the building press to hospitals, new and old, and a great number of the smaller paragraphs are, I find, inserted by makers of particular ward stoves which have been used in the building. There is no reason to doubt that they are excellent stoves for many purposes, but as they are built of iron plates and grilles, and plentifully adorned with mouldings, &c., they would appear to be entirely unsuitable to a hospital ward.

One or other of the forms of stoves which is built up with plain firebrick and bricks or tiles is far preferable. There is a greater amount of heat given out by radiation and far less by conduction, and there are few lodgments for dust and dirt. Some of these brick and tile stoves are honeycombed with ventilating flues for heating air, which is conveyed by long horizontal flues from the outside. They would not appear to be open to objection, as they are so constructed as to be easily kept clean.

Heating and Ventilation.

It is not the purpose of this paper to deal with such large and controversial subjects as heating and ventilation, or to enter into any discussion upon the relative merits of natural or mechanical ventilation.

It is only necessary to remind you that whatever pipes or fittings are used, they should be so placed and constructed as to be easily kept clean. If possible, too, all controlling valves and pipes are to be kept out of the ward.

Flues of any sort, whether in the floors or walls, should also be so constructed, with movable gratings and covers, so as to allow of easy access for cleaning and disinfection.

Lavatory Basins.

Until quite recently a fixed lavatory basin was, I think, regarded as quite inadmissible in the ward itself, but the inconvenience of hand basins and the great improvement in the construction of fixed lavatories have combined to overcome the objection to their being in the ward. Of course, they are only for the use of the medical staff and the surgeons. The first hospital in which I saw them was one which is not even yet finished, and which has claims to being considered of the most modern design and construction. The basin was, however, of quite an ordinary pattern, and fixed close against the wall, but I regret to add that underneath the supply, waste, overflow and anti-siphon pipes—all on the surface of the wall—reminded one of Medusa's head.

While dealing with these fittings I should like to refer to the deceptive character of so many sinks and basins in the market, which are designed especially for hospital purposes. They are beautifully designed to avoid anything in the nature of dirt crevices or mouldings on the surface, and so far only as they can be obvious to the casual observer. But the glazed surface and rounded angles are confined to the top and sides. Underneath they are rough, angular and full of pockets which are never likely to be cleaned from the day they are fixed. Much improvement is being effected by a few manufacturers to meet the persistent demands of those who value cleanness and virtue in the unseen parts as in those seen.

One other detail I have to refer to, and that is the necessity of what I may call "openness" in every part of a ward and its adjuncts. It would seem desirable that in a general way both patients and nurses should always be under observation, or at least liable to be observed at nearly all times by the superior officers. If that appears to be objectionably stringent, I may add that it is not at all necessarily so.

I need scarcely say that I exclude the bath-rooms and ward conveniences, but certainly the duty-room and ward kitchen and separate day-rooms should always be more or less open. My own practice is to make the side next the corridor leading to the ward of glazed partitioning.

When patients know that they cannot escape even casual observation, they are more likely to behave themselves correctly, and the nurses themselves do their duty none the worse for the lack of opportunities of concealment.

It is better, too, that nurses should always be employed when on duty for shorter hours, than that the weariness of long hours should lead them to lounge or neglect their duties when occasion offers.

At the Mart, Tokenhouse Yard, last week, Messrs. Farebrother, Ellis & Co. offered at auction the freehold properties 194, 195 and 196 Strand, occupied by the *Daily Graphic* and others, and owned by the proprietors of the *Graphic*. The site has an area of 4,040 feet. Bidding started at 40,000*l.*, and at 63,000*l.* it was knocked down.

THE HOUSING PROBLEM.*

IT would be not only tedious but impossible to traverse in a short address like the present the many subjects where the sanitarian and the engineer meet on common ground, but at the present time there is one very prominent in the minds of men occupying responsible positions in our large centres of population; that is, the problem of providing suitable dwellings at a reasonable rental for those now lodged in unhealthy tenements with sordid surroundings.

The Legislature has decided, and very reasonably, that it will not grant compulsory powers for the acquisition and demolition of any considerable number of houses occupied by working men, and those dependent upon them, until provision is made for rehousing them at a reasonable distance from their work. Where the demolition of the old houses would be the result of a street widening or of making a new street through a congested neighbourhood, the cost of making provision for the evicted inhabitants can be fairly well ascertained beforehand, and is so much added to the cost of improvement; the authority can go to work with open eyes, having made up its mind that the improvement will be for the general good and worth the outlay. In such cases the Local Government Board exact all that they are entitled to, and make no exception for even another Government department, as a Bill promoted by the Postmaster-General for the acquisition of a site was withdrawn in consequence of the Local Government Board's representations, and the difficulties and expense of complying with the latter's requirements.

The Torrens Act, Lord Cross's Act, the Act of 1882 and others were consolidated in the Housing of the Working Classes Act of 1890, to enable the local authority to deal with large and small unhealthy areas by clearing them of houses unfit for habitation, and constructing in their place dwellings complying with sanitary laws. As one of the causes rendering the clearing of the site desirable would be its congested state, it would rarely happen that the new buildings, having a greater superficial room area per person, separated by wide streets instead of the former courts and alleys, could accommodate all the persons formerly living on the area; and the Act of 1890 gives the local authority power to acquire land elsewhere and make provision thereon for the persons unhoused. It may be assumed that the clearing away of unhealthy slums, with their hotbeds of disease, is a public benefit, and that therefore the cost of providing dwellings for those persons who have been unhoused is a legitimate charge on the public funds. An improved state of health must result in an improved condition of the mind, a sense of greater satisfaction with things in general and better ability to perform work. Unfortunately experience shows that only a small proportion of the unhoused population of an unhealthy area find a habitation in the new dwellings. Persons who have sunk to the level of squalid, dirty, overcrowded rooms do not readily appreciate light and airy dwellings with the restrictions enforced by the municipal control, and are gradually absorbed in houses of the type they have been accustomed to, which in their turn become overcrowded, while the new dwellings built with the rates are occupied by a better class of persons than those for whom they were intended. Custom also largely influences the choice of a habitation, and the wife of a working man does not take readily to a type of dwelling different to those occupied by her associates.

In many large towns there are, independent of the local authority, self-constituted committees for the better housing of the working classes who exercise sometimes an intelligent and sometimes a sentimental interest in their protégés. These bodies press the local authorities to put their powers in force even when it can be readily shown that the construction of working-men's dwellings in that particular district must entail a charge on the rates. In many places rows of houses have been built by the local authorities when the local builders were quite willing and able to supply all the accommodation necessary, and it is a doubtful point whether under those circumstances the council is justified in using the rates to compete with private enterprise, as there are very few instances where buildings constructed by or for the council have been built as cheaply as those put up by local builders. The Local Government Board very rightly insists that the by-laws shall be complied with, but it also places upon the council the duty of providing expensive means of drainage and greater floor space per head of the persons to be accommodated than the occupiers have been accustomed to. Again, a block of buildings built by a contractor working under such a specification as the borough engineer must of necessity prepare, and under proper supervision in order that the specification may be carried out, will always cost considerably more than similar houses built by the speculative builder working at his own time and in his own way. Of course I do

not refer to what are termed "jerry-built" houses, but to those constructed of sound, useful materials; yet it is no unusual complaint made by members of a council that a house built by a private individual, and providing all the accommodation found in one of those erected at the cost of the public funds, can be purchased at a much lower rate than the cost of the latter. For these reasons very few of the municipal schemes can show a clean balance sheet at the end of the year, even when the houses have been recently built, and if that is the case when they are new the result may be financially serious when considerable repairs have become necessary.

During the last few years the rates of most towns have shown a tendency to increase as better provision is demanded by the public for its comfort, convenience and amusements as well as for the necessities of life. Municipal debts have increased by leaps and bounds, and it is our duty that as tenants for life we do not leave to our successors a burden of mortgages too heavy to bear.

I take it therefore to be the duty of the municipal engineer, while desirous that his council shall occupy a foremost place in the advancement of all those points which make for the well-being of the people, to use his influence to discourage chimerical schemes for the lifting of a stratum of society that, do what you will to buoy them up, will always sink to the bottom and leave the advantages offered to them to be reaped by other strata capable of looking after themselves.

THE STORY OF TRENT BRIDGE.

IT should be remembered that in early times, says the *Nottinghamshire Guardian*, the great bridges of the country were not, as nowadays, maintained by local authorities. The expense was too great, and they were always treated as an Imperial burden, borne by the old kings primarily, assisted by the contributions of the charitable. King Edward the Elder built the first bridge over the Trent at Nottingham in the year 921, and in later centuries we read of the Archbishops of York granting indulgences to all such as contributed to its support. But in those times stonework was an unattainable luxury, and timberwork was made to serve in its stead. Hence, no doubt, reparations and rebuildings frequently took place. Not before the year 1300 was a stone Trent Bridge seriously planned, and it was the lady philanthropist of Nottingham—already known as a benefactor of the local White Friary and other charities—who projected and carried out the undertaking.

The story opens with an application by John le Palmer, of Nottingham, and Alice, his wife, for a Royal license to give 6*l.* 13*s.* 5*d.* of yearly rents of Nottingham property for the maintenance of two chaplains, to celebrate Divine service for their souls in the chapel of St. Mary on "Hethbeth Bridge," as it was then called. In accordance with custom an inquiry was held, in the Royal interest, in 1301-02, when it was reported that the proceeding would not be prejudicial to the king, and the desired license was consequently granted on April 16, 1303. In the last-named document it is recorded that the chaplains were to pray not only for the souls of the Palmers and their relatives, but also for the souls of "all Christians who assign their goods, or part of them, to the maintenance of the said bridge." Probably the Palmers were also then assisting in maintaining the structure, although we are not expressly told so. But the chapel of St. Mary—if it ever existed—is heard of no more. The benefactors built or rebuilt it as the chapel of St. James, and, being reared as part of the new bridge, it was not completed and fit for use until 1322.

Of course, the Palmers were people of position. John was made Mayor of Nottingham in 1302, 1306 and 1311. His wife, who survived him, was sister and heir to Hugh de Stapleford, of a powerful local family. Possibly it was her money alone that went to found the chantry, as her husband does not again figure in association with the work of the bridge. Probably Alice laboured at first in connection with the town authorities. At any rate, on August 28, 1311, there was issued a Royal grant to Alice le Palmer and the good men of the town of Nottingham of "pontage" for a term of five years, for the repair of the bridge of Hethbeth—under due supervision. This pontage, as its name implies, was a fund devoted to bridgework, derived from toll on goods entering the town, from whatever direction. Although "repairs" only are alluded to, there is no doubt that the bridge was being reconstructed, the terms being elsewhere confused among contemporary documents. Alice did not remain on cordial terms with the town authorities, for subsequently the latter desired that the same tolls might be diverted to the building of the town wall, as we shall see.

John le Palmer appears to have died soon after completing his term of office as mayor in 1312. On August 26, 1314, was issued a Royal "protection or license to beg for one year to Alice, late the wife of John le Palmer, of Nottingham, who is build-

* From the address by Mr. T. H. Yabbicom as president of the Conference of Engineers and Surveyors to County and other Sanitary authorities, delivered at Bradford.

ing the bridge of Hethbeth." No doubt the lady's object in obtaining the license was that of invoking the assistance of the charitably disposed about the country, through the medium of bearers of begging letters.

All this time, of course, the local pontage dues were being levied. On January 1, 1315, a case came up at the borough court, when complaint was made against one William Metel, for arresting two cartloads of wood at Chapel Bar, the west entrance to the town, for pontage. Defendant pleaded that he suspected them to contain merchandise.

On the expiration of the previous license, on August 30, 1315, there was issued another "simple protection for two years for Alice, late the wife of John le Palmer, of Nottingham, building the bridge of Hethbeth." Moreover, on the same date she obtained an extension for three years of the pontage grant in 1311 for five years.

So far as appears on the surface it must be confessed that the foregoing documents allude only to Alice le Palmer superintending the expenditure of funds contributed by others. But the building of the bridge was her lifework, and we are fortunately able to show that she expended her wealth as well as her energies thereon, insomuch that she began to feel anxious as to her old age. Hence she took steps, the result of which remains on record in the following interesting note, dated February 1, 1317:—"The king to the prior and convent of Thurgarton. Request that they will grant to Alice le Palmer, of Nottingham, by their letters patent, a suitable allowance for her maintenance in food and drink, to be received from their house for life, the king wishing to provide her with maintenance lest she should be brought to want on account of the expenditure of her goods about the construction of the bridge of Nottingham, upon which she has spent and still spends great sums for the common utility of all persons passing over the same, the king wishing that she may be animated to complete so desirable a work when she sees that she is sure of suitable maintenance for life."

In thus quartering the distinguished lady philanthropist on Thurgarton Priory, Edward II. exercised a privilege the Crown appears to have claimed of providing for old servants at the expense of the monastic establishments. In the present case it was evidently an "out-pension," for Alice le Palmer remained busy on the bridge many years longer.

When the same king granted an extension of "murage," or the right to take toll for the purpose of building the town wall, to the people of Nottingham on July 2, 1321, he inserted a stipulation that "custom is not to be taken of goods or merchandise whereof any custom is due in aid of the repair and amendment of the bridge of Hethbeth, and of another bridge between it and the land towards Gamston to be newly constructed, according to the king's grant to Alice le Palmer." Is it not possible in face of the preceding that the lady immortalised in "Lady Bay" is none other than this eminent bridge-builder?

About six months later, on January 12, 1322, the king granted murage to the town of Nottingham for three years, with a clause that the customs granted to Alice le Palmer, "in aid of the construction of certain bridges near the aforesaid town," shall cease during the said three years, on account of the necessity of enclosing the said town. Herefrom we may perhaps infer that the Trent Bridge was now sufficiently complete for traffic, so that further operations might be postponed.

This year the chapel of St. James on the bridge was completed, the first two chaplains being instituted on November 23, 1322. The first chaplain of a chantry she had founded in Stapleford Church was instituted on the same date. Like other chantry founders, Alice le Palmer reserved to herself the rights of presentation so long as she lived, directing that after her death such rights should revert to the priory of Newstead, to which her ancestors had given Stapleford Church.

We next read of the bridge works on December 17, 1324, when the king addressed letters to the town authorities forbidding them to take further customs for murage by virtue of an unexpired license, "for the king has now granted to Alice le Palmer and Hugh de Stapleford that they may take certain customs upon things for sale coming to that town until the end of three years, in aid of the repair of the bridge of Hethbeth and the bridge of the new breach near it."

On April 30, 1327, the king granted a "protection" to Alice le Palmer for two years. No doubt this had to do with the raising of further money for the work of the bridge. On May 3, 1327, there was an extension for one year of the former grant of pontage to Alice le Palmer and Hugh de Stapleford for the repair of the bridge of Hethbeth, &c., and likewise a mandate to repair the same by view of two burgesses. Three days later, on May 6, 1327, the king directed the men of Nottingham to cease collecting murage during the corresponding period, "as the king has granted to Alice le Palmer that she may take such customs until Christmas next and for a year from then in aid of repairing the bridge of Hethbeth, and the king is unwilling that divers customs shall be taken in the town from one and the same thing."

We have an interesting item under the date of November 8, 1327, when there was a royal grant to Alice le Palmer, "in consideration of her great labours and expenses on the construction and repair of the bridge of Hethbeth, over the Trent by Nottingham, that she be quit from payment of the 20th, lately granted by Parliament, and of all taxations, aids, tallages, &c., while engaged on such work."

On January 6, 1328, a commission was despatched to survey the Trent Bridge, &c., and "to audit the accounts of Alice le Palmer and Hugh de Stapleford, collectors of the pontage granted by the late king for the repair of the bridges, and to take inquisition as to the amount received and the amount expended." One would imagine that the report of the auditors was a favourable one, for on August 30, 1328, there was another extension for one year of the grant of pontage to the lady bridge-builder and her brother under the supervision of two burgesses.

But at this period undercurrents were at work, for in a few months time a change came over the scene. On May 10, 1329, a royal mandate was issued ordering Alice le Palmer to cease collecting pontage until otherwise ordered, "as the king learns by trustworthy testimony that the said bridge is now repaired, and that William de Amyas, now mayor of Nottingham, intends to repair out of his own goods all bridges between Leen Bridge and Trent Bridge, and that he has begun, and that Alice has expended nothing upon the repair of the bridge of Hethbeth since Michaelmas last, although she has continued to levy the tolls."

This is the last we hear of Alice le Palmer and her devoted labours. We may reasonably assume that she was in her decline, which would account for the alleged decrease in her activity, for she was dead within two years of this time. If it be true, as stated above, that the bridge was then "repaired" or completed, she lived to enjoy the crowning triumph of fulfilling her lifework, though evidently without securing the gratitude of the contemporary city fathers. Her only monument to-day is represented by the two southernmost arches of the bridge she built, adjoining the Trent Bridge police station, and supporting the inclined approach to the Lovers' Walk. Her life of perpetual self-sacrifice is but roughly outlined by the records we have quoted of six centuries ago.

TESSERÆ.

Applied Art in England.

THE story of the acanthus, as the origin of the Corinthian capital, is known to every schoolboy. There are, if not acanthi, at least other plants in every conservatory in England capable of suggesting hundreds of the like agreeable combinations. Ornament is but nature deprived to a certain extent of one of her features, variety, and brought under the dominion of geometrical rules. The English school has shown itself particularly deficient in ornamental art, and it will be better at once to acknowledge the error, and endeavour to find out its cause, than to attempt to mask an inferiority apparent to even a casual observer. There is no natural inability in the Englishman to excel in ornamental or decorative art, but he has never been placed in circumstances so to do. The foreigner, whether he be a worker in metal or a designer for textile goods, whether he be a house-decorator or a modeller in the potteries, is educated for the particular branch to which he devotes himself; he is well read in his art, he has passed half his life studying in galleries or collections containing the *élite* examples of his calling; he is, in fact, not only by right of his talent an artist, but he is also one who has devoted his whole energies to the walk in which he practises, and art on the Continent is of so varied a nature, and so universally spread among all classes of society that he suffers no degradation from turning his attention to that which we term manufacture, but which, with them, is almost as much high art, in one sense of the word, as are painting and sculpture with us. Not so in England; art with us moves in a more limited sphere. What talent we possess is devoted to the three recognised walks, painting as understood in its legitimate style, sculpture in its simple pure manner, and architecture on its grandest scale. An artist, obliged by circumstances to desert these and turn his thoughts to decorative works, feels that he has lost caste, and not only that, he enters into a class of art of the peculiarities of which he knows little, and his method of designing, his way of thinking, his manner of combining forms are in consequence unsuited to what he is then called upon to perform. In truth he is, in nine cases out of ten, one who, either from want of talent or industry, or, to speak charitably, from want of opportunity, has failed in that which he first tried, and has been obliged to devote himself to other and less difficult tasks. Need it be said that this person is in no condition to contend with his foreign competitors, even leaving out of the question the lack of appreciation for such things here? It is pleasant

however, to illustrate an assertion like this by looking at the opposite side of the page, and pointing out exceptions to sweeping, and may be censorious remarks like the above, but it must be understood that we consider them merely as exceptions, and that as such they do not alter the argument; on the contrary, if the effect be found to vary with the cause it serves as evidence that we are correct.

Some Nineteenth-Century Sculptors.

Bacon, and afterwards Flaxman, had dealt largely and liberally with the allegories of the ancients, and endeavoured to derive from them a language suitable to the purposes of modern times. Some of the absurdities committed not so much by these men as by lesser ones, who were their contemporaries, caused from time to time a shrug indicative of fear lest what had been intended for poetry might be looked upon as bathos. A thought seemed passing through the public mind that art in being allegorical had not always become intelligible; a more sedate view of matters seemed growing into vogue, a greater respect for facts, a treatment more commonplace, perhaps, but less deviating from what sober judgment might approve of. Poetical or imaginative sculpture, which had never been in high demand except for monumental purposes, fell into disrepute; portrait sculpture, to a certain extent, took the place of the other in public favour. Men were found to excel in this as in the other branches of the art when a call was made for them. Nollekens ventured in his busts as well as his figures to depart from the severity of the antique, and copy minutely individual nature as well as modern costume. Chantrey engrafted on the style of Nollekens greater knowledge of human character, greater mastery over the expression of the human countenance, as well as greater freedom and propriety of treatment in his draperies and modern dresses. Never soaring high into the regions of poetry, nor ever too literal in his ideas, he managed by his genius, which was ever guided by sound judgment, and by the policy he pursued through life to gain for himself the public favour to such an extent as to amount at one time to almost a monopoly. If his works do not quite support the reputation he held in his lifetime, it may be attributed to his want of anatomical knowledge of the human figure, which sometimes showed itself, and rendered his productions not altogether satisfactory or correct. In his busts, however, he is unsurpassed, and these alone will serve to preserve his fame entire. The death of Chantrey rendered sculpture in this country to a species of crisis, from whence may be dated a new state of affairs, certainly with regard to sculptors themselves, and we think we may say with regard also to their art. Almost the last of a set of artists who, though not numerous, had engrossed to themselves the patronage of the public for a considerable number of years, a question seemed to arise at his death whether, in showering favours so liberally on a few, the patrons of art had not done injustice to many who had been struggling for fame in comparative obscurity, but who might possibly with proper encouragement have displayed as much genius or talent as those who had hitherto completely engaged the eye of the world. It was found that commissions in art, given upon the strength of high reputation, had not always produced what that reputation warranted the expectation of. It was discovered that the loading of one or two artists with many commissions led in some instances—at least, where avarice was stronger than real love of art—to thoughtless conceptions and slovenly execution. A reaction took place; instead of those who were already in the enjoyment of public favour, and in many instances had gained it justly by their talent, a disposition arose to try younger and unknown artists. Competition was called in to remedy the evil which monopoly had created.

Egyptian Sepulchral Vases and Boxes.

These vases made of alabaster, calcareous stone, porcelain, terra-cotta, and even wood, were destined to hold the soft parts or viscera of the body, embalmed separately and deposited in them. They were four in number, and were made in shape of the four genii of the Karneter or Hades, to whom were assigned the four cardinal points of the compass. The body of the vase was that of the genius, and the head mortised into it was the cover. The names and order of these genii were Amset, human-headed, the first genius, and the body of his vase held the stomach and large intestines; Hapi, the second, cynocephalus type, held the small intestines; Tuautmut, the third, jackal-headed, held the lungs and heart; and Kabhsenuf, the fourth, the liver and gall-bladder. They were separately embalmed, were made into oval packets and placed in the vases. These vases are either plain, with the name of the genius which they represent, or with a particular formula, ending with the name of the deceased. The formulæ are speeches respectively made by Isis, Nephthys, Neith and Selk on behalf of the deceased. The vases were placed in boxes with partitions, then set on sledges and drawn to the sepulchre with the other funereal apparatus. In the vignettes of the "Ritual," chapter 89, and in the paintings of the coffins, they are represented placed

under the bier on which the mummy is laid. They are found in the tombs in different positions, sometimes at the corners or angles of the coffins, in niches in the walls of the sepulchral chamber, or in the boxes with partitions in which they were taken to the sepulchre. Only the richer persons had these special receptacles, the viscera being often made into separate packets disposed close to the mummy and covered with the bandages. The boxes used for these purposes exhibit great variety of shape and decoration, but all are rectangular, some divided into two or more compartments, and their covers either vaulted or flat. The subjects represent adoration to the principal sepulchral deities, and the inscriptions with which they are inscribed are either chapters copied from the sepulchral ritual, or dedications to Osiris and other deities of the dead. None of them appear to be older than the eighteenth dynasty, and most of them are of the twenty-first and following dynasties, till the Roman period of the first century A.D. They were deposited in the tombs at the side of the coffins. They are made of sycamore wood, and, like the boxes in use for private life, had no locks, being secured by strings tied to a stud in the cover and another in the body of the box.

The Tower of London.

The building that Shakespeare calls "Julius Cæsar's ill-erected tower" was a Roman stronghold for a thousand years or more before the Norman king caused one stone of the great White Tower to be laid upon another. It was not until eighteen years after the Conquest that William turned his attention to fortifying the river approach to London. He summoned as his architect Gundulf, the weeping monk of Bec in Normandy, a Benedictine of considerable acquirements, whom travel had made familiar not only with the best specimens of architecture in his own country, but even with the more ornate school of the East. He is said to have been a pupil of Lanfranc and the friend of Anselm, and it is evident that he had acquired considerable fame as an artist before he was called away from his cloister to become the chief builder to King William. "But," says Hepworth Dixon, "he was chiefly known in the convent as a weeper. No monk at Bec could cry so often and so much as Gundulf. He could weep with those who wept; nay, he could weep with those who sported, for his tears rolled forth from what seemed to be an unfailing source." This melancholy man was made Bishop of Rochester, the cathedral and castle of which city were designed and built by him, and it is in a "fair Register Book of the Acts of the Bishop of Rochester, set down by Edmond of Hadenham," that Stow finds it recorded that "William I., surnamed the Conqueror, builded the Tower of London, to wit, the great white and square tower there, about the year of Christ 1078, appointing Gundulf, the Bishop of Rochester, to be principal surveyor and overseer of that work, who was from that time lodged in the house of Edmere, a burgess of London." So Gundulf wept and built, and Ralph Flambard, Bishop of Durham, found the money, little wotting that he was taxing and robbing the people to erect a prison for himself. Probably the earliest description of the Tower of London is that quoted by Stow of Fitzstephen, who lived in the twelfth century:—"The city of London hath in the east a very great and most strong palatine tower, whose turrets and walls do rise from a deep foundation, the mortar thereof being tempered with the blood of beasts." Perhaps Gundulf pounded up the old red tiles and bricks of the Romans to mix his mortar, and the people, only too ready to surround with new glamour the great threatening tower that was springing up in their midst, accounted for the colour in this way. Gundulf is said to have lived to the age of eighty, and to have seen the completion of the works which he designed about the Tower, including a church dedicated to St. Peter, which stood on the site of the present chapel of St. Peter ad Vincula.

English Sculpture.

England is very rich in its series of ecclesiastical and monumental sculpture from the earliest introduction of that class of art in this country. There are effigies in low relief of two abbots of Westminster in the eleventh and twelfth centuries. The statues which decorate Wells Cathedral are also remarkable. At first all sculpture to commemorate individuals was confined to the ecclesiastics, the clergy having the exclusive control over these works. The earliest monumental effigy of a king is that of John in Worcester Cathedral, the date 1216. The next of royal personages are those in bronze in Westminster Abbey, of Henry III. (1272), and of Eleanor the queen of Edward I. (1290). From this time there is a continued succession of such works, which are not only highly valuable from their historical importance, but for the illustration they afford of the changes in the style of monumental design. Some of those of the end of the fourteenth and the fifteenth centuries are particularly rich in design, and deserve attention for many valuable qualities of art. It will be observed that, from its commencement till about the end

of the sixteenth century, monumental sculpture exhibits the influence of the religious feeling of the earlier ages. It was, of course, modified in its forms and mode of representation, as may be seen in numerous examples of easy reference that abound in our cathedrals and older churches, but everywhere the prevailing sentiment was religious. Figures, whether they are lying recumbent on their tombs or kneeling, a posture not so often met with in the principal subject in early monumental sculpture, are usually represented praying; or if not literally occupied in the act of prayer, they generally have accessories or accompaniments referring to religious exercises, or are attended by ministering angels, either supporting the cushion at the head or grouped at the feet of the person represented. Of course there are exceptions to this rule, as in the effigies of the knights in the Temple Church and others that might be mentioned; but generally the sentiment described was the prevailing one in this class of works. In the sixteenth century a departure from this characteristic of church sculpture is observable, and in a few years all reference to the religious character in such works is lost sight of. The taste exhibited in monumental design of the date of Elizabeth and James I. is exceedingly bad, but after that time this class of art still further deteriorated, and the monuments produced in the latter part of the seventeenth century are for the most part entirely wanting in the associations which seem to be so essential in works of this kind.

GENERAL.

The Bishop of Truro on Wednesday dedicated the nave of the cathedral in the presence of the Prince and Princess of Wales.

The French Government have made its annual purchases at the Salons of the Society of French Artists and of the National Society of Fine Arts. The architectural works selected from the Salon were *The Palatine Chapel at Palermo*, by M. Mors, and the tiled pavement in the church of St. Jacques, Boulogne, by M. Polart.

The Tynwald Court have decided to purchase the leased demesne hitherto occupied by the Governors of the Isle of Man. This action is in consequence of Lord Raglan's refusal to live there on account of the insanitary conditions. An extensive scheme of improvement, costing several thousands of pounds, will be undertaken.

Glasgow University Court last week gave instructions for the acceptance of tenders for the construction of two new buildings—(1) for the department of natural philosophy; and (2) for combined buildings for the departments of physiology, materia medica and forensic medicine, and public health. The work is to proceed at once. The cost of each of the two buildings is to be 40,000*l*.

The International Society of Sculptors, Painters and Gravers have elected Mr. Howard Pyle an honorary member, and Messrs. Maurice Greiffenhagen, W. Y. MacGregor and Douglas Robinson associates.

A Public Monument to Leo XIII. in Rome is being prepared, called the International Working Men's Monument. It is a statue about 11 feet in height, representing a working man surrounded with the symbols of labour, raising his eyes towards a cross held in the right hand. On the cross is the inscription in Latin, "In this sign thou shalt conquer." At the sides of the monument are three encyclicals on labour issued by Leo XIII.

M. Besnard has been commissioned to decorate the lobby of the Palais des Beaux-Arts in Paris. The work will take him five years to complete, and his honorarium has been fixed at 12,000 francs a year.

The Canadian Government propose to assist the local iron industry by granting a bounty of 6 dols. per ton for the manufacture of wire rods to be used in Canada for further manufacture, and of 3 dols. per ton on angles, beams, other structural ironwork and on large steel plates. These are not at present made in Canada, but the Dominion Steel Company is erecting plant for their manufacture.

A Memorial in favour of Mr. Thornycroft's suggestion for the further improvement of the Strand, by altering the northern line of frontage near the Law Courts, was presented to the London County Council on the 13th inst.

The London County Council have approved the plans submitted by Mr. F. Matcham, on behalf of Mr. Oswald Stoll, of a building to be known as the Coliseum, which it is proposed to erect upon the site of houses abutting upon St. Martin's Lane, Bedfordbury and May's Buildings.

The International Fire Prevention Congress passed various resolutions, which include the following:—That the term "fire-resisting" be adopted in place of "fireproof," as being the more applicable for general use; that the standards of fire-resistance shall be (1) the temporary protective class,

(2) the partially protective class, and (3) the fully protective class; that testing stations for fire-resting materials be established, and a universal method of testing be adopted; that courses of study be provided in universities, technical colleges and schools for the instruction of engineering and architectural students in the fire-resistance of building materials and the methods of construction as based on investigation; and that in all cases of fire an official inquiry shall follow.

A Party of Members of the Manchester Society of Architects recently made a sketching visit to Whalley and Mytton Churches, and to Stonyhurst College, the Early Renaissance portion of which provided some interesting subjects. The rain unfortunately prevented a good attendance at the visit to the new car depôt in Hyde Road. Mr. J. Gibbons, the architect, kindly explained the design and construction of this very interesting building, the first part of which is now approaching completion.

The International Society of Sculptors, Painters and Gravers have been invited by the leading American academies and art institutions to exhibit the work of the members in the United States. The Society have accepted the invitation, and exhibitions, commencing in October, have been arranged for in the Pennsylvania Academy of the Fine Arts, Philadelphia; the Carnegie Institute, Pittsburgh; the Cincinnati Art Gallery, and the St. Louis Museum of Fine Arts, during the period of the Exposition in that city.

A Bronze-coloured facsimile of Stevens's plaster model of the equestrian figure for the Wellington monument, with certain missing parts supplied from his sketch model, has now been placed in position in St. Paul's Cathedral, and will be open to public view by permission of the Dean and Chapter until the end of this week. The advantage of such a figure is evident, but from the height it is almost impossible to judge of details.

An Illustration of the memorial of Charles Garnier has appeared in the last number of *La Construction Moderne*. It is on a large scale, and does justice to the work of M. Pascal and M. Thomas.

Woodwork and Carving ascribed to Grinling Gibbons, and now fitted in a room of No. 3 Clifford's Inn, with bolection moulding, chair rail and deep skirting, four doorways, and a chimney-piece surrounded by rich carving, will be sold by auction by Messrs. Farebrother, Ellis, Egerton, Breach & Co. on Thursday, July 23, at noon.

The Beni-Hasan Excavation Committee have an exhibition of Egyptian antiquities in the rooms of the Society of Antiquaries. It will remain open until the 25th inst.

At a Meeting held recently in Manchester it was unanimously resolved that it is desirable to hold an international exhibition in that city in 1905, and a committee was appointed to take such steps as are considered necessary to ascertain the views of those likely to be interested in such a project.

The London County Council have adopted some new by-laws which include the following:—Every person who in any street, to the obstruction, annoyance or danger of residents or passengers, orders or permits any person in his service to stand or kneel on the sill of any window for the purpose of cleaning or painting such window, or for any other purpose whatsoever, such sill being more than 6 feet in height from the level of the ground immediately below it, without support sufficient to prevent such person from falling, shall for every such offence forfeit and pay a sum not exceeding 5*l*. Every person who in any street, to the obstruction, annoyance or danger of residents or passengers, stands or kneels on the sill of any window for the purpose of cleaning or painting such window, or for any other purpose whatsoever, such sill being more than 6 feet in height from the level of the ground immediately below it, without support sufficient to prevent such person from falling, shall for every such offence forfeit and pay a sum not exceeding 20*s*. The by-law as to window-cleaning or painting is in substitution for one previously in force, the by-law having been amended so as to cover the case of kneeling on window sills.

The Trustees of the National Gallery in their latest report announce that the whole collection of framed portraits has been placed under glass with the exception of four portraits and three very large groups, which it is not deemed expedient to glaze owing to the difficulty of viewing them in their present position; they are, however, protected by barriers and placed under the constant supervision of the attendants and police. The collection now consists of 1,248 pictures and engravings, 158 works in sculpture, and 41 miscellaneous portraits exhibited in cases. The number of students who have applied for students' tickets during the past year is 41, and 35 students have had their tickets renewed. The total number of visitors admitted on the Sunday afternoons of the summer months was 12,528, an average of 417 per Sunday. The total number of visitors from January 1 to December 31, 1902, was 151,352, of whom 130,583 were admitted free of charge.

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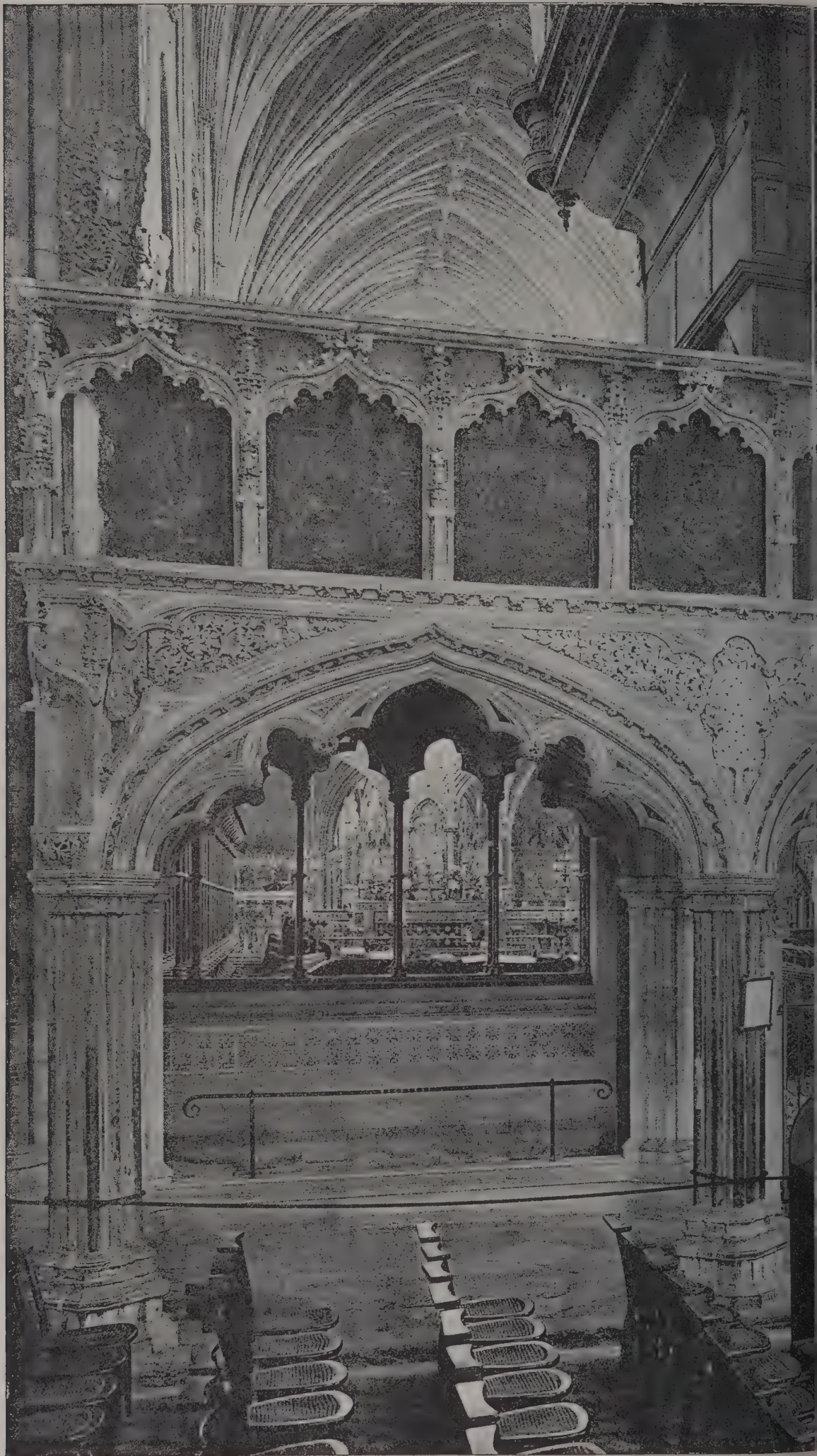
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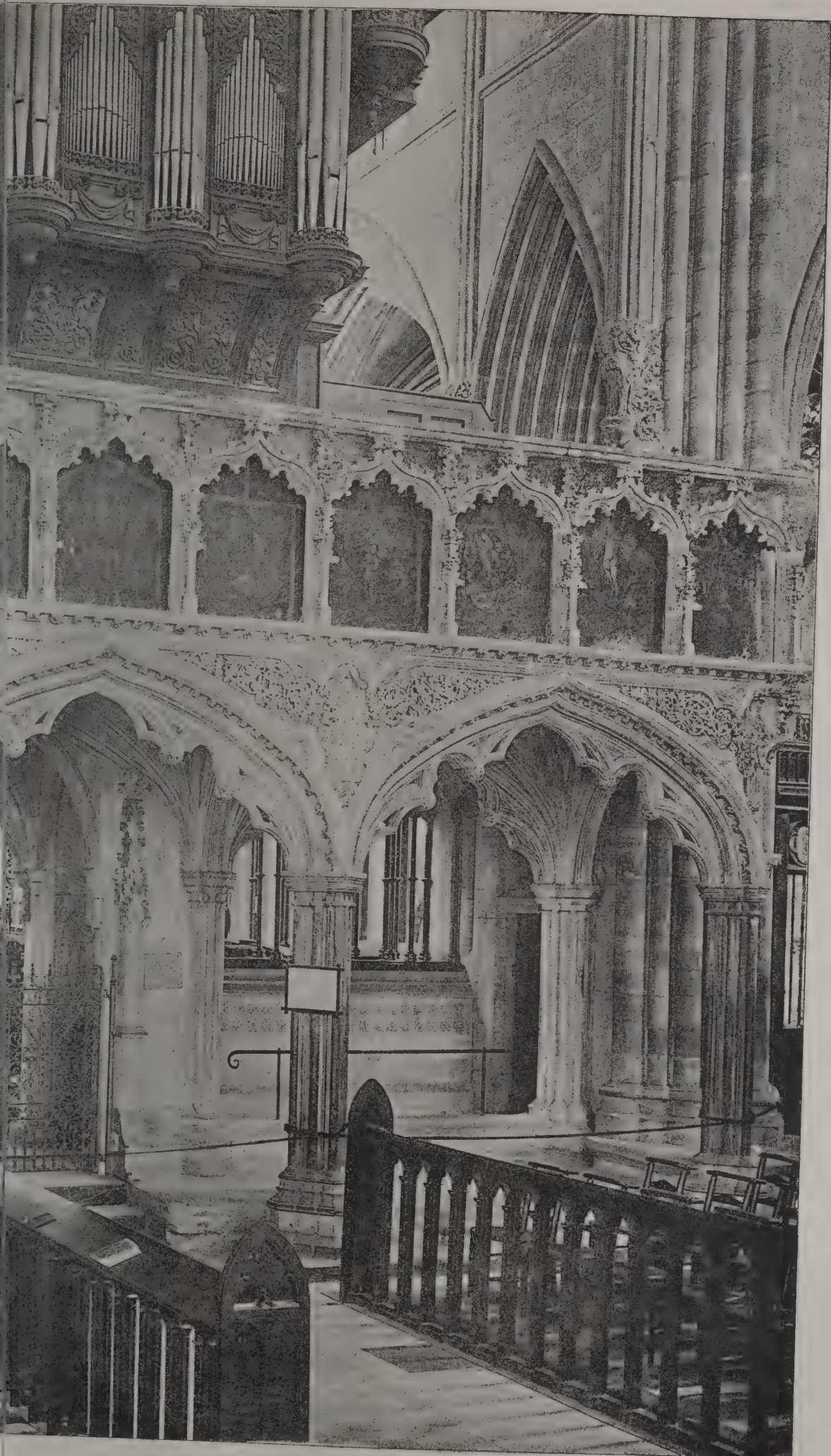
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ER: THE CHOIR SCREEN.

The Architect, July 17th 1903.



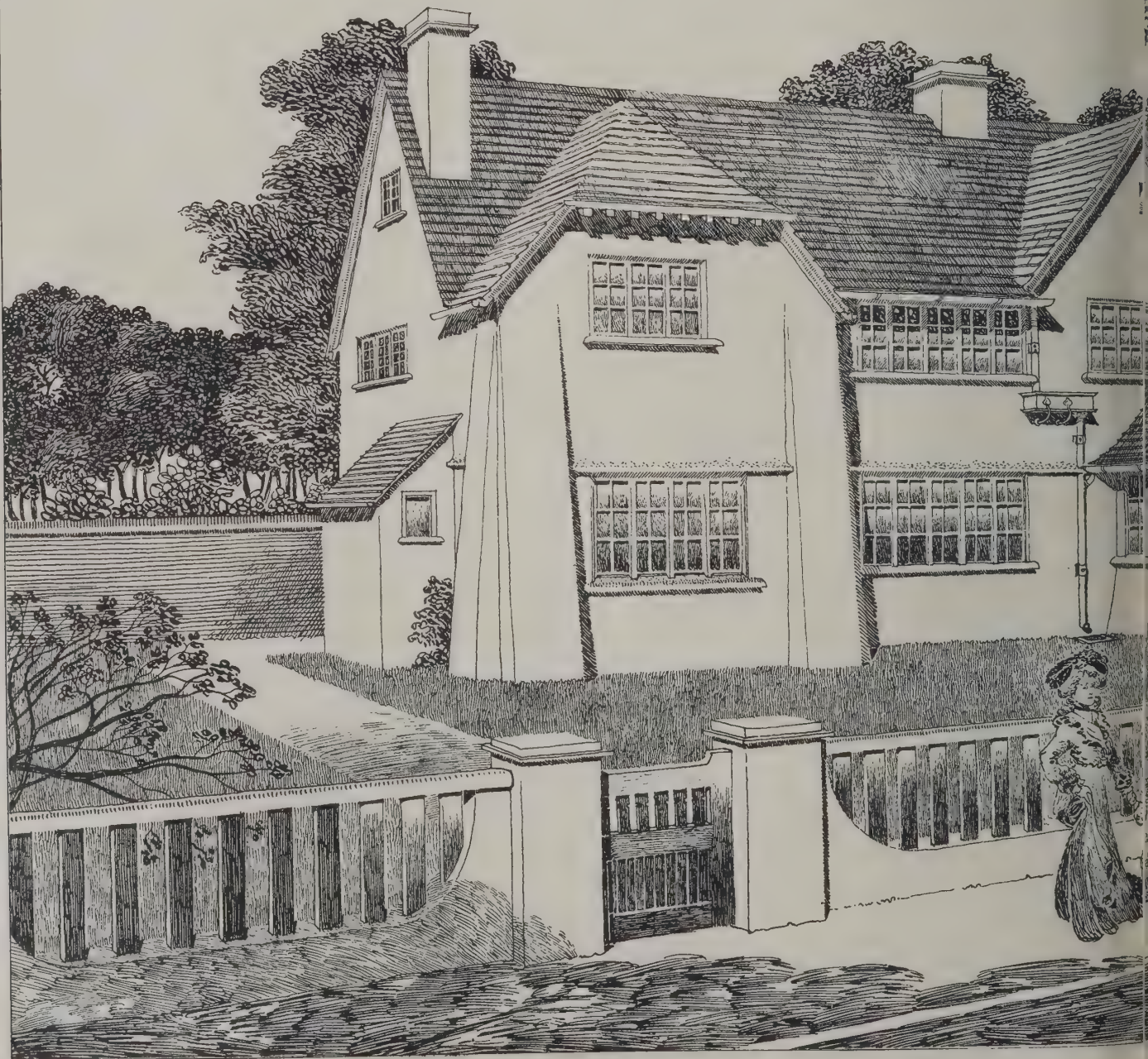
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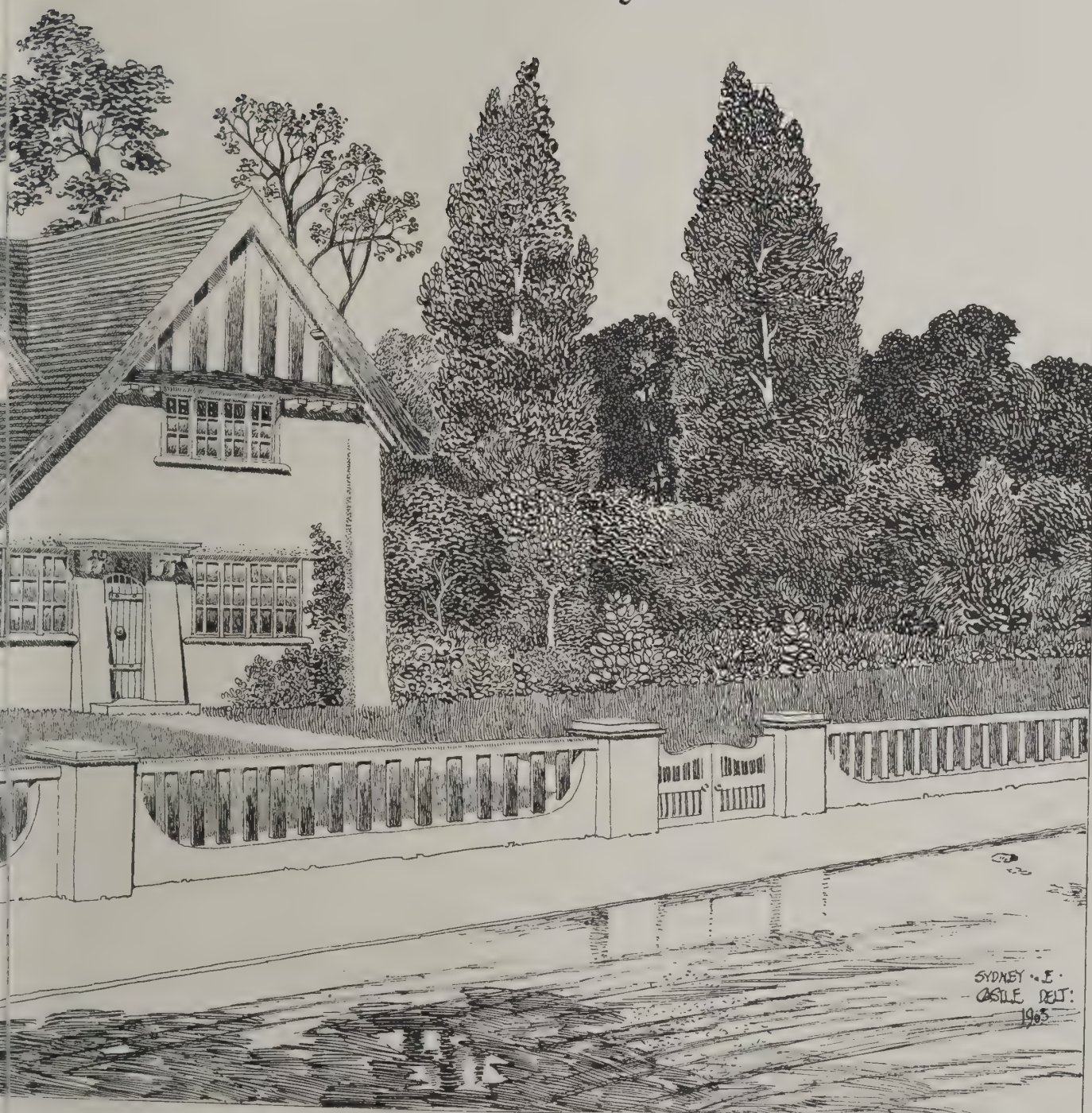
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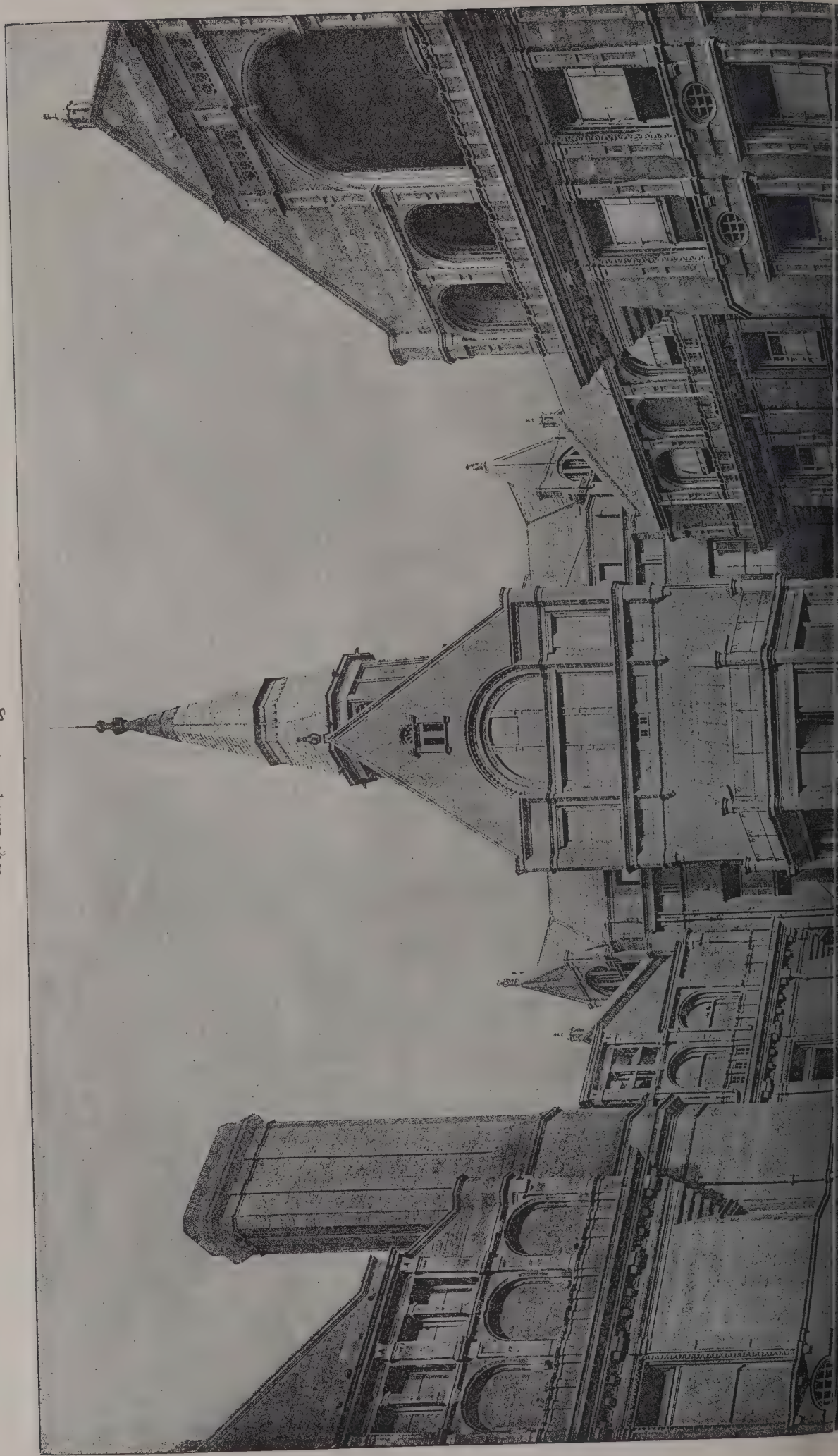
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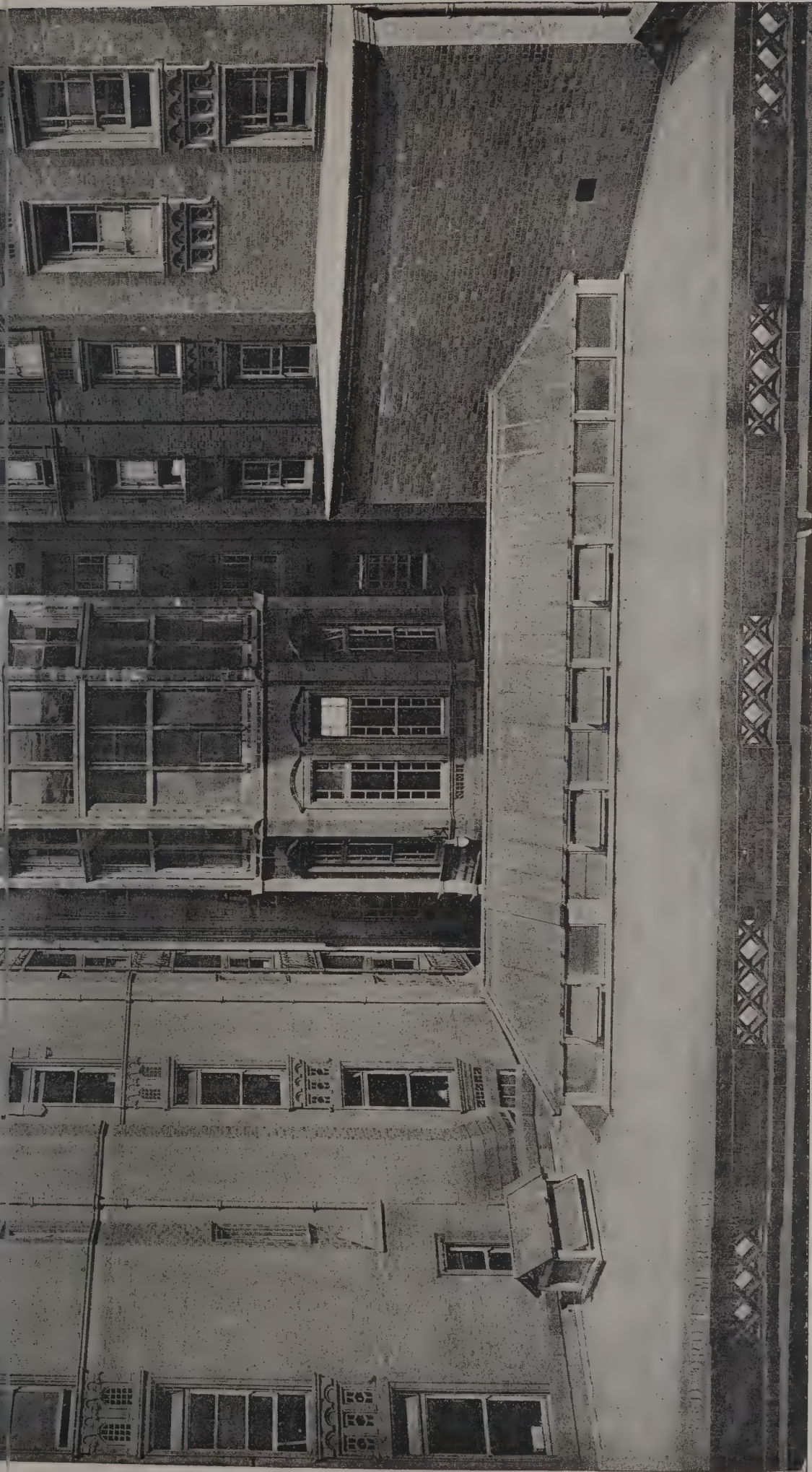
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Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

* *As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

SCOTLAND.—Competitive plans are invited for a new hospital for the treatment of infectious diseases, which is to be erected at Cloverhill, near Ayr. Mr. David W. Shaw, district clerk, 5 Wellington Square, Ayr.

TAUNTON.—July 20.—Competitive designs are invited for a library building to be erected in Corporation Street, at a cost not exceeding 5,000l. inclusive. Premiums of 30l., 20l. and 10l. will be awarded for designs adjudged of sufficient merit, and placed first, second and third in order respectively. Mr. George H. Kite, town clerk, Municipal Buildings, Taunton.

CONTRACTS OPEN.

BARROW-IN-FURNESS.—July 24.—For the enlargement of the post office at Barrow-in-Furness. Particulars and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, London, S.W.

BEAMISH.—July 22.—For the erection of house and shop property, Beamish. Mr. T. Ernest Crossling, architect, Fent Street, Stanley, R.S.O.

BEBINGTON.—July 20.—For additions and alterations to the sexton's lodge at Bebington cemetery, Bebington, Cheshire. Mr. William Griffiths, architect, 5 Hamilton Square, Birkenhead.

BOOTLE AND SEAFORTH.—July 21.—For construction of new timber yard at Regent Road, Bootle, and tipping of embankment and other works in connection therewith at Seaforth, for the directors of the Lancashire and Yorkshire Railway Company. Mr. R. C. Irwin, secretary, Hunt's Bank, Manchester.

BRIDGWATER.—July 29.—For the extension of infants' cloak-room and lavatory at the Albert Street Board school. Messrs. Samson & Cottam, architects, 43 and 45 High Street, Bridgwater.

BRISTOL.—July 20.—For the erection of a school at Dean Lane, St. George. Messrs. La Trobe & Weston, architects, 25 Clare Street, Bristol.

BURY.—For the erection of offices at the Phoenix Brewery, Green Lane. Mr. Wm. E. Gill, architect, Derby Chambers, Fleet Street, Bury.

BYFLEET.—July 21.—For taking-down and rebuilding two bridges at Byfleet, Surrey, known as Plough Bridges. Mr. W. Durrant, surveyor, Spinney Hill, Addlestone, Surrey.

CARTMEL.—For improving a house at Cartmel. Mr. John Stalker, architect, Kendal.

CHELMSFORD.—July 27.—For the erection of a public library, museum and school of art in Market Road. Messrs. Chancellor & Son, High Street, Chelmsford.

CHIPPING ONGAR.—July 29.—For the erection of children's homes at Chipping Ongar, Essex. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

COLCHESTER.—July 28.—For the erection of a tramcar shed, consisting chiefly of iron and steel, for the tramways committee. Mr. Herbert Goodyear, borough surveyor, Town Hall, Colchester.

COVENTRY.—Aug. 1.—For the erection of (specification No. 6) sulphate works, comprising sulphate house (54 feet 9 inches by 27 feet 6 inches), sulphate store (54 feet by 18 feet), boiler-house (48 feet 3 inches by 30 feet), lime store and warehouse over (31 feet 6 inches by 15 feet 6 inches) and chimney (80 feet high); and (7) the excavation for and construction of an underground liquor-tank (50 feet diameter by 15 feet). Mr. Fletcher W. Stevenson, engineer and general manager, Gasworks, Coventry.

DARTFORD.—July 27.—For the erection of new wards and administrative buildings at the workhouse, West Hill, Dartford. Mr. G. H. Tait, architect, Lowfield Street, Dartford.

DARWEN.—For the erection of a Wesleyan church, Blackburn Road, Darwen. Mr. John B. Thornley, architect, Market Street, Darwen.

DEVIZES.—July 30.—For converting part of the town hall into public offices, and for other alterations. Plans at the Borough Surveyor's Offices, 15 Market Place, Devizes.

DRIFFIELD.—July 30.—For additions to the infirmary at the Driffeld workhouse. Mr. Joseph Shepherdson, architect, Driffeld.

DRONFIELD.—For the erection of warehouse and offices at Dronfield. Messrs. Gibbs & Flockton, architects, 15 St. James Row, Sheffield.

DURHAM.—July 28.—For the erection of education offices, Durham. Mr. William Crozier, architect, Shire Hall, Durham.

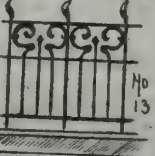
EALING.—July 30.—For the erection of slipper baths at Williams Road, West Ealing. Mr. Charles Jones, surveyor, Town Hall, Ealing, W.

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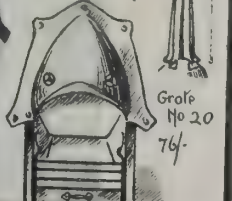
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EAST HAM.—July 20.—For the erection of school buildings to accommodate 1,592 children at Monega Road, East Ham. Mr. H. C. Padgett, clerk, East Ham.

EAST SWALE.—July 24.—For the erection of a coastguard station, consisting of houses for an officer and seven men, and new boathouse, at East Swale, near Faversham, Kent. Plans and specification can be seen on application to the Chief Officer, H.M. Coastguard, 22 Preston Street, Faversham.

EXETER.—July 27.—For the erection of offices, &c., at the Castle, Exeter. Mr. E. H. Harbottle, county architect, Exeter.

FAVERSHAM.—July 24.—For the erection of a new coast-guard station, consisting of houses for an officer and seven men and a new boathouse at East Swale, near Faversham, Kent. Bills of quantities will be supplied on application to the Director of Works Department, Admiralty.

FENAY BRIDGE.—July 20.—For the erection of three dwelling-houses. Mr. I. Berry, architect, 3 Market Place, Huddersfield.

FLEETWOOD.—July 20.—For the erection of a bakery in London Street, Fleetwood. Mr. Tom G. Lumb, architect, Estate Office, Fleetwood.

GATESHEAD.—July 30.—For the erection of stables at Tyne Road East. Mr. J. Bower, borough surveyor, Town Hall, Gateshead.

GILDERSOME.—For the erection of Wesleyan Sunday schools, Gildersome. Messrs. Garside & Pennington, architects, Pontefract.

GRASSINGTON.—July 20.—For the erection of a residence at Grassington. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

GRAYS.—July 23.—For alterations and additions at the police station, Grays, Essex. Mr. Herbert W. Gibson, deputy clerk of the peace, Shire Hall, Chelmsford.

HASLINGDEN.—July 21.—For the erection of farm buildings behind the workhouse. Mr. James Kerr Hay, clerk to Guardians, Union Offices, Pikelaw, Rawtenstall.

HAYLING ISLAND.—July 31.—For the erection of coast-guard buildings at Hayling Island, Hampshire, consisting of houses for an officer and twelve men, watchroom, outbuildings, &c. Particulars may be obtained on application to the Superintending Engineer, Portsmouth Dockyard.

HEYWOOD.—For the erection of offices at the Phoenix Brewery, Green Lane, Heywood. Mr. Wm. E. Gill, architect, Derby Chambers, Fleet Street, Bury.

HEYWOOD.—For alterations at the *Heywood Advertiser* office, York Street, Heywood. Mr. Wm. E. Gill, architect, Derby Chambers, Fleet Street, Bury.

HOUNSLOW.—July 23.—For the erection of a boiler-house, engine-room, battery-room, offices and chimney-shaft at the Pear Tree estate, Hounslow. Mr. H. J. Baker, clerk, Town Hall, Hounslow.

ILKESTON.—For the erection of a Congregational church and schools, Ilkeston. Mr. H. Tatham Sudbury, architect, 18 Market Place, Ilkeston.

IRELAND.—For reslating and repairing the roof and tower of Townsend Street Presbyterian church, Belfast. Mr. Robert T. Martin, 7 Wellingborough Place, Belfast.

LANCASTER.—July 20.—For alterations and additions to the pig slaughter-house, and the erection of a shippoon. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LANCASTER.—July 21.—For laying wood-block flooring and erecting a lead flat on the roof of a classroom at the Bowerham school. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEEDS.—July 22.—For the erection of station buildings and platform roofing at Church Fenton, for the North-Eastern Railway Company. Mr. William Bell, architect, York.

LEEDS.—July 27.—For additions and alterations to offices and the erection of new workshops, &c., at Whitehall Road. Mr. William Bruce, architect, Greek Street Chambers, Greek Street.

LICHFIELD.—July 22.—For the erection of four-bed observation wards at the workhouse, Lichfield. Mr. D. C. Marks, architect, St. Mary's Chambers, Lichfield.

LINTHWAITE.—July 22.—For the erection of a branch store at Linthwaite. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

LONDON.—July 21.—For the erection of a sorting office at Tooting, S.W. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

LONDON.—July 21.—For the erection of a coach-house and dormitory at the Royal Mews, Buckingham Palace. Mr. J. B. Westcott, H.M. Office of Works, &c., Storey's Gate, S.W.

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LONDON.—July 22.—For painting and repairing latrine blocks at Norwood schools. Mr. W. Thurnall, clerk to Guardians, Brook Street, Kennington Road, S.E.

LONDON.—July 22.—For the erection of the superstructure of Block 3 of the new Admiralty buildings, for the Commissioners of H.M. Works and Public Buildings. Drawings and specification, conditions and form of contract may be seen on application to Sir John Taylor, K.C.B., H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—July 23.—For decorative repairs, &c., at the Union Offices, John Street West, Blackfriars Road, S.E. Mr. G. D. Stevenson, architect, 13 and 14 King Street, Cheapside.

LONDON.—July 23.—For decorative repairs at the infirmary, East Dulwich Grove, S.E. Mr. G. D. Stevenson, architect, 13 and 14 King Street, E.C.

MANCHESTER.—July 21.—For the foundations for new buildings adjoining the approach road to Victoria station, Manchester, for the Lancashire and Yorkshire Railway Company. Mr. R. C. Irwin, secretary, Hunt's Bank, Manchester.

MANNINGTREE.—July 21.—For alterations and additions to the Sunday schools, Manningtree, Essex. Mr. J. W. Start, architect, Cups Chambers, Colchester.

MIDSOMER NORTON.—July 20.—For the erection of a cottage on the Redfield Road, Midsomer Norton. Mr. Stanley J. Gregory, architect, Combe Hill House, Radstock.

ST. AUSTELL.—July 21.—For alteration and enlargement of the Capital and Counties Bank, High Cross Street, St. Austell, Cornwall. Mr. F. C. Jury, architect, 1 Alma Villas, Tregonissey Road, St. Austell.

SCOTLAND.—July 20.—For the reconstruction of portion of two-storey goods shed C, 416 feet in length by 75 feet in width at berth 10, north quay of centre basin, Prince's Dock, Glasgow. Mr. T. R. Mackenzie, general manager, 16 Robertson Street, Glasgow.

SCOTLAND.—July 22.—For the erection of proposed shelter at Roseburn public park, Edinburgh. Mr. R. Morham, city architect, Public Works Office, City Chambers, Edinburgh.

SCOTLAND.—July 23.—For the erection of a school at Currie. Mr. Wm. Baillie, architect, 223 Hope Street, Glasgow.

SCOTLAND.—July 23.—For the erection of two covered courts and repairs to offices, &c., at Waterside, Aberdeen. Mr. Macdonald, Cluny Estates Office, 16 Union Terrace, Aberdeen.

SCOTLAND.—July 25.—For the erection of bank house at Rothie-Norman. Mr. R. G. Wilson, architect, 181A Union Street, Aberdeen.

SOUTHEND-ON-SEA.—July 23.—For the erection of two houses for police officers at Westcliff, Southend-on-Sea. Mr. F. Whitmore, architect, Duke Street, Chelmsford.

SHREWSBURY.—Aug. 3.—For the erection of a covered cattle sale ring (walls of brickwork and slated roof). Mr. W. Chapple Eddowes, borough surveyor, The Square, Shrewsbury.

SHREWSBURY.—Aug. 4.—For the erection of station buildings and other works at Shrewsbury station, for the joint committee of the London and North-Western and Great Western Railway Companies. Mr. A. E. Bolter, secretary to joint committee, Paddington Station.

SOUTHEND-ON-SEA.—July 23.—For the erection of two houses for police officers at Westcliff, Southend-on-Sea. Mr. F. Whitmore, architect, Duke Street, Chelmsford.

STAIRFOOT.—July 21.—For the erection of a villa at Stairfoot. Mr. Ernest W. Dyson, C.E., architect, 14 Market Hill, Barnsley.

STRETTFORD.—July 20.—For alterations and additions to the Stretford town hall. Mr. Ernest Worrall, surveyor, at the Council Offices, Old Trafford.

THORNHILL.—July 21.—For rebuilding boundary wall at Coombe Top, Thornhill. Mr. J. H. Dyson, clerk to the U. D. Council, Thornhill.

TODMORDEN.—July 22.—For the erection of post office, Pavement, Todmorden. Mr. Jesse Horsfall, Todmorden.

TROWBRIDGE.—July 21.—For the erection of a warehouse at Trowbridge. Mr. Walter W. Snailum, architect, Church Street, Trowbridge.

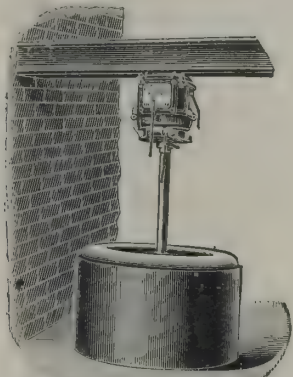
WALES.—For the erection of three shops and offices, with stables, covered yard, &c., at Working Street, Cardiff. Messrs. Habershon, Fawckner & Co., architects, 14 Pearl Street, Cardiff.

WALES.—For the erection of registry offices for the University of Wales in Cathays Park, Cardiff. Mr. Ivor James, registrar of the University, Brecon.

WALES.—For the erection of a chapel at Miskin, Mountain Ash. Mr. T. W. Miller, architect, Mountain Ash.

WALES.—July 20.—For the construction of masonry abutments, fence walls, and various street works in connection with

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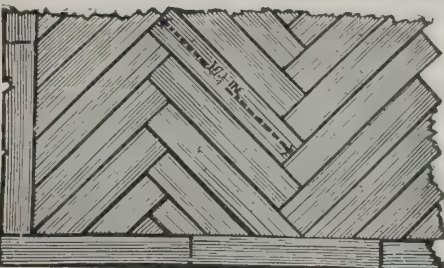
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WALES.—July 20.—For the erection of a school at Deri, Cardiff. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—July 20.—For alterations and additions to the Nant Padarn Congregational chapel, Llanberis. Mr. Ishmael Davies, Snowdon Terrace, Llanberis.

WALES.—July 20.—For rebuilding the Masons' Arms, Pantygasseg, near Pontypool. Mr. E. A. Johnson, architect, Abergavenny.

WALES.—July 21.—For the construction of a boundary wall around part of the site of the isolation hospital, Ystrad, with excavations and various street works. Mr. W. J. Jones, surveyor, Council Offices, Pentre, Glam.

WALES.—July 22.—For repairs and decoration at Bethlehem Green church, James Street, Neath. Mr. Philip Thomas, Groll Park Road, Neath.

WALES.—July 23.—For the erection of a C.M. chapel at Grove Place, Port Talbot. Mr. Rees, Glynderwen, Grove Place.

WALES.—July 23.—For additions to the Greyhound inn, Bargoed, Mon. Mr. D. F. Pritchard, Western Valleys Brewery, Crumlin, Mon.

WALES.—July 24.—For the erection of a post office at Merthyr Tydfil. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—July 24.—For the erection of a stable and coach-house and converting portion of building into a brewer's house at Rhymney. Mr. T. Roderick, architect, Glebeland, Merthyr Tydfil.

WALES.—July 25.—For rebuilding Jabez chapel, Dyffryn Gwaun. Mr. J. Evans, Pengegin, Pontfaen, Letterston, R.S.O.

WALES.—July 25.—For the erection of twenty houses at Waunllwyd, Mon. Mr. R. L. Roberts, architect, Abercarn.

WALES.—July 25.—For the erection of a chapel and school-room at Hafod. Mr. Arthur O. Evan, Pontypridd.

WALES.—July 27.—For the erection of twenty-eight houses at Tirphil. Mr. T. Roderick, architect, Glebeland, Merthyr Tydfil.

WALES.—July 27.—For the erection of ninety-one houses at Rhymney. Mr. T. Roderick, architect, Glebeland, Merthyr Tydfil.

WALES.—July 30.—For the erection of seventy-two houses at Aberaman. Mr. T. Roderick, architect, Clifton Street, Aberdare.

WALES.—Aug. 7.—For the erection of new coastguard buildings at Cemaes, Anglesea, consisting of houses for three men and a watch-room, &c. Drawings and specification can be seen at the office of the Director of Works Department, 21 Northumberland Avenue, London, W.C.

WALES.—Aug. 26.—For the erection of a school at Troedyrhiw for 400 boys. Mr. J. Llewellyn Smith, architect, Aberdare.

WARRINGTON.—Aug. 17.—For rebuilding church, Newchurch, near Warrington. Messrs. Travers & Ramsden, architects, 44 Church Street, Leigh, Lancashire.

WEST HARTLEPOOL.—July 27.—For the erection of a block of school buildings (new upper grade school) to accommodate 1,200 scholars, with outbuildings, caretaker's house, &c., in Elswick Road, Eamont and Belmont Gardens, West Hartlepool. Mr. Richard Holt, architect, Liverpool.

WHICKHAM.—July 22.—For the erection of eight or more three-roomed cottages at Whickham. Messrs. Hannington & Co, Ltd, Guildhall Chambers, Newcastle-on-Tyne.

WHITEHAVEN.—July 22.—For the erection of a Sunday school, classrooms, &c., connected with Hogarth Mission, Whitehaven. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

WHITEHAVEN.—July 23.—For the erection of a house in the parish of Moresby. Mr. J. S. Stout, architect, 36 Lowther Street, Whitehaven.

WITHAM (ESSEX).—July 20.—For the erection of an engine-house, engine foundations, boiler-house and seatings, coal stores, chimney-shaft and water-tower. Mr. W. Bindon Blood, clerk, U.D.C., Witham.

THE Bealey Memorial Convalescent Hospital at Radcliffe, which has been erected at a total cost of about 28,000l., was formally opened on the 7th inst.

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T. F. Howells	5,583	0	0
T. Rossiter & Sons	5,500	0	0
E. R. Evans & Bros.	5,450	0	0
W. T. MORGAN, Cardiff (accepted)	5,350	0	0

BECCLES.

For the erection of four new earth-closets for the old men's sick and infirm wards at the workhouse at Shipmeadow.
Mr. ARTHUR PELL, architect, Beccles.

G. Johnson	£143	0	0
G. A. DUNN & SON, Denmark Road (accepted)	141	10	0

For the erection of two cottages at Weston, near Beccles.
Mr. ARTHUR PELL, architect, Beccles.

A. D. Body & Son	£474	0	0
Hipperson Bros.	463	0	0
G. A. Dunn & Son	460	0	0
J. J. Doe	450	0	0
C. Spurling	425	0	0
G. JOHNSON, Queen's Road (accepted)	409	15	0

BRISTOL.

For the erection of the new parish hall, for the Parish Council, Shirehampton. Mr. F. BLIGH BOND, architect, Star Life Building, St. Augustine's, Bristol. Quantities supplied.

		A.		B.	
W. H. Roe	£3,326	0	0	£3,315	0 0
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E. Love	2,833	0	0	2,772	16 0
J. Flower	2,770	0	0	2,738	0 0
C. A. HAYES (accepted)	2,715	0	0	2,687	0 0
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BINGLEY.

For the erection of an operating-room and a mortuary at the Bingley Cottage Hospital, Yorks. Mr. W. M. RHODES NUNNS, architect, 13 Market Street, Bingley.

Accepted tenders.

J. Foulds & Bros, Ireland Bridge, mason	£194	15	0
M. Brown, Whitley Street, plumber	32	7	0
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BRADFORD.

For the erection and fitting of mortar-pan shed and engine-house at Sunbridge Road destructor works. Mr. F. E. P. EDWARDS, city architect.

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B. Thresh & Son, carpenter and joiner.	
E & W. H. Haley, engineer.	
G. Jackson, plumber and glazier.	
T. Thornton, slater.	

For the erection of shop property in Manningham Lane. Mr. JAS. LEDINGHAM, architect, District Bank Chambers, Bradford.

Accepted tenders.

Toothill & Balmforth, mason, bricklayer, carpenter and joiner.	
Hallam & Holgate, plumber.	
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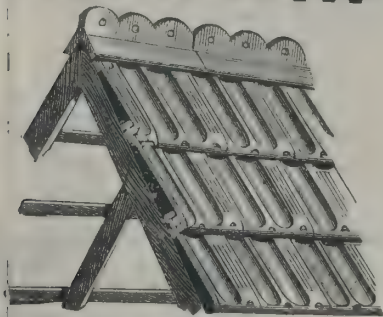
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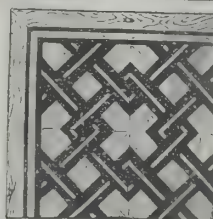
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Accepted tenders.

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J. Greenwood, joiner.

W. Thornton, Bingley, slater.

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A. Bage, Bingley, plumber.

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W. Jowett	923	7	0
Ross & Crabtree	920	0	0
T. Rowland	859	0	0
T. Young	822	5	0
Hill & White	795	17	6
F. & G. Wilson	687	18	5
J. Pickthall	625	0	0
G. Clements	597	17	11
C. BIRKIN, York (accepted)	508	6	0

For the supply and delivery of sluice and air-valves, hydrants, surface-boxes, &c., for the Featherstone Urban District Council, Yorks. Mr. FREDK. B. ROTHERA, surveyor.

Whiteley Partners	£232	5	3
Hamilton, Woods & Co.	212	16	9
Guest & Chimes	201	10	6
J. Lees & Sons	192	9	8
J. BLAKEBOROUGH & SONS, Brighouse (accepted)	173	18	10
Glenfield, Kennedy & Co.	161	6	3

For the supply of 9-inch pipes for extension of waterworks, for the Featherstone Urban District Council, Yorks. Mr. FREDK. B. ROTHERA, surveyor.

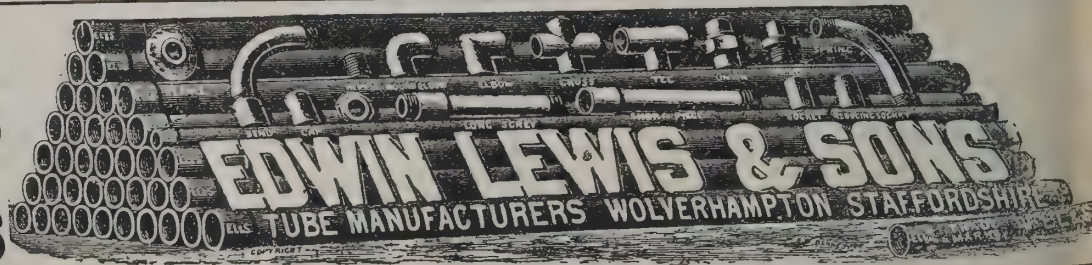
C. P. Kinnell & Co.	£1,751	0	0
E. & W. H. Haley	1,719	0	10
Stanton Ironworks Co.	1,657	8	2
L. Cooper	1,667	8	0
Cochrane & Co.	1,595	8	9
Clay Cross Co.	1,563	14	5
H. A. Fawell	1,563	14	4
A. G. Cloake	1,562	18	4
STAVELEY COAL AND IRON Co., Staveley (accepted)	1,530	15	8
Sheepbridge Coal and Iron Co.	1,527	2	6

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FINCHLEY.

For the erection of sorting office at Church End.

J. Stewart.	£2,364	0	0
W. Hooper	1,899	0	0
J. Chessum & Sons	1,803	0	0
Smith & Barber	1,820	0	0
Thompson & Co.	1,717	0	0
B. E. Nightingale	1,699	0	0
W. LAWRENCE & SON (accepted)	1,694	0	0

FLASS HALL.

For the erection of a timber footbridge near Flass Hall, Durham. Mr. J. MCKENZIE, surveyor, Langley Moor.

J. ROBSON, Water Houses (accepted)	£65	0	0
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GRAVESEND.

For the redecoration of the sanatorium.

W. J. Lock	£150	0	0
I. G. Stevenson	127	10	0
E. Hales	98	0	0
E. G. Gallant	90	0	0
H. S. JOEL, Milton Road (accepted)	88	0	0

HANWELL.

For the erection of a sorting office.

Abbot & Herbert	£2,328	0	0
Stephens, Bastow & Co., Ltd.	1,998	0	0
T. Bendon	1,842	0	0
T. H. Kingerlee & Sons	1,830	0	0
W. J. Dickens	1,787	0	0
E. A. Hadley & Sons	1,775	0	0
E. Plaistowe	1,738	0	0
General Builders, Ltd.	1,697	0	0
B. E. Nightingale	1,658	0	0
Collins & Lee	1,646	0	0
A. & B. Hanson	1,643	0	0
Speechley & Smith	1,620	0	0
J. DOREY & CO., LTD. (accepted)	1,550	0	0

HELSTON.

For alterations and additions to board and other rooms at the workhouse, Helston, Cornwall.

W. H. BEAGLEHOLE, St. John's Road (accepted)	£115	5	11
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HOLSWORTHY.

For repairing the market buildings.

BECKEY (accepted)	£54	7	0
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HORNCASTLE.

For taking-down and rebuilding a culvert in Moor Lane, Horsington, Lincs. Mr. HENRY WHITE, surveyor.

J. Darley	£42	0	0
K. MILLER, Minting, Horncastle (accepted)	35	0	0

HORSHAM.

For the erection of a billiard-room and other additions and alterations to the Warren, Itchingfield, for Mr. F. Hulme King. Mr. C. H. BURSTOW, architect, 6 West Street, Horsham

Reeves & Port	£765	0	0
G. Potter	725	0	0
Dewdney Bros	685	0	0
Hillman & Murrell	660	0	0
William Potter	640	17	0
Rowland Bros.	633	0	0
JAMES WADEV, Five Oaks, Billingshurst (accepted)	460	0	0

HOVE.

For painting and distempering the walls, ceilings, &c., of the Sanatorium. Mr. H. H. SCOTT, surveyor.

W. WHITEMAN (accepted)	£58	0	0
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For the construction of two new bath-rooms at the Sanatorium.

W. WHITEMAN (accepted)	£183	0	0
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For paving and other works on the south side of Clarendon Villas.

PARSONS & SONS, Brighton (accepted)	£617	0	0
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ILFORD.

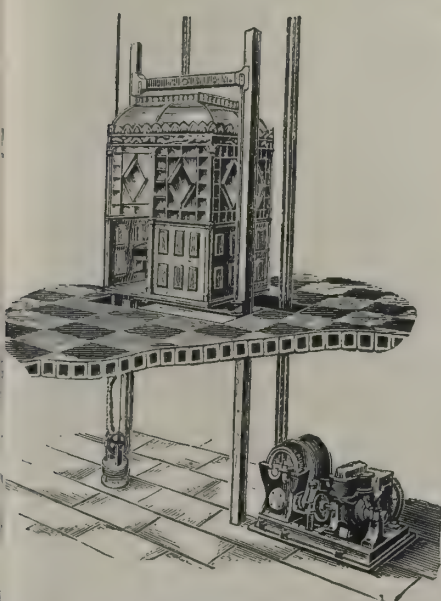
For laying surface-water drainage from Granville Road to the watercourse at the Central Park. Mr. H. SHAW, surveyor.

PARSONS & PARSONS, Ilford Wharf, Ilford (accepted)	£478	0	0
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For the erection of a lodge and convenience at the north-west entrance to the South Park, Green Lane. Mr. H. SHAW, surveyor

T. H. THOMPSON & CO., Roden Street (accepted)	£404	0	0
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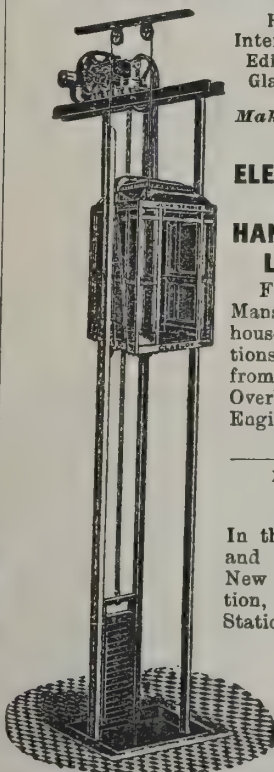
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Glasgow; Court
Houses, Glasgow,
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IPSWICH.

For enlargement of Ipswich post office.

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H. J. Linzell	£2,454 0 0	£75 0 0	
W. H. Death	2,450 0 0	57 0 0	
Spencer, Santo & Co.	2,190 0 0	10 0 0	
G. Grimwood & Sons	1,952 0 0	110 0 0	
R. Girling	1,930 0 0	100 0 0	
A. Sadler	1,898 0 0	48 0 0	
T. Parkinson & Son	1,800 0 0	78 0 0	
F. BENNETT (accepted)	1,780 0 0	130 0 0	
A. Credit old materials.			

IRELAND.

For painting all outside wood, iron and cementwork, previously painted, of the workhouse, fever hospitals and small-pox wards, Larne.

R. Foulis	£32 0 0
J. MYERS, Larne (accepted)	26 5 0

For making a granolithic footpath and crossings on south-west side of Mill Street, Larne. Mr. WM. PINKERTON, town surveyor, Larne.

W. EARLS, Pound Street, Larne (accepted)	£90 15 6
J. Dale	90 3 10

LANCHESTER.

For laying a 9-inch pipe sewer at Villa Real, near Consett, and for the construction of sewage-disposal works in connection therewith, laying a 9-inch pipe sewer at Low Westwood, &c. Mr. G. W. WESTGARTH, surveyor.

Villa Real sewerage and sewage-disposal works.

J. Atkinson	£281 11 6
A. Routledge	235 0 0
J. Allison	224 4 0
J. Walton	212 18 5
S. DART, Annfield Plain, co. Durham (accepted)	169 9 9

Sewer at Low Westwood.

R. F. Taylor	55 0 0
M. Cawthorne	53 10 0
J. Atkinson	52 0 0
S. DART (accepted)	47 7 9

LAMBETH.

For the erection of a boundary wall at Tyers Street, Vauxhall.

B. E. Nightingale	£165 0 0
London and County Builders, Ltd.	139 11 4
H. & G. Mallett	139 10 0
E. Wall	138 0 0
H. J. Tydeman	133 15 0
W. Hooper	132 0 0
H. Bragg & Son	129 10 0
F. Pearce	123 0 0
H. KENT, 17 Albion Road, Lewisham, S.E. (accepted)	98 0 0

LEYTON.

For private street works within the district. Mr. WILLIAM DAWSON, surveyor.

T. Adams	£6,935 9 11
W. Griffiths & Co.	6,018 12 8
Parsons & Parsons	5,924 19 5
G. J. Anderson	5,243 0 4
B. W. Glenny	5,119 19 0
A. W. Porter	5,021 15 3
W. MANDERS, Lindley Road, Leyton (accepted)	4,916 10 0

LONDON SCHOOL BOARD.

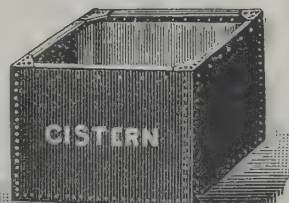
For new school, Knapp Road.

McCormick & Sons	£22,957 0 0
John Greenwood, Ltd.	22,626 0 0
Johnson & Co.	22,547 9 8
F. & F. J. Wood	22,494 0 0
Perry & Co.	22,478 0 0
Macey & Sons, Ltd.	22,377 0 0
J. Longley & Co.	22,289 0 0
J. Grover & Son	22,272 0 0
W. Shurmur & Sons, Ltd.	22,176 0 0
J. & M. Patrick	21,963 0 0
A. Porter	21,852 0 0
E. Lawrance & Sons	21,744 0 0
W. Downs	21,697 0 0
J. Smith & Sons, Ltd.	21,652 0 0
G. Munday & Sons	21,479 0 0
W. Gregar & Son	20,990 0 0
Treasure & Son, London and Shrewsbury *	20,942 0 0

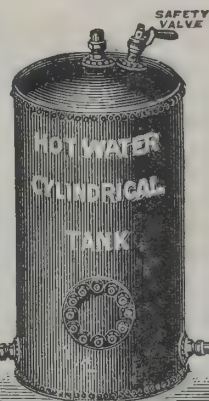
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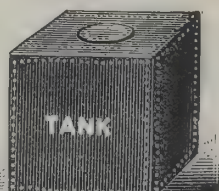
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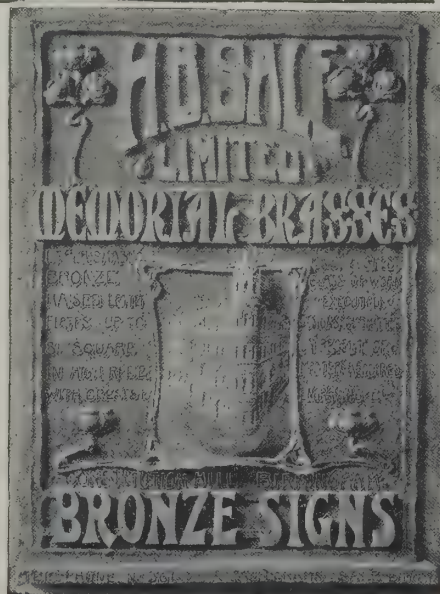
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LONDON SCHOOL BOARD—continued.

For school for mentally defective children—three classrooms for twenty each, with power of extension by one twenty classroom, and enclosing, draining and tar-paving the additional land, Glenister Road.

Turnbull & Son	£3,447	0	0
E. Lawrance & Sons	3,342	0	0
J. Smith & Sons, Ltd.	3,253	0	0
W. Akers & Co.	3,141	0	0
G. E. Wallis & Sons	3,139	0	0
Johnson & Co.	3,102	0	0
Treasure & Son	3,101	0	0
E. P. Bulled & Co.	3,091	0	0
F. & H. F. Higgs	3,088	0	0
John Greenwood, Ltd.	3,014	0	0
J. Garrett & Son	3,001	0	0
J. & C. Bowyer.	2,993	0	0
T. D. Leng	2,968	0	0
Rice & Son	2,897	0	0
Martin, Wells & Co., Ltd., London and Aldershot*	2,831	0	0

For altering position of partitions and providing an additional glazed partition in order to redivide classrooms C, D and E into four rooms; reversing stepping, providing stoves and rearranging doorways, &c; replacing the old stoves in end classrooms with open-fire portable stoves and providing new Tobin tubes, &c, boys and girls, Springfield.

T. Hooper & Son	£1,100	0	0
E. P. Bulled & Co.	1,041	0	0
H. Bouneau	1,016	9	0
F. & H. F. Higgs	1,015	0	0
E. Triggs	999	0	0
W. Hammond	995	0	0
J. Garrett & Son	975	0	0
W. Downs*	933	0	0

* Recommended for acceptance.

For supply of bentwood chairs, on a running contract.

Josias Eissler & Sons	each	3	0
The (Original) Austrian Bentwood Furniture Co., Ltd.	"	3	0
B. Cohen & Sons, Ltd.	"	2	9
JACOB & JOSEF KOHN (accepted)	"	2	9

LONDON SCHOOL BOARD—continued.

For providing and fixing a complete low-pressure hot-water apparatus and additional boiler for warming classrooms, Wordsworth Road.

Rosser & Russell, Ltd.	£866	10	0
Wippell Bros. & Row	850	0	0
J. & F. May	820	0	0
J. Grundy	760	0	0
The Brightside Foundry and Engineering Co., Ltd.	759	0	0
Mather & Platt, Ltd.	707	0	0
M. Duffield & Sons	703	0	0
G. & E. Bradley	691	0	0
G. Davis	682	0	0
TURNER & Co. (accepted)	679	0	0

LONDON.

For alterations and additions at the Northern hospital.

Foster Bros.	£2,017	0	0
W. D. Tucker	1,974	0	0
A. Porter	1,867	0	0
H. Wall & Co.	1,835	0	0
VOLLER & GOODFELLOW, 12-14 Truro Road, Wood Green, N. (accepted)	1,757	0	0

For the re-forming of pipe trenches and repairing corridor floors at the South-Western hospital.

H. & C. Davis & Co., Ltd.	£935	0	0
J. C. Mason.	675	12	0
Hall & Sons	661	9	0
W. J. COLEMAN & Co., Wynne Road, Brixton, S.W. (accepted)	602	15	0

LOWER BEBINGTON.

For street work in Henthorne Road, Lower Bebington, Cheshire.

I. Ireland	£44	4	7
J. Maddocks	42	13	5
C. Warren	42	8	9
W CHADWICK, 19 Leeds Street, Liverpool (accepted)	40	7	6

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NANTWICH.

For the erection of Congregational schools, Monk's Lane, Nantwich. Mr. R. MATTHEWS, architect.
COX & VAUGHAN, Nantwich (*accepted*). £1,895 0 0

NEW BROMPTON.

For the erection of shop, stores, &c., at Byron Road, New Brompton, Kent. Messrs. J. W. NASH & SON, architects, 245 High Street, Rochester.

E. West	£2,099	0	0
H. Harris	2,052	0	0
J. Davison	1,891	0	0
H. E. Phillips	1,850	0	0
E. Filley	1,717	0	0
J. L. Trueman	1,659	0	0
J. Leonard	1,630	0	0
W. C. Snow	1,629	0	0
West Bros.	1,599	0	0
G. E. WOOLLARD, New Brompton (<i>accepted</i>).	1,589	0	0

NEWCASTLE-UNDER-LYME.

For sewerage works, with manholes, lampholes, &c., and the construction of tanks, filters and other works of sewage disposal. Mr. ARTHUR E. JONES, engineer, Brunswick Street, Newcastle-under-Lyme.

Contract No. 1.

F. Barke	£4,695	0	0
Morley & Sons	4,389	0	0
G. Bell	4,310	0	0
W. Williams	3,890	0	0
T. Tucker	3,756	0	0
G. K. Downing	3,697	0	0
S. Witton, jun.	3,458	0	0
SMITH & TAYLOR, Basford, Stoke-on-Trent (<i>accepted</i>)	3,229	0	0

Contract No. 2.

G. K. Downing	1,946	0	0
W. Williams	1,780	0	0
S. Heath	1,712	0	0
F. Barke	1,665	0	0
S. Witton, jun.	1,640	0	0
Smith & Taylor	1,630	0	0
Morley & Sons	1,575	0	0
G. BELL, Corporation Street, Manchester (<i>accepted</i>)	1,520	0	0

NORTHAMPTON.

For the construction of a small tank and a short length of sewer in connection with the Bugbrooke sewer. Mr. I. B. WILLIAMS, surveyor, Daventry.

D. Ratledge	£191	17	6
F. W. Westmoreland	184	2	0
T. ADAMS & CO., Daventry, Northamptonshire (<i>accepted</i>)	170	2	0

NORTH BERWICK.

For the erection of gasworks.

Accepted tenders.

C. M. Hamilton, Hamilton, mason	£3,592	18	10
W. Binst, Woodhaven, Wormit, Fife, joiner	972	13	6
J. Mundy, 30 East Vale Place, Kelvinhaugh, Glasgow, steel roofing	664	17	4
D. Blake & Co., 10 Beaverhall Road, Edinburgh, plumber	173	10	0
A. McLaren, slater	171	9	4
T. Arundel, plasterer	93	12	1

ROCHDALE.

For sewerage works in Manchester Road, between Kingsland Road and Nixon Street, Rochdale. Mr. S. S. PLATT, borough surveyor.

J. MOORE, 23 Entwistle Road (*accepted*).

For paving the bed of the river Roch, from the upper side of the Wellington bridge to the lower side of the Rochdale bridge, with concrete, and for the covering of the portion between the Rochdale and the Wellington bridges with ferro-concrete on the Hennebique system, and for other works incidental thereto. Mr. S. S. PLATT, borough surveyor.

D. JONES & CO., 15 Park Place, Leeds (*accepted*).

SHIBDEN.

For the erection of two houses, Green Lane, Shibden, Yorks. Messrs WALSH & NICHOLAS, architects, Halifax.

Accepted tenders.

S. Mitchell, Kirk Lane, Hipperholme, mason.
H. Abbot, Ford Hill, Ambler Thorn, Halifax, joiner.
Bancroft & Son, Winding Road, Halifax, slater, plasterer and concreter.

W. Hodgson, Queensbury, near Bradford, plumber.

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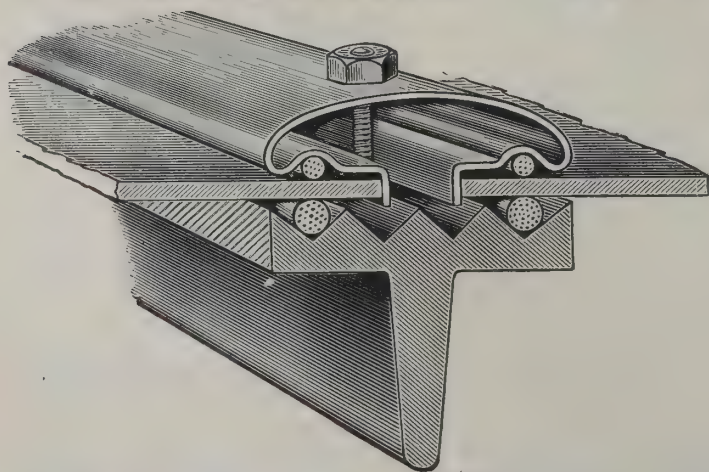
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MANAGER'S ROOM.

UNIVERSITY COLLEGE HOSPITAL.

HOUSE AT ROEHAMPTON, SURREY.

SCOTLAND.

For construction of drainage works at Lossiemouth. Messrs.
GEO. GORDON & Co., engineers, Inverness.

J. Swanson	£8,282	16	6
B. & J. Scott	7,752	18	9
J. Warrack	7,153	15	0
D. Matheson & Co.	6,987	1	8
G. Chalmers	6,840	18	10
MacLeish, Morrison & Co.	6,653	1	3
J. Mackenzie	6,479	17	0
J. Martin	6,128	5	4
R. Fraser	5,503	17	8
G. Mackay & Son	5,503	15	10
T. Munro	—	—	—
R. Mackay	5,288	19	11
J. H. Clark	5,099	10	7
J. Ross	4,985	19	8
W. Duncan	4,943	19	7
R. C. Brebner & Co.	4,565	12	7
T. MACDONALD, Hawthorn Bank, Muirfield Road, Inverness (accepted)	4,326	3	0

STOCKPORT.

For sewerage a portion of Athens Street. Mr. JOHN ATKIN-
SON, borough surveyor.

R. H. Rogers	£278	9	2
W. H. Eva	179	15	10
P. D. Hayes	168	7	0

STOCKWELL.

For the erection of sorting office.

Jones Bros.	£3,730	10	10	A.
W. Norton	3,310	0	0	£15 0 0
Perry & Co.	3,216	0	0	10 0 0
Balaam Bros.	3,180	0	0	5 0 0
W. Smith & Son	3,081	0	0	5 0 0
B. E. Nightingale	3,056	0	0	—
Martin, Wells & Co., Ltd.	3,000	0	0	—
Edwards & Medway	2,921	0	0	21 0 0
J. Chessum & Sons	2,916	0	0	10 0 0
W. J. Renshaw	2,897	0	0	5 0 0
W. H. Lorden & Son	2,888	0	0	—
Speechley & Smith	2,882	0	0	5 0 0
J. Appleby & Sons	2,844	0	0	—
W. Pattinson & Sons	2,844	0	0	—
H. Bragg & Sons	2,819	0	0	2 0 0
J. SHELBOURNE & Co. (accepted)	2,779	0	0	5 0 0

A.—Credit old materials.

SURREY.

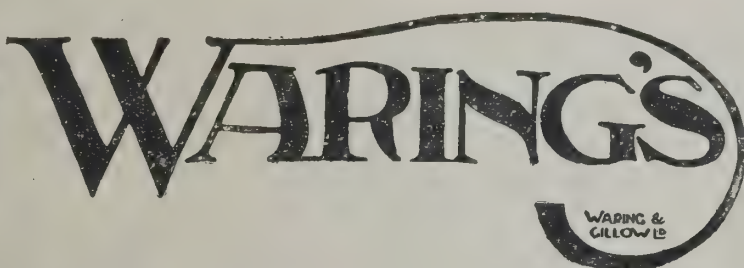
For additions and alterations to the Scarlett Arms, Abinger,
for Lord Abinger's trustees. Mr. C. H. BURSTOW, archi-
tect, 6 West Street, Horsham, Sussex.

Joseph Harrison	£393	0	0
E & J H. Holden	378	0	0
J. Knight	370	0	0
Warren & Killick	368	0	0
REEVES & PORT, Rudgwick (accepted)	362	10	0

SUSSEX.

For alterations and additions to business premises for a new
post office at Slinfold, for the trustees of the late Mr.
Charles Child. Mr. C. H. BURSTOW, architect, 6 West
Street, Horsham.

G. Marden	£474	0	0
J. Wade	465	0	0
Rowland Bros.	459	0	0
Hillman & Murrell	450	0	0
E. Reeves & Port	441	0	0
THOMAS AYLING, Slinfold (accepted)	353	0	0



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175, 176 SLOANE STREET, S.W.

ALSO AT LIVERPOOL, MANCHESTER, PARIS, AND CAPE TOWN.

SUTTON.

For the erection of a residence at Sutton, Yorks. Messrs. JOHN HAGGAS & SONS, architects, 71 North Street, Keighley.

Accepted tenders.

E. Smith & Son, Keighley, mason.
Judson & Steel, Keighley, joiner.
R. Nelson, Ilkley, slater.
F. Davy, Crosshills, near Keighley, plasterer.
H. Firth, Crosshills, near Keighley, plumber.
Total £2,301 16s.

TUNBRIDGE WELLS.

For sewerage and sewage purification works for Speldhurst and Langton. Mr. FRANK HARRIS, engineer, Broadway, Southborough, Tunbridge Wells.

T. Rowland	£9,924	1	5
Bell & Co.	9,914	1	2
Davies, Ball & Co.	9,816	13	4
W. Maunders	9,640	0	0
W. Smith	8,787	11	5
J. Jarvis	8,613	10	0
E. Iles, jun.	7,899	10	0
Arnold & Sons	7,491	19	6
G. J. Rayner	7,413	8	3
Martin & Co.	7,339	10	0
Streeters & Todhunter	7,227	0	0
S. Wood	7,163	9	5
Peerless, Dennis & Co.	6,768	0	0
A. DIXON & Co, Bradford (accepted)	6,083	3	2

WALES.

For erection of show-rooms and stock-rooms, Market Square, Merthyr Tydfil. Mr. C. M. DAVIES, architect, 112 High Street, Merthyr.

J. Williams	£2,690	0	0
J. Jenkins	2,338	7	0
S. Hawkins	2,320	0	0
M. Warlow, Warlow Street (accepted)	2,199	19	0

For rebuilding 105 and 106 High Street, Merthyr. Mr. C. M. DAVIES, architect, 112 High Street, Merthyr.

J. Williams	£2,997	8	0
J. Jenkins	2,952	0	0
Lloyd & Tape	2,880	0	0
L. Davies	2,850	0	0
E. JONES, Dowlais (accepted)	2,650	0	0

WALES—continued.

For the erection of a lattice-girder bridge at Cefn Cemetery, Merthyr Tydfil, for the Urban District Council. Mr. T. F. HARVEY, engineer and surveyor.

Patent Shaft and Axletree Co.	£3,080	0	0
J. Tildesley, Ltd.	3,020	0	0
E. FINCH & Co, LTD., Chepstow (accepted)	2,100	0	0
Handyside, Ltd.	2,060	0	0

For cleaning and painting the iron bridge crossing the river Rhymney at Llanedarne. Mr. JAMES HOLDEN, surveyor, Llandaff Chambers, 35 St. Mary Street, Cardiff.

R. M. Lovell	£29	10	0
P. Jones	27	10	0
B. Barton	21	10	0
S. Cram	20	14	4
C. H. Lansdown	18	0	0
W. E. JAMES, Cardiff (accepted)	12	10	0

For erection of vestry at the Carmel chapel, Pentredwr, Llansamlet.

Walters & Johns	£435	10	0
D. W. ROSSER, Llansamlet (accepted)	412	0	0

For the erection of an organ chamber, minister's vestry, lavatory, &c, and for varnishing, colouring and decorating St. David's Presbyterian church, Gelliwastad Road, Pontypridd. Mr. ARTHUR LLOYD THOMAS, architect, Market Square Chambers, Pontypridd.

Organ.

W. HILL & SON, London (accepted)	£620	0	0
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Organ-chamber.

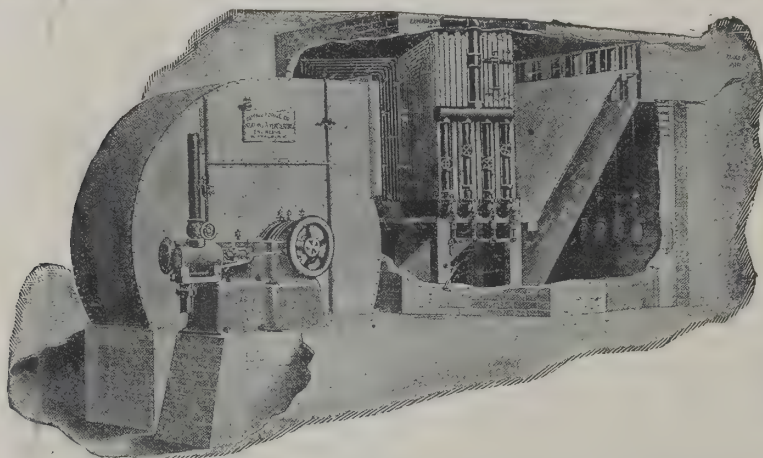
Price Bros.	234	2	4
G. DAVIES, Pontypridd (accepted)	230	10	6

Painting, &c.

Price Bros.	165	0	0
E. Jones	145	10	0
Llewellyn Bros.	135	0	0
L. Talbot	116	15	0
T. EVANS, Pontypridd (accepted)	97	10	0

For the erection of two villas, Rickards Street, Pontypridd. Mr. J. PARRY WILLIAMS, architect, Taff Chambers, Pontypridd.

E. J. Parfitt	£2,115	9	6
Williams & James	1,741	7	3
E. JONES, Morgan Street (accepted)	1,690	0	0
M. Julian	1,597	0	0

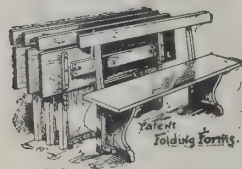


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Hospitals, &c.
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Regulation.

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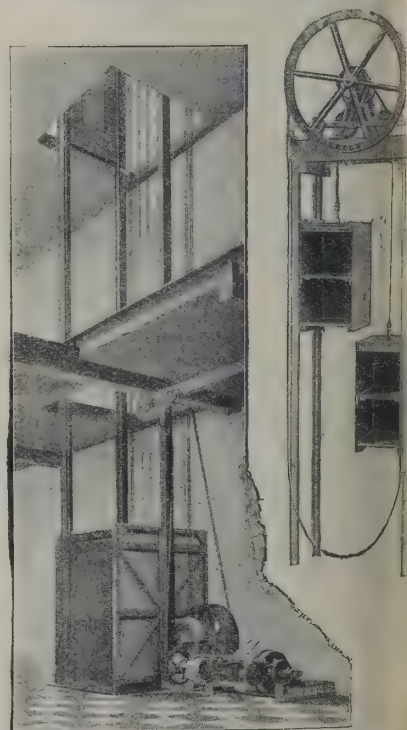
15 per cent. more seated.
Increased Revenue.
Rows can be spaced 24 in. apart.
Pack away into minimum space.

Prices, Particulars, and Samples of all above on Application.

For Index of Advertisers, see page x.

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ELECTRIC, HYD., BELT, HAND
PASSENGERS OR GOODS.



RAWLINSONS, Ltd.
Hoisting Engineers,
LEEDS.

TRADE NOTE.

MESSRS. E. H. SHORLAND & BROTHER, of Manchester, have just supplied a number of their patent Manchester grates to the new naval barracks, Portsmouth.

NEW CATALOGUE.

A VERY complete catalogue of furniture and fittings for schools, colleges and gymnasia is now being issued by the North of England School Furnishing Company, Ltd., of Darlington, a firm devoting a large amount of attention to the hygienic aspect of school furniture and its adaptability to the needs of growing children, in order that their physique may be developed at the same time as their intellects. With this object in view the firm have introduced a number of adjustable desks and seats of various descriptions, which can be so arranged by an ingenious mechanism as to avoid the stooping and cramped positions which children so often assume during their studies, and which are so inimical to their growth. Other specialties of the firm comprise fittings for technical schools, laboratories, public and other libraries, &c.

VARIETIES.

THE German Emperor has conferred the large gold medal for art on Mr. John Sargent, R.A., and the small gold medal for art on Mr. Edwin Abbey, R.A.

A NEW Baptist church was opened on the 8th inst. in Hither Green, the site and building having cost 6,575/. This is one of the thirty odd churches founded by the London Baptist Association.

THE new school-church which the Primitive Methodists have built in Third Avenue, Trafford Park, Manchester, was opened on Saturday. Accommodation is provided for over 300 worshippers, and the total estimated cost is 2,200/.

THE employes of Messrs. Waygood & Otis, Ltd., spent an enjoyable day on Saturday last, when the firm's London cricket eleven went down to Coventry to play in a match between them and the country works eleven, in which the latter were victorious, making 120 against the Londoners' 94. Prior to the match the teams and their supporters lunched together at the White Lion hotel, the chair being taken by Mr. D. W. R. Green, secretary.

THE new and substantial stone bridge built by the Kent County Council over the Medway in Hampstead Lane, near to the railway station, was opened on the 8th inst. The new bridge succeeds an old wooden structure, and provides an excellent approach to the station and very serviceable vehicular communication between the districts on either side of the river. It is an attractive erection of Kentish ragstone, with railed approaches of iron tubing and a parapet wall of ragstone. The approaches extend some 1200 feet on either side, and have a gradient of 1 in 20. The bridge itself is of steel girders, with Hobson's patent flooring, both girders and flooring having been supplied and fixed by the Cleveland Bridge and Engineering Company, of Darlington. There is a clear roadway of 16 feet 6 inches and a 4-foot path. The bridge crosses the river almost at an angle of 45 degrees, and allows barges 9 feet 6 inches head room and a waterway of 21 feet. In addition there are five land arches, 10 feet in breadth, for the accommodation in flood time of the extra water. The strength of the bridge will admit of any traffic, including all kinds of steam tractions. It has been erected by Messrs. Wallis & Sons, of Maidstone, to plans and specifications prepared by Mr. F. W. Ruck, the county surveyor, and the contract price was 4,150/, the total cost being 4,400/.

ELECTRIC NOTE.

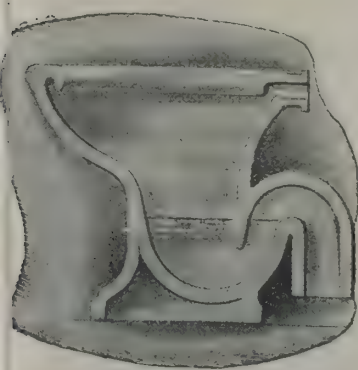
THE new lighthouse which has been erected by the German Government on the island of Heligoland is notable, says the *Birmingham Post*, because, although it is claimed to have one of the most powerful lights in operation, it is made with the old parabolic reflector, with a powerful illuminant at the focus in place of the Fresnel lenses and prisms. An arc light, with a current of 34 amperes, is the illuminant, and it is stated that the candle-power is 30,000,000. The lamp is so arranged that a flash is given every five seconds, and its duration is only one-tenth of a second. This is the same length of flash as adopted by the French authorities, but experts are by no means agreed that it is long enough. It would certainly be sufficient on a clear day, but when the atmosphere is hazy it is doubtful if one-tenth of a second is long enough to make an impression on the eye. It is said that on the first night of trial the light was seen for a distance of forty miles.

TO BOROUGH ENGINEERS, SURVEYORS, ARCHITECTS, &c

Hassall's Patent Water Closet.

AWARDED THE MEDAL OF THE SANITARY INSTITUTE, 1902.

IMPORTANT IMPROVEMENT IN FLUSH-DOWN W.C.'s.



SECTION.

ADVANTAGES.

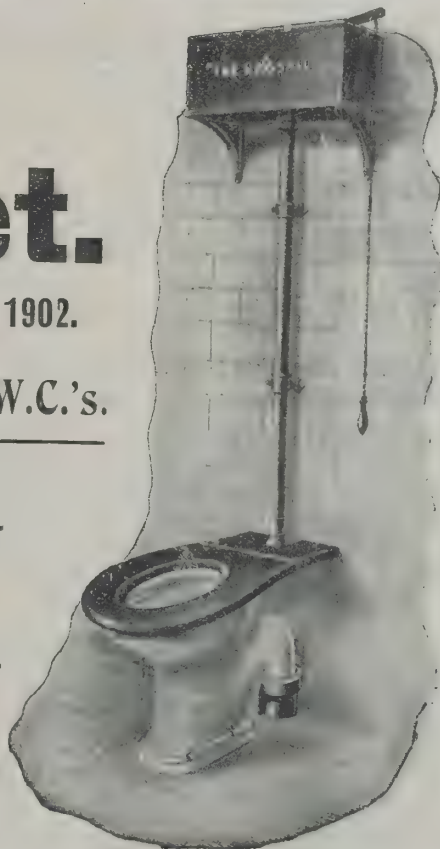
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Not depending on syphonic action.

No double trap required.

The whole surface of pan perfectly cleaned each time of flushing.



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OUTRAM & CO. WOODVILLE, near Burton-on-Trent.

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BUILDING AND BUILDERS.

A WELSH Calvinistic Methodist chapel, costing 8,000*l.*, is to be built at Llandudno, to supersede the present building.

THE foundation-stones of a new Wesleyan church and schools to be erected at Hales Owen Road, Old Hill, Birmingham, at a cost of 4,500*l.*, were laid.

THE last stone of the new Aberystwith promenade, constructed by the Corporation at a cost of 12,000*l.*, has been laid. The new structure is about half a mile long, running due south, and contains a carriage-road as well as an esplanade.

ON Saturday Sir Thomas Brooke laid one of the principal stones of a new chancel which is to be erected at Christ Church, Mold Green, Huddersfield. The church has been without a chancel for about forty years. The new chancel will, with the redecoration of the church, cost about 1,900*l.*

A LOCAL GOVERNMENT BOARD inquiry has been held into the application of the Seiston Rural District Council for sanction to borrow 14,000*l.* for purposes of sewerage and sewage disposal. The scheme was prepared by Mr R E W. Berrington, M.Inst C.E., of Westminster and Wolverhampton.

THE building strike in New York, now ended, kept 115,000 men out of work for fifty-one days. The cost in wages to labourers was 17,839,020*l.* on the prospective profits; the expenses to contractors totalled 30,000,000*l.*, and to working-men in allied trades 18,000,000*l.*, making a total of 66,839,000*l.*

PLANS have been accepted for the new post office which it is intended to erect for the burgh of Linlithgow. They show a one-storey building, and accommodation for public office, instrument-room, telephone-room and boys' room facing the street, with postmaster's-room, large sorting office, and postmen's-room and store behind. The plans have been prepared by Mr. W. W. Robertson, of H.M. Board of Works, Edinburgh. Messrs. Bakie & Peattie, builders, Bo'ness, have secured the contract for the work.

COLONEL R. A. DURNFORD, R.E., Local Government Board inspector, held an inquiry at the Gorton town hall into an application by the Gorton (Lancs) District Council for sanction to borrow 8,816*l.* for the provision of a refuse destructor on a site adjoining the Gorton outfall sewage works. The site is between 400 and 500 yards from the Belle Vue

Gardens, and Mr. Charles Jennison opposed the application because of its proximity to the gardens. Mr. Lord appeared for the Gorton Council, and explained that the population of the district was 28,000, the assessable value 75,730*l.* and outstanding loans 91,764*l.* The scheme was, he said, a good one, the Council had selected the best site and a destructor was most necessary, the population having almost doubled in the last ten or twelve years. Mr. Singer (clerk to the Council), Mr. Howarth (assistant engineer to the scheme), Councillor Wainwright (chairman of the health committee), Dr. Martin (the medical officer of health), Mr. G. Watson (of the Horsfall Destructor Company) and others gave evidence in favour of the application. Mr. Jennison, in explaining the reasons for the opposition of the proprietors of the Belle Vue Gardens, said they had a very large interest at stake. Much land had been purchased around the gardens for the purpose of keeping down any nuisance, and they were very chary about allowing anything to come near Belle Vue that might possibly be injurious. It was difficult, even at the present time, to keep the trees in the gardens alive and maintain the vegetation in anything like reasonable order. The Inspector afterwards inspected the site, and said the result of the inquiry would be intimated in due course.

At a meeting of the Tamworth joint waterworks committee the manager (Mr. H. J. Clarson) emphasised the necessity of having a quantity of water in reserve, because several times the existing reservoir has been practically empty. The height of water in the well on July 13 last year was 22 feet 6 inches; this year it was 20 feet 7 inches. He suggested the construction of a small reservoir at Hopwas. The committee afterwards resumed consideration of the report of Mr. D. F. Worger, an expert, who was called in to advise the committee on the matter, and in the end Mr. Morgan proposed that a new reservoir to hold 500,000 gallons be provided at Hopwas, near the existing works. Dr. W. Marris seconded, and the proposition was agreed to with one dissentient (Mr. F. G. Alton). It was stated that the cost of the proposed reservoir would be an average rate over the whole water area of 1*o*36*d.* Mr. Worger estimated the cost of the reservoir as proposed to be 4,370*l.*, while the committee's manager's estimate totalled 5,417*l.* It was stated by the chairman that the difference in the estimates was entirely in the cost of construction.

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GRANITE FOR BUILDING,**
PAVING, ROAD-MAKING, CONCRETING,
BACTERIA BEDS, &c.
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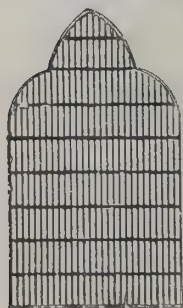
Inlaid Marble Mantel-Pieces.
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GLAZED BRICKS.

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PROCTER'S PATENT WINDOW.

THIS ventilating and weatherproof window which we illustrate is being exhibited at the Sanitary Institute's Exhibition at Bradford, and possesses more than one special feature. The window is formed of two wood casements which open inwards; above them is fixed a fanlight window which drops into a groove, and at the top can be pushed back and locked

or brought forward until it self-locks. Behind the architrave is an air passage from the room to the open air, and when the fanlight is brought forward there is a clear passage for the current of air to pass straight into the room directed towards the ceiling. By means of this arrangement the window, although securely locked, admits fresh air at any time, there being no necessity to close it at night or when the house is locked up in the absence of the tenant.

The fanlight being held in position without fastenings or hinges, excepting the bolt at top for securing it either open or shut, can be easily lifted out, and with the casements open gives an opening the full size of the window. Besides the advantages of ventilation without draught or damage to the curtains, these windows form a perfect safety window, as both inside and outside can be cleaned from inside the room, no special fittings being required to effect this. Fig 1 shows the action of this window.

In fig. 2 will be seen the patent tipping weather bar, fixed to the bottom of casement. When the window is closed it falls into its place, and, as will be seen, the greater the wind pressure the more perfect is the seal over the joint outside.

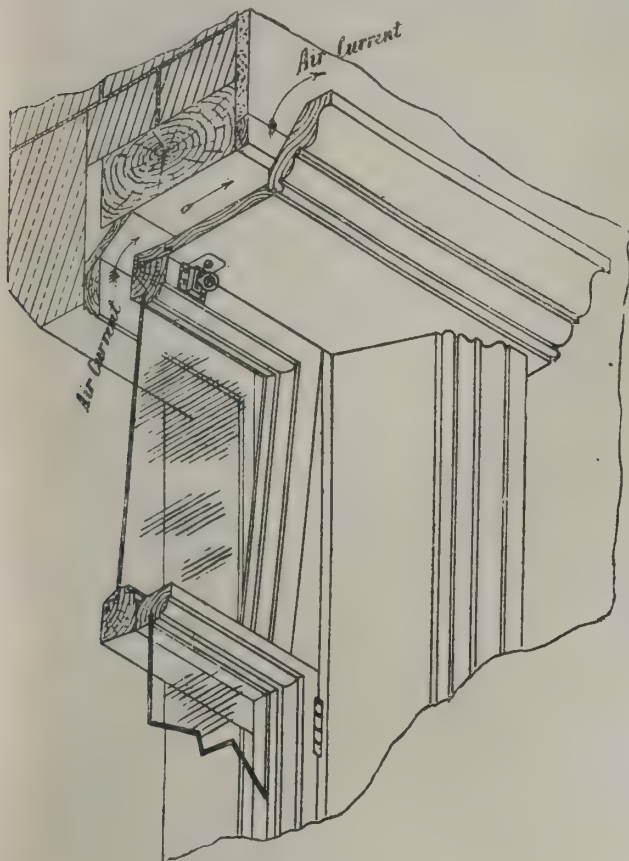


FIG. 1.

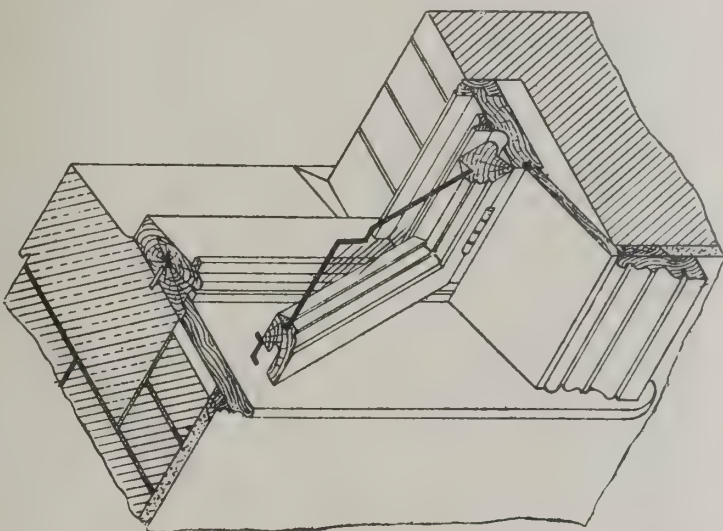


FIG. 2

ARMoured FIRE DOORS

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Telegrams,
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Officially Endorsed by the
Fire Offices Committee.

Lighter and Cheaper than
Iron Doors.

Can be made to Close
Automatically in Case
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Will NOT Buckle or Twist
out of Shape.

ALSO MAKERS OF THE ARMoured
URALITE DOORS.

Full Particulars on Application.



**HOT WATER AND
STEAM HEATING
INSTALLATIONS,
High and Low Pressure.
Vacuum System.**

**GRINNELL AUTOMATIC FIRE EXTINGUISHING INSTALLATIONS.
FIRE PUMPS AND FIRE APPLIANCES OF ALL KINDS.**

MATHER & PLATT, LTD. Park Works, Manchester; & 14 Victoria St., London, S.W.
And at Glasgow, Leeds, Birmingham, &c.

THE SANITARY INSTITUTE EXHIBITION.

THIS exhibition, organised by the Sanitary Institute at Bradford in connection with their twenty-first annual Congress, was formally opened by the Mayor on the 7th inst. and will continue until the 25th inst. It, indeed, forms a very important section of the Congress, for while the papers read and discussed are of great interest, dealing with a great variety of subjects where improvements are possible and often necessary for the health and well-being of the community, by means of the exhibition practical demonstrations are afforded to the delegates and visitors of the latest improved methods of sanitation, and the exhibitors may be congratulated that by their co-operation these are of such a comprehensive character. A brief description of those exhibits appealing more directly to our readers will doubtless be read with interest.

Messrs. Doulton & Co., Ltd., are represented by an extensive display of baths, lavatories, closets, cisterns, urinals, &c., some being specially designed for hospital use, and the fact that they received four awards from the judges is proof of the general excellence of their exhibit. The gun-metal mixing valve for hot and cold water, awarded a bronze medal, so controls the supply to the bath that cold water must first be turned on, then the hot water is mixed with it, giving a tepid supply, and finally, by shutting off the cold, hot water only is given, all, of course, through the same tap, a removable combined standing waste and overflow being carried through the centre of it. These are fitted to a vitreous enamelled—inside and outside—recessed bath, with soap-dishes made on the rolled edge on each side of the valve. The "Syphonic" and "Waverley" closets, both of which gained a bronze medal, have an extra large water area, and in the former the seat is fitted to extensions either bolted through or hinged. The "Waverley" is fitted with the improved "Paisley" cisterns, also awarded a bronze medal, which, with a 2-gallon flush, thoroughly cleanses the whole face of the pan, and fitted also to the "Simplicatus" closet, gives a 3-gallon discharge in four seconds. This closet has a balance seat fixed to lugs or extensions. The special closet for schools is designed to replace automatic syphon closets, and is fitted with independent cisterns. It takes very little space, the outlet being made to turn to one side, either right or left hand, and is fitted with an inspection cap to trap, giving easy access either for inspection or cleaning out. The "Vulcan" urinals in white-glazed fireclay have the back and

base in one piece, reducing fixing to a minimum, with open weir outlet to channel covered with loose gratings, allowing it to be easily cleansed. The operating-room lavatories are fitted with hot and cold combined valves, with lever handles so arranged that they are worked by the arms, avoiding any necessity for the hands to touch them, and preventing the possibility of contamination to the fittings. For greater cleanliness, all the hospital lavatories, &c., are made to stand clear from the wall. A white vitreous enamelled mortuary table on pedestal, fitted with ball bearings, with brake, enabling the operator to fix it in any position, and special facilities for cleaning out wastepipe, &c., is also shown. We have only space to mention that Messrs. Doulton & Co., Ltd., have a good display of white-glazed baths and marble lavatories, all of which are excellent.

Messrs. Shanks & Co., Ltd., at their stand close to the above, exhibit the "Perfecto" bath, vitreous enamelled on the inside and outside, having a syphonic outflow that can be easily removed and a 2½-inch full-way waste. Model lavatories with nickel or oxidised fittings supported on marble slab floors are shown in various designs. For schools individual closets with cistern to each, as supplied to the Manchester education committee, are a special feature, and are fitted with inspection cap to trap, while an enclosed rod in place of a chain is used for emptying the cistern.

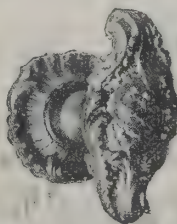
Messrs. Joseph Cliff & Sons have an extensive and interesting exhibit of many of the specialties manufactured by them, and were awarded bronze medals for the following:—The Newcliff intercepting trap, with special inspection cover; the Hessel-Tiltman scum channel for swimming-baths, made in white enamel fireclay and forming spittoons at intervals which are washed out by water flowing through the channel; and for the "Imperial" bath, patented and registered. This bath of white-glazed fireclay is novel as regards its shape, being designed with the object of giving more room at the head of the bath—at that end the sides being extended outwards forming an oval, giving greater freedom to the arms of the bather—and has other special features, the principal one being the introduction of fluted sides at the foot end, into which can be placed a slide covered with cocoanut matting, either for shortening the bath for children or forming a hold for the feet. The "Imperial" porcelain parallel bath, having straight sides, is an excellent comparison to the above, with lavatory and bathroom accessories complete, the walls being of Burmantofts faience. In addition Messrs.

COMYN CHING & CO. Ltd.

Finger Plate 1371.



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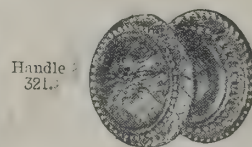


TRADE MARK.



Knocker 363.

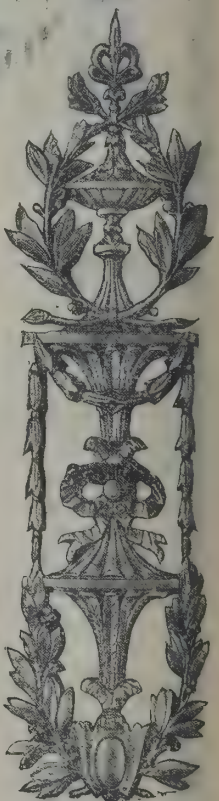
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Cliff exhibit a range of "Empire" urinals, a variety of lavatories, the "Imperial" mortuary slab and pedestals, hospital sinks, hospital closets without woodwork, improved pattern "Modern" washtubs and shampooing basins, hollowed at back of pedestal, enabling the fittings to be easily fixed; also examples of their well-known white and coloured and salt-glazed bricks, Tiltman's and the Shepwood patent partition bricks, Hall's hanging tiles, "Wyvurst" patent channels, Winsor's bends and channels, Border's patent sectional man-holes, "Tron" inspection eye, gullies, traps, sinks, &c. A word of praise must also be given to the specimens of terra-cotta; the "Fios" test-recorder for self-registering movements of water surface in manholes, drains, cisterns, &c., is also shown.

Messrs. Oates & Green, Ltd., occupy two stands, and on each is plenty to repay inspection. Dealing with the smaller one first, there are displayed samples of the sanitary stable fittings and cattle troughs, of which this firm make a spécialité, including a range of salt-glazed fireclay feeding troughs, providing a separate water supply and manger for each animal, a waste below the inflow keeping the water at a proper level, preventing it flowing into the next trough or contaminating the supply. A 6-feet glazed fireclay sanitary manger, with give-and-take fastener, and small feeding troughs are shown, also samples of salt-glazed Nalethric stoneware pipes, and white enamelled fireclay channels, bends, &c. On the larger stand is prominent a range of salt-glazed urinals as supplied to Windsor Castle; also white enamelled "Taper" and "Otis" urinals, with sloping backs and channels, being made in one piece, the sloping backs ensuring a thorough cleansing, the whole surface being flushed by the automatic apparatus. A large variety of lavatory basins are displayed with special features. For schools they are round-fronted and fitted with lugs for building into walls; a range of white enamelled fireclay slab basins and pedestals with skirting at back, and returns and overlapping joints, are for public institutions; while others are designed for hotels, clubs and private houses, and in these the taps are arranged not to extend into the basins, but are recessed at the back. Special closets for workmen, and hospital bracket closets clear underneath to the wall, waste water-closets, as well as white enamelled fireclay washdown closets, are a feature of this stand; also syphonic latrines with flushing rims and after-flush, and "Isolt" latrines with automatic flush and separate trap made in one piece with the pedestal, giving perfect isolation.

Messrs. Holroyd & Co. have a fine display of fireclay baths, lavatories, &c., of American manufacture, a bronze medal being awarded for the excellence of the ware in addition to one for the crystal drinking-fountain, a bowl and pedestal in one piece. The water issues as a miniature fountain by pressing down the valve in centre of bowl, over which the mouth is held. The porcelain baths, made either with base to floor or on pottery feet, are fitted with "Primus" combination supply and waste. The water may be drawn either hot, tepid, or cold, the supply being carried low down into the bath. The "Prompto" closet, fitted with "Simplex" flushing-valve, is of good appearance, and has a large water area with deep seal, but owing to the low pressure of water supply it could not be shown in action.

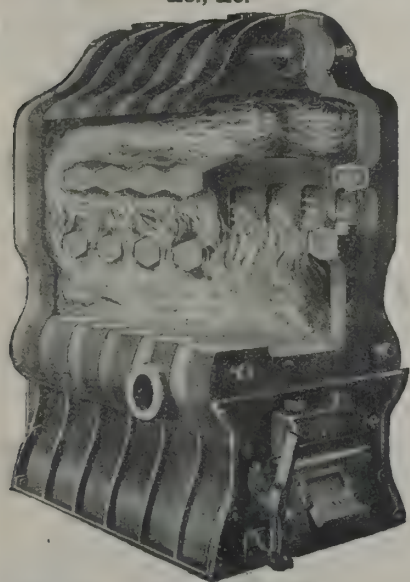
Messrs. Twyford, Ltd., have a very representative display of their well-known specialties. The "Nereus" w.c. combination complete, the Sicilian marble lavatories and anti-splashing bath with fittings well deserve attention. For hospital use the surgical lavatory, fitted with elbow taps and knee-controlled waste and revolving operating table, and pedestal and other urinals form part of their exhibit.

Messrs. J. Duckett & Son, Ltd., were awarded a silver medal for the isolated syphon closets, of which a range of four were shown, also automatic flushing tanks for 10 and 20 gallons, lavatory basins for schools, slop water-closets, wash-down closets, ranges of urinals in white and amber ware, sewer pipes with Hassell's & Button's joints, manhole inverts, gullies, traps, &c.

Messrs. George Freeman, Ltd., have a display of numerous sanitary specialties that is both interesting and comprehensive. They were awarded a bronze medal for the "Priory" alumine bath which they first exhibited at the recent Building Exhibition, and after witnessing the severe tests made by the judges we are confirmed in the good opinion we then expressed. They also gained a bronze medal for Brown's penny-in-the-slot lock for public conveniences, which is always under the control of the attendant, who can gain an entrance at any time in case of illness of the user. Freeman's patent double-seal pipe-joint has the following advantages:—It is quickly and easily made; it requires no skilled labour and little cement; it is a locking joint insuring concentric fitting and absolutely close-abutting of the pipe ends; when finished with a cement seal it has a strength and rigidity equalled by few and surpassed by no other joint. Hassall's patent suite water-closet, with 1½-gallon flush, was at Birmingham this year

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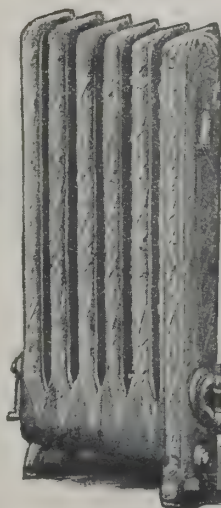
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severely tested, and called forth a highly satisfactory report from the city engineer. Several of these were shown and also fitted to cisterns on other stands, and demonstrated the value of this closet Lavatory basins, with alumine fittings, taps, ball-valves and other brass fittings, also dados and panels in "Mansfield" tiles, were also exhibited.

The Valveless Syphon Co. had a good display of their well-known "Waterwitch" combination closets and syphon cisterns, showing their latest improvements, which are deservedly becoming more popular.

The Bradley Star Tap Co., Ltd., gained a silver medal for equilibrium and compensating ball, bib and meter taps. The Star tap has a full water-way for all pressures, and is so constructed that the pressure of the water holds the valve firmly closed when the cistern is full. In the "cup-leatherless" tap the valves slide freely in the cylindrical chamber of the tap body, which is hermetically sealed by a screwed tap, and has neither cup-leathers nor stuffing-boxes.

Messrs. Mather & Platt, Ltd., have a complete installation of a model sewage-purification works, showing that their system is adaptable to the various methods of treatment of sewage, the appliances shown demonstrating that they work either in contact or continuous filtering. The first part of their sewage treatment consists of a Detritus chamber fitted with a screen to prevent mineral solids, paper, &c., passing into the sedimentation or septic tanks, of which there are two here working in conjunction, but one can be held in reserve in case of repairs being necessary to the other. The next is the valve chamber, fitted with patent automatic distributing apparatus, which we have previously fully described. By means of flap valves automatically controlled the effluent from the sedimentation tank is distributed to the bacteria beds in regular succession and in controlled quantities. The bacteria beds are supplied by either fixed spreaders or patent revolving spreaders, and in the grounds adjoining the stand a revolving spreader and valve forming part of the scheme for the Delamere sanatorium for consumptives, Cheshire, are erected, the spreader being 38 feet, but spreaders are made by Messrs. Mather & Platt up to 200 feet in diameter.

The Hard York Non-Slip Stone Co. show flags, steps, landings, coping, channelling, also grooved flags for crossings and a section of their stone showing its workability, and were awarded the bronze medal. On page 25 we describe a visit paid to their works at Lightcliffe by members of the Congress, which we feel sure will be read with interest.

Messrs. Brookes, Ltd., have at their stand a fine display of Norwegian and Swedish granite setts, 2-inch and 2½-inch Myddleton macadam, 2-inch and 2½-inch Welsh macadam, 2-inch limestone and limestone setts.

Messrs. J. Defries & Sons, Ltd., show numerous specimens of the well-known Pasteur-Chamberland filters for domestic and institutional purposes, working with and without pressure; also Equifex disinfection appliances. The latest improved Equifex saturated-steam disinfectors renders it impossible for the air exhaust-valve to be closed until all air is ejected from the disinfectors, and prevents any disinfections being recorded on the recording gauge if performed with anything but pure steam. Messrs. Defries were awarded a bronze medal for Pakes & Barnes's milk purifier.

Messrs. Wilson & Stockall have as their exhibit their patent brougham ambulance and accident ambulance van, each of which gained the silver medal. In the brougham a new feature is introduced, the inner panel of the doors being hinged so that the whole of the inside of the doors may be disinfected after being used for infectious cases, which hitherto could not be properly accomplished. Another improvement relates to the stretchers, which are hinged, and can be raised instantly to a sitting position by simply pressing a lever. An improved hospital dinner-waggon is also shown.

Messrs. W. & R. Leggott, Ltd., have a most excellent display of builders' and general brasswork, including gearing for roof and lantern lights for regulating the amount of ventilation for electric-generating stations, hospitals, laundries, baths, &c., also wrought-iron and gun-metal casements fitted with the patent "Namdar" hinge, which allows the outside of window to be brought into the room for cleaning, and overcomes one of the objections to metal casements. Exit bolts for theatres, &c., and quick-opening gears for fire station and other doors are also shown, as well as many beautiful examples of electroplating on door furniture, &c.

Mr. Joseph Procter has for his exhibit his patent chimney-pot, which has proved most successful in curing smoky chimneys, preventing a down-draught, and creating an up-draught under all circumstances; also his patent ventilating and weatherproof window, of which we give a description in another part of this issue.

There are a number of other interesting exhibits that claim our attention, but want of space prevents us dealing with them until our next issue.

FIRE ESCAPE STAIRCASES.

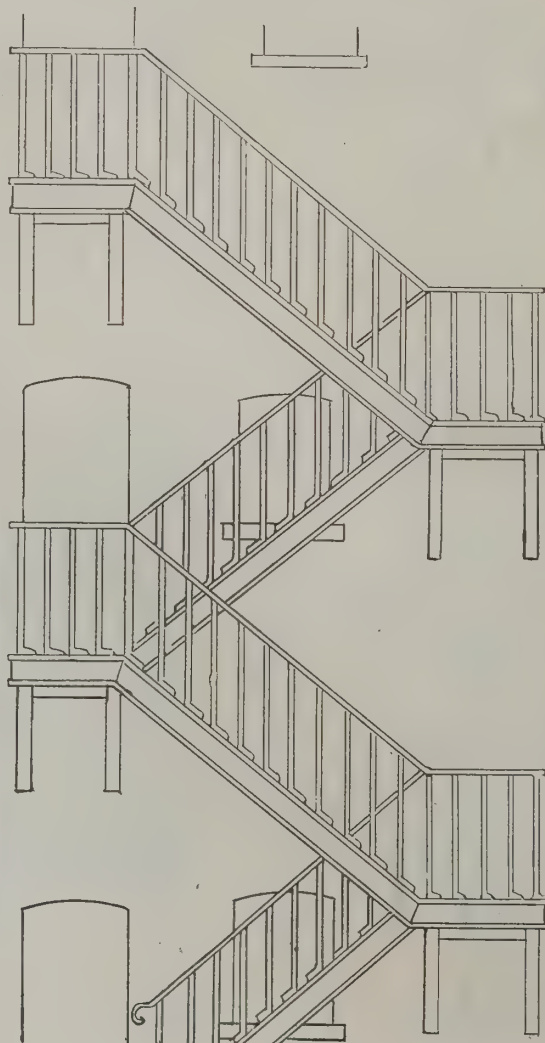
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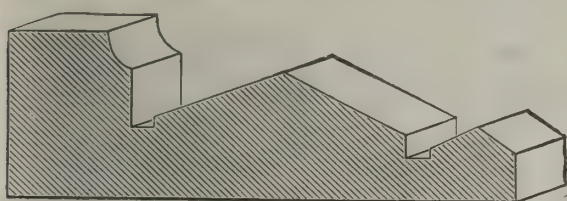
Nearly 100 delegates to the Sanitary Congress took advantage of the invitation to visit Lightcliffe, issued by Messrs. Brookes, Ltd. At Lightcliffe station the large private siding constructed by the Brookes firm debouches upon the main line. There the delegates disembarked. The siding which makes so conspicuous a mark from the window of the train might be more accurately described as a circle-railway, on which sturdy little locomotives pull the loads from the quarries and works upon the circuit. After luncheon, the company set off towards the open quarries at Yew Trees and Tuck Royds, and to one of the mines at Harley Head. The Silex quarries are operated in a large and strictly methodical fashion, so that the initial and final stages are carried on side by side as the rock is exhausted. The baring of fresh soil and blasting of worthless cover goes on simultaneously with the getting, splitting and riving of exposed stone. On the bank, dressing, tooling, sett-squaring and kindred processes are the first to take the eye. The bottom or Silex bed lies somewhat over 100 feet from ground-level. Its yield is distinguished by the fineness in colour and in texture, its supreme workability and freedom from "ray" no less than by a chemical structure of unwonted purity. Physically, the Silex stone exhibits a crushing strain of 2,200 tons per cubic foot, and its faculty of absorption is practically nil. Its freedom from lime renders Silex stone proof against atmospheric attack. The name Silex is, of course, a registered trade name denoting the best hard York stone obtainable. The need for some definite standard for specification induced Messrs. Brookes to introduce this convenient appellation. The name Silex is blazoned upon the great chimney-stalk adjoining the Silex stone works, where planing, sawing, polishing are done there by machinery, as is polishing by hand. Attention was directed to a display of the granite now being worked by Messrs. Brookes' Scandinavian branch, the A/S International Granite Company of Christiania. In acquiring their large estates in Sweden and Norway the firm has tightened its hold upon the granite trade. Ten separate and distinct quarries are in work, and the blocks that may be got are limited by nothing but the size of the steamers to convey them. Fine monumental granite, kerbs, landings, dock stones, setts and broken pieces in a variety of colours and textures are being got upon the ground now owned by Brookes, Ltd. An exhibit of their non-slippery granites took the highest award (bronze medal) at the recent Sanitary Congress. The adjacent premises of the Hard York Nonslip Stone Company is a reconstitution of Silex rough material. The chippings

of the quarries after reduction to their pristine granules are incorporated with a binding material in almost fluid form. Thus the pasty liquid is run into moulds and speedily converted by the application of some 2,000 tons of hydraulic pressure into a solid flag or landing or step as the case may be. From thence the newly-created mass passes to the drying grounds. Fourteen acres are occupied by stacks of maturing flags, which are shipped only after some eight or twelve months of storage. By that time the material is perfectly responsive to the chisel. Angles, curves and holes of all dimensions are readily shaped, as the deputation was assured by ocular evidence.

The Nonslip Works were doubled in capacity not long ago, and further extensions are in contemplation. Other estates and works of Messrs. Brookes, Ltd., were pointed out from the contiguous hills, including their important tannery and their remote "delfs."

A SITE has been secured in Park Road, Crouch End, on which to erect the proposed Coronation Memorial cottage-hospital, and efforts are being made to proceed with its erection at once.

THE Manchester Corporation have decided to widen the streets which surround the site of the proposed new infirmary. In Piccadilly itself the pavement will be carried back opposite to the Queen Victoria memorial statue, and also opposite to the Peel and the Wellington statues. This will give a straight line of thoroughfare along Piccadilly, making the whole roadway 56½ yards wide at the Market Street end and 47½ yards wide at the London Road end. There will be a considerable widening of Portland Street. At the junction of this street with Piccadilly its present width is 30 yards. It will be made 7 yards wider. Near Parker Street, Portland Street is a little over 30 yards wide. Its width will there be extended to 30 yards 2 feet. Parker Street, at the rear of the infirmary, is 12 yards wide. The proposed new building line will carry the roadway right back to the present infirmary building, and eventually in parts even further. In the place of a street 12 yards wide as now, the city will have a street 26 yards wide. George Street is now 16 yards in width. Like Parker Street, it will be widened to extend to an open street of 26 yards.



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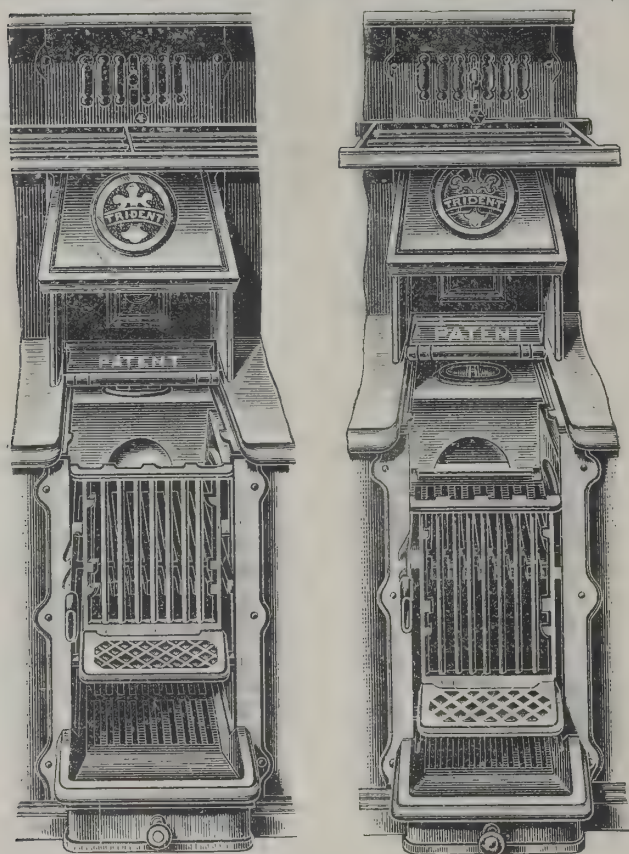
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THE "TRIDENT" COOKING RANGE.

MESSRS. WM. GREEN & CO., LTD., of Ecclesfield, near Sheffield, have just placed this new range upon the market, which possesses several improvements on the usual combined



cooking range, and has already met with considerable success. One of the most important is that when used as an open fire

the whole top and front of the fire is quite clear and fully exposed, there being no solid fall-bar at the top of the front bars, which are lowered or raised as an open or closed fire is required, and also lift entirely out, giving free access to back boiler for cleaning out flue. The flue is an iron-cased one, effecting a saving in the brickwork. The open fire is easily regulated, and can be made large or small by the lifting bottom, which is held in position by the socket in which the lifter is inserted, engaging with teeth on the side frame, one hand only being required to operate it. The fire door is attached to the sliding cover, and when an open fire is desired turns on to the sliding cover and is pushed back with it.

Section 1 shows a roasting fire, with the sliding fire cover and fire door pushed right back, the bottom grate lowered and the front bars raised to their highest position.

Section 2 illustrates the open fire with front bars and bottom at medium height, and exposing the whole of the front and upper surface of the fire. This range is a perfect cooker, as the heat is carried round under and over both ovens before entering the flue. It is to be exhibited at the stand of Messrs. Wm. Green & Co., Ltd., at the Ironmongers' Exhibition, Agricultural Hall, from the 17th to 28th inst., where it can be seen in operation.

ACCORDING to an official of the Corcoran Art Gallery, Washington, there have been within the last week conferences between a trustee of the gallery and Mr. J. Pierpont Morgan, who has offered to transfer his valuable private collection of paintings, valued at 6,000,000 dollars, to the proposed National Gallery, in the event of its establishment. The plans now are to have a Bill creating the National Gallery introduced at the next session of Congress by a New York member, who will accompany the project with a voluntary offer of 1,000,000 dollars for the maintenance of the institution.

At a special meeting of the Elgin, N.B., Burgh School Board, a communication was submitted from the Education Department approving of extensive alterations in the East and West end schools, subject to minor changes. The changes were given effect to and the plans returned to the Department. The alterations involve an expenditure of 6,600l., and the abolition of the girls' school, which has been in existence for over fifty years.

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ELECTRIC LIGHTING OF BRIGHTON.

THE lighting committee of the Brighton Town Council have received a report from Mr. Arthur Wright, the consulting engineer and manager, with reference to the tenders for the Southwick and North Road electrical plant. The three following firms, he stated, sent in complete tenders, complying in all respects with the conditions of his specification:—The British Westinghouse Company offered to carry out the work for the sum of 79,846*l.*, and an addition of 58*o*l. for electrically-driven condensers; Messrs. Witting Bros. & Eborall for 88,000*l.*, and the General Electric Company for 96,213*l.* After thoroughly examining all the propositions received, Mr. Wright was of opinion that the equipment offered by the British Westinghouse Company is as complete as that offered by any other firm, and, having inspected their facilities for manufacturing the whole of the apparatus at their Manchester works, he recommended the Council to accept their tender, subject to a complete set of working drawings being submitted by them for his approval, and the contract signed before August 31 next. The committee resolved that the tender of the British Westinghouse Electric and Manufacturing Company, Ltd., to supply and erect the generating plant at the Southwick power station, together with switchboards, instruments, &c., at the North Road power station, and to maintain the same for a period of twelve months from the erection thereof for the sum of 79,846*l.*, with an addition of 58*o*l. for electrically-driven condensers, be accepted, subject to the conditions named by Mr. Wright.


ELECTRICITY AT ASTON.

THE electricity-generating station in Chester Street, Aston, the erection of which was commenced about a year ago, is now nearing completion. The undertaking is a large one, for electricity is to be generated not only for the purpose of lighting, but also for tramways. The station has cost, with the expense of the cables, 65,000*l.* The building, which adjoins the local fire station in Chester Street, and consists of an engine-room 70 feet by 40 feet, a boiler-house 70 feet by 36 feet, a shop for repairs, and with a chimney-stack 160 feet in height, has been practically finished for some few weeks. It is being equipped with machinery of the most up-to-date type. There are two 500-kilowatt engines, one 250-kilowatt engine and six boilers. The latter are fitted with mechanical stokers, and a wonderful

labour-saving device for unloading coal from the canal, carrying it to the top of the boiler-house and dropping it down automatically. It also carries the ashes back to the canal. Up to the present there has been laid about ten miles of cables for lighting purposes along the following thoroughfares in the district:—Aston Road North, Lichfield Road, High Street, Birchfield Road, Lozells Road, Witton Road, Albert Road, Victoria Road, Park Road, Church Lane, Church Road, Vicarage Road and Trinity Road. Experts who were consulted before the undertaking was commenced expressed the view that Aston is in a peculiar position to make electric lighting a success, one factor being that the district has no local gas undertaking to compete against the more advanced light of the district. The committee have decided to charge 6*d.* per unit between the hours of five and seven at night in winter, and from seven to nine in the summer, and during the remainder of the day 1½*d.* per unit, charges which for cheapness compare well with other towns. As to public lighting, it was originally proposed to erect 100 arc lamps in the principal parts of the manor, and in the laying of the cables provision has been made for this number. Instead, however, of proceeding with the whole of these immediately, the committee have decided to place for the present fifteen arc lamps at Six Ways and Aston Cross, Lichfield Road, by way of experiment.

CONTROL OF HOUSE DRAINS.

A PAPER on "The Dual Control of House Drains: Is it Effectual?" was read by Mr. W. J. Addiscott, sanitary inspector, Plymouth, at the Conference of Sanitary Inspectors at Bradford. It was said that the interest awakened in the public mind, due to the holding of conferences and the spread of sanitary literature, is such that when illness of a serious nature occurs in a family by reason of defective drains, the question arises, "Who is responsible?" He considered that one department, and one only, should be responsible, and that the Health Department. Under dual control the Surveyor's Department is responsible until the house is completed or in occupation for the first time. Immediately the house becomes occupied responsibility passes from them to the Health Department. By this method of dual control responsibility for defects can be shifted from one department to another. The surveyor should have full control up to the house connection, manhole or intercepting trap; from this point all control and



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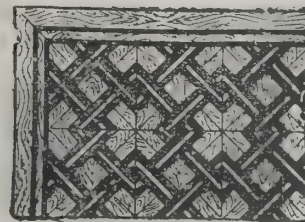
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responsibility should rest with the Health Department, the inspector being responsible to his committee for the soundness of the drains, soil-pipes and fittings connected therewith, thus extending to new buildings the same principle that applies to old premises. There is no branch of "domestic sanitary work" that a fully trained sanitary inspector is not qualified or capable of pronouncing a judgment on equally with an engineer. This argument is supported by all local authorities in their placing the supervision of all sanitary work of occupied houses, whether it be a cottage or mansion, under their control. Again new premises, the sanitary work of which has just been supervised by an expert engineer or the Surveyor's Department, has become occupied, and immediately, if the owner so wishes, he calls in the sanitary inspector from another department, who is then in a position to advise alterations or extensions of the sanitary fittings. This causes unnecessary expense, loss of confidence on the part of the public in the municipal authorities and possible friction between two well-meaning departments. If one department was responsible for all house drains in new as well as old premises in all stages of construction, then greater confidence would prevail on the part of the public, they knowing that for all purposes connected with house drains the internal sanitary fittings of their homes were from the start to finish under the control of the Health Department as the right and proper sphere for its labour.

KINGSTON-ON-THAMES ELECTRIC-LIGHT INQUIRY.

COL. W. R. SLACKE, R.E., Local Government Board inspector, held an inquiry at the Kingston town hall on the 1st inst. in respect to the application of the Town Council for sanction to borrow 7,784*l.* for purposes of their electric-light undertaking.

The Town Clerk, after giving the usual statistics as to population and assessable value, said the Local Government Board had sanctioned three loans for the electric-light undertaking, viz. in October, 1899, 15,000*l.*; in March, 1901, 15,000*l.*; and on the same date, 2,800*l.*; total, 32,800*l.* It was in regard to what had been done in respect to those items sanctioned by the Local Government Board that the present inquiry was being held. The total expenditure had amounted to 40,584*l.*, including a small item of 317*l.* additional work, which was absolutely necessary. After certain savings, the net excess was 7,781*l.* That application was merely in respect to the

additional expenditure found necessary in connection with the series of loans he had referred to. It was a fact that the Corporation, in due course, on the advice of Mr. Burstall, who had been consulted specifically on those matters, would have to apply to the Local Government Board for certain capital expenditure, the amount of which it was impossible to state, for extension of the undertaking and for meeting certain requirements that had come up. Their application that day was for one branch, and he wished to make it clear that they might in the future apply for some more money.

Col. Slacke observed that it was much better to have the works commenced finished before starting any more.

Mr. Winsor said, to avoid that, they thought it was best to start afresh before going on with the new work. He presented a summary showing the excess expenditure on the various items as follows:—Buildings (including shaft, &c.), 1,448*l.*; machinery (exclusive of street machinery), 1,714*l.*; street machinery, 39*l.*; street lighting (cables and lamps), 178*l.*; other mains, &c., for distribution purposes, 1,836*l.*; consumers' cables, 2,124*l.*; and miscellaneous items, 445*l.*

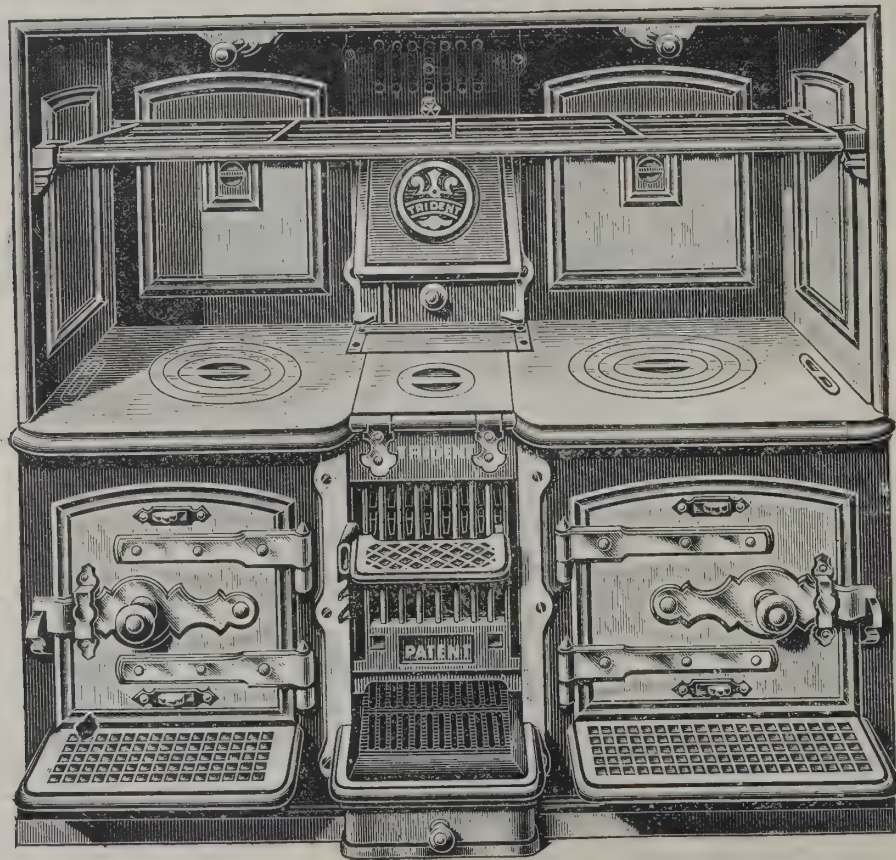
Councillor Francis (vice chairman of the committee) said he had been through the accounts, and he was satisfied that the excess of the original loans was necessary.

The Inspector said that the evidence would be of a purely technical character, as he had disposed of the principle of the thing.

Mr. Edgcome, the electrical engineer, then gave evidence. He said the works started to supply light in October 1893. The number of lamps connected during the last year was 25,767 8 candle-power, exclusive of street lighting, now it was 26,438. The charge at present was 6*d.* per unit for the first two hours, and 4*d.* afterwards for lighting; for power 3*d.* per unit up to 5,000, and between 5,000 and 10,000 2½*d.*, and above 10,000 2*d.* An alteration had recently been made, and would take effect next January, when it would be 7*d.* per unit, and then 3*d.* The number of consumers was 548. In respect to street lighting, the cost worked out at a fraction under 2*d.* a unit on the old plan of using the arc lamps, seventy-six in number, all night; now side lights had been fitted, and at 12.30 A.M. these were used instead of the arc lamps. For each lamp they received 20*l.*, and he anticipated that the side lights would bring the price per unit up to about 2½*d.* During the last three years there had been a marked improvement in the undertaking.

Further evidence of a technical character was given by Major Macaulay, and the inquiry then terminated.

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The Architect.

THE WEEK.

ON August 4 the members of the Royal Societies of Antiquaries of Ireland will visit Youghal, where a meeting will be held and the remains that have survived will be visited. The name means the "yew wood." Before the English invasion it was a settlement of the Vikings. But what is most interesting in the town is the house of a man who embodied the Viking spirit, viz. Sir WALTER RALEIGH. The house was not, it is believed, erected for him. It is supposed he obtained it at the same time as his large estate of 42,000 acres. SPENSER, the poet, testifies to his visits, but the royal favourite was too busy and adventurous to be satisfied with the dull existence of a remote Irish town. As happened with many other absentee landlords, his estates were badly managed, and he was glad to sell them to Sir RICHARD BOYLE. According to tradition, he first planted the potato in Ireland, and "Father PROUT" has descanted on the ingratitude of the Irish in failing to erect a memorial of their benefactor, although of late years the value of the esculent has been doubted. On other days there will be excursions to Rhincrew Preceptory, which belonged to the Knights Templars, Temple Michel, the Abbey of Molana, and finally Lismore Castle, the seat of the Duke of DEVONSHIRE, on the banks of the river Blackwater. For a four days' excursion the district is especially suited.

ONE of the most remarkable of the mosaics found in Pompeii is one which is believed to represent the *Battle of Issos*. Professor QUARANTA, who was the first to describe it, asserted that MICHEL ANGELO and RAPHAEL might have been proud of the dying horseman in it, as well as ALEXANDER's Bucephalus. The horses of the quadriga, the others that lie on the ground wounded, and especially one rearing and foreshortened, all are shown with a boldness and truth in their motions and positions which modern painters might envy. In another place he declared that even the finest of RAPHAEL's heads will scarcely bear comparison with those of DARIUS and some of the Persians. The subject was recently treated by Dr. PERNICE of the Berlin Museum. He says that ALEXANDER is represented as having just slain AXATHRES, the king's brother, and is about to kill DARIUS himself. He suggested that a similar painting must have existed as lately as the Renaissance period, and was the source of inspiration for many Scripture pieces. The question of authorship cannot be settled. There were two contemporaries of ALEXANDER THE GREAT who were competent to undertake the original masterpiece from which the mosaic was derived. One was a woman named HELENA, whose works were carefully preserved for many years, and, indeed, a *Battle of Issos* by her was reverently placed in the Roman Temple of Peace by the Emperor VESPASIAN, who had acquired it in an expedition. There was also the painter APELLES, the friend of ALEXANDER, and from the traditions about his ability which have come to us it may be assumed that he would be equal to the task of producing so vigorous a work.

"WHAT great events from little causes spring" is a common exclamation, and it was exemplified in the case of a picture-dealer on a small scale who was brought before the Courts of Paris some time ago. He was charged with selling some designs which were ascribed to HENRI PILLE, and on inquiry it was discovered that was not his first offence of the same kind. Even the humblest class of picture-dealers cannot help being verbose, and it was through M. ELLINA's loquacity that the system of falsification—of which the notorious tiara in the Louvre was one of the products—was first revealed to the public. The manufacture of works of art was proved to be international, and the whole extent of the agency has yet to be investigated.

It was, however, demonstrated beyond doubt that the tiara, or at least the greater part of it, was made by a poor metal-worker in the east of Europe. Attention was concentrated on that work, and eventually it was shown that M. ELLINA's statements were correct. The tiara having become an example of the waste of public money, judicial attention was again directed to the unlucky vendor of the so-called drawings by PILLE. He has been fined 100 francs. The young artist who performed the work, another picture-dealer and a woman who aided the vendor have been fined in sums from 25 to 50 francs. Considering the services which M. ELLINA has rendered, not only to France but to other countries, in exposing the incompetency of museum officials, he ought to have escaped without punishment.

THE inauguration of the new buildings of the Bibliothèque Nationale in Paris will enable the public to view one of the most interesting exhibitions ever held in the city. M. PASCAL, the architect, has made a restoration of the ancient "Cabinet du Roi," which PETER THE GREAT considered the most beautiful marvel among the interiors he had seen in Europe. He was not perhaps a good critic of anything relating to art, but at least his judgment was not led astray by false theories. The restored room might well serve for the reception of kings, princes and statesmen. The French Government have resolved to use it for a display of works of art in various forms belonging to the period of the VALOIS. The reign of that family began in 1328. CHARLES V. was one representative, FRANCIS I. another, and there were HENRY II., HENRY III., HENRY IV., LOUIS XIII., and LOUIS XIV. In the museums of Paris and the provinces many remarkable works are to be found dating from that long period. A selection from them has taken place. In addition several collectors in France and other countries have acceded to the request of the French Government, and it will be found that among the pictures, illuminated manuscripts and other objects there will not be one inferior specimen.

THE rumours about the irremediable condition of the site of the Campanile of St. Mark, Venice, do not appear to be exaggerated. The correspondent of the *Scotsman*, who, since the collapse of the structure has been able to obtain accurate information on all points relating to the proposed works, says it was taken for granted that the old foundations continued to be stable throughout their depth. They are visible, and he says:—"The sight is not a little surprising." The lower courses are found to be of smaller and unhewn stones, not too carefully laid, and apparently thrown down in hot haste to keep out the water. They are of Istrian sandstone, liable to absorb water and to disintegrate. Common lime mixed with sea-sand was used for mortar. The result is, says the correspondent, that the salt water has percolated through and through all the foundations of the campanile, below the level of high-water mark, which is the level of the Piazza, and has disintegrated the mortar and washed it out. As the tide falls in the lagoons the water trickles all through amongst the foundation-stones, running in little streams in places. Again, the foundations of the campanile have a list towards the Doge's Palace. This at the level of the pavement of the Piazza is nine centimetres, or $3\frac{1}{2}$ inches, which is not much, but as the tower ascends, it would amount to a great deal. Once more, hydraulic lime will not attach itself to ordinary mortar. There would be difficulty in uniting the old with the new. Lastly, the foundations are split from top to bottom where the door of the campanile was. The architects, engineers and builders are said to consider it would be madness to build on foundations which have served for a thousand years. The correspondent concludes by saying:—"Now is the time to agitate for the rebuilding of an artistic campanile on another site, and leave the Piazza of St. Mark, the drawing-room of Venice, free in all its amplitude of beauty as it is to-day."

JAMES WHISTLER.

WHEN JAMES WHISTLER painted his harmony in black and grey of THOMAS CARLYLE, it is to be regretted that an arrangement like that prevailing among artists was not adopted. CARLYLE in return should have given us a study in words of his portraitist. In the picture which is now in the Glasgow Gallery, we observe the scorn of shams as he then appeared, when in his comfortable and well-brushed garments he might be taken for a retired parson. Painting could not suggest the strange figure which used to be seen a few years earlier walking in Chelsea or mounted on a steed manifesting amateur grooming. Literary art is more powerful; it can look before and after, and a sketch by CARLYLE would have suggested to us the versatile personality, the fantastic mortal who was to many no more than a charlatan, but who was admired by friends for his genuineness as an artist and as a man. During many years JAMES WHISTLER was put under the microscope by critics and others professing to be faithful interpreters of humanity. Immediately after his death every journal attempted to give a representation of him. The contrarieties found in the judgments are a testimony to the different appearances he presented when looked at from various points of view. Half playfully, half seriously, he adopted the figure of a butterfly, as if it were a crest duly assigned by a herald who considered it most appropriate to the artist's character. He flew from subject to subject with the lightness of his symbol; he never could be said to have exhausted any of them in an academical sense, but he drew from each whatever he thought would best answer his purpose. There seemed to be no more labour in his efforts than the butterfly displays, and no more foresight, but the products were peculiar to himself, for we may say he had no predecessor and has left no successor.

His capricious manner caused him to be misunderstood. Some young artists in this country out of mere wantonness assume for a time a Bohemian manner, but the English people wish to see their future Academicians appearing as responsible men, paying their way, living decorously and qualifying themselves to be accepted as bail, or for the duties of a special jurymen. WHISTLER from the time he came among us was mercurial, nay, as elusive as PUCK himself. His strokes might be considered dainty and his arrangement of colours novel, but what signified those qualities if they were without endurance? What could so whimsical a fellow care about the effects of time? By calling his pictures nocturnes and symphonies he himself suggested they were as fleeting as sounds. He knew he was the victim of prejudice, and his sensitiveness to RUSKIN's clumsy libel about his flinging a pot of paint in the public's face touched him to the quick, not so much for the keenness of the stroke, for WHISTLER could take as well as give, but because he felt that RUSKIN degraded himself to be the mercenary of WHISTLER's opponents. It was therefore not the downfall of RUSKIN he sought when he undertook his action, but his own vindication, and the verdict of the jury, which was inspired by a Bæotian attorney-general and a valetudinarian judge, made him believe that he was incomprehensible in England, and that it would be wiser to seek patronage elsewhere.

There were numerous people who rejoiced at his defeat. Dr. JOHNSON excused his sarcasms on GARRICK by saying, "PUNCH has no nerves," and many of the quidnuncs who flit from studio to studio made simple people believe that WHISTLER was a man who not only wounded but dropped vitriol into the wounds he made. He could be witty and epigrammatic, and his remarks were usually happy. He enjoyed his own repartees and had a childish vanity in repeating them. But no one more carefully avoided the utterance of a word that might give pain to those he respected. He was kindly at heart. No men are more considerate than artists, and WHISTLER was not an exception. If he could not relieve the distresses of applicants, he endeavoured to serve them in other ways. But to pretension of every kind he did not conceal his enmity. Those who knew him would, we are sure, bear out our description, and those judging his character simply from hearsay will do well to remember he was no MEPHISTOPHELES, but rather an innovator amidst unfavourable surroundings.

It was also brought against him, especially during late years, that he was supposed to make a bad return for the kindnesses he received. His action in the Paris law courts against Sir WILLIAM EDEN, although successful in a technical sense, involved him in costs, and was assumed to be an endeavour to extort money. A man who is ungrateful is sometimes deemed to have committed the greatest of crimes, and a patron in art often considers himself as a person who confers great favours, while he receives only paltry returns. WHISTLER's works were valuable, and he was justified in insisting on a proper sum being paid for them. Because his name was not found on the list of Academicians it was inequitable to expect him to receive with meekness a third or a sixth of their prices. He is charged with having painted a portrait of Mr. LEYLAND in the character of a demon. Revenge of that kind is not unknown among artists; MICHEL ANGELO himself could not resist it. But we doubt if such a portrait exists. We have never seen it, nor are we acquainted with any of the artist's confidants who have. What we believe gave rise to the report is, that in the Peacock-room in Mr. LEYLAND's house we see one bird, who is in a state of excitement, ready to tear another bird, who appears to be calm and prepared for the contest, and WHISTLER made no secret that the two were intended to suggest the financial relations between the millionaire and the dissatisfied decorator. It was generally believed that the novel work was obtained at a price which did not correspond with the labour expended on what was probably the most original example of decoration produced in the nineteenth century.

WHISTLER was supposed to produce his pictures with so much speed, a buyer would maintain he had no claim to expect remuneration on a scale similar to that paid for works which were "solidly painted." It used to be a joke among the artist's friends, and which he himself enjoyed, to say his house was taken for the dyeing branch of a laundry, on account of the number of paintings hung on lines to dry. When exhibition times approached there was an expedition in the studio which afforded grounds for the story. But it should not be forgotten that WHISTLER avoided that painting-in and painting-out method until the right colour is arrived at by accident. Before he touched the canvas he had a definite idea of what he was to accomplish—not only each stroke by itself, but in its relation to the other strokes. Indeed, it is to be regretted that with so peculiar a skill he was unable to take part in fresco-painting. It must, however, be allowed that, in spite of the facility with which his paintings and drawings were produced, they have stood the test of time. They are also likely to survive, because there can be no chemical action going on between a series of layers of paints.

He rejoiced in colour, and his English and South American firework scenes were daring efforts, from which he received a pleasure. His pseudo-Japanesque figures were also delightful to him. But the portrait of *Carlyle* and the *Portrait of the Painter's Mother*, which was purchased by the French Government, his *Sarasate* and several others show how well he could manipulate sombre black, especially when he had an opportunity of contrasting materials of various textures. Indeed, his portraits, whatever may be the colour, are of extreme simplicity; but the last of them was as much subjected to censure as the powerful figure of the girl at the piano, which startled visitors from its elevated position in the Royal Academy between forty and fifty years ago. It will be admitted that his contributions to the Grosvenor Gallery helped to give character to that noble experiment. They demonstrated that the Royal Academy did not comprise on its walls all that was elevated in painting. Other artists took courage from WHISTLER and dared to be original in different degrees. When, to the surprise of many, he was elected President of the Society of British Artists, he endeavoured to alter the dead level which of recent years marks a gallery which is reputed to be a nursery of British painting. For a year or two there was a sign of movement, but the efforts required too much energy from the members, and once more lethargy prevailed in Sussex Street, apparently for ever. Of late WHISTLER made another attempt to foster individuality in the exhibitions of the International Society, and the success attained was mainly due to the foreigners co-operating with him.

In the majority of his works, and more particularly in the harmonies and nocturnes, WHISTLER demonstrated the superiority of treatment over subject. He could make a picture out of anything, and the simplest object became expressive in his hands. That quality made him an incomparable etcher. He had acquired the art in Paris, and his earliest examples are still prized. He was not, like MERVON, at war with the world and with a tendency towards the sombre. WHISTLER enjoyed life, and as BURNS and BÉRANGER were inspired to lyricism by commonplace matters, WHISTLER made any form delightful which admitted of light and shade. The etching-needle enabled him to portray the mood of the moment, and he could rejoice in the gloomiest parts of the Thames as well as amidst the architecture of Venice. There are no tricks in his plates. He never attempts to rival photography in details. But he conveys to us most emphatically the impression made by the object or the scene on himself. Yet amidst the variety it can hardly be said with the same force as of other men that he had any specialty. Love of light and shade attracted him to wharves and wooden bridges, riverside warehouses and dingy shops in Chelsea. But among his 300 etchings there are scenes of all kinds. A few years ago he was tempted to make drawings on transfer paper, but, as we said at the time, although they showed dexterity it was not possible with the material to produce anything which would correspond with the plates of GÉRICAUT, DELACROIX, RAFFET, DAUMIER, CHARLET, DECAMPS, &c., who boldly drew on the stone.

The views in the etchings do not correspond with what used to be known as "topographical drawings," which undoubtedly exercised much effect on water-colour art. The latter were produced by men who appeared to be entirely unmoved in the presence of nature or art. The utmost praise we can give them is that they were conscientious. The drawings were useful in bringing scenes before stay-at-home travellers. In that way they showed their relationship to the majority of English pictures, which are expected to have an utilitarian purpose, to teach history or geology or morals. BÉRANGER considered "l'art sans application est un enfantillage," and many English amateurs agree with the song-writer. WHISTLER'S aim was less exalted. He sought to show appearances which to his eyes were beautiful, and was satisfied if the spectators agreed with him and began to see silver and gold where formerly only muddy water was visible. As a rule, we believe the majority found it more easy to believe in the transformation of natural scenes than in such artificial glories as his scenes of illumination and firework displays. There was, however, a subtle suggestion of evanescence in all he produced. They are commentaries on the words of PROSPERO about the great globe and its inheritors being only an unsubstantial pageant. Most of his portraits are suggestive of ghosts, while his nocturnes and symphonies seem records of transient aspects which can never be recalled.

WHISTLER was an American by birth. His ancestors were English, but he used sometimes say there was an Irish strain in his blood, and in many things he was more Celtic than Saxon. He was not much disposed to talk about his youth. But as his father acted as a railway engineer in Russia he lived for a time in that country. He returned to America to be trained as a military engineer. There was a curious precision occasionally exhibited in his drawing and painting which suggested an early teaching that science was measurement, and it was the more remarkable when contrasted with the final results, which suggested influence of a different sort. He abandoned soldiering for art, and studied under GLEYRE. In England he was friendly with DANTE ROSSETTI. He married the widow of EDWARD GODWIN, who was a daughter of BIRNIE PHILIP, the sculptor, and was, moreover, a clever water-colour artist. GODWIN, whom WHISTLER admired, designed a house for him in Chelsea. Although neurotic and belligerent he nearly attained his seventieth year. After life's ferment he now sleeps in the same ground with HOGARTH, who also fought the battle of individuality.

A LEITH COMPETITION.

SEVERAL circumstances have lately arisen which indicate the failure of architectural competition as a system. It is satisfactory neither to promoters nor to architects. The cathedral case in Liverpool was only an indication on a very large scale of the prevailing feeling. Fortunately the executive committee, on reflection, changed their resolve. Like true men of business they accepted the judgment of the experts to whom they had confided their interests. If Mr. SCOTT'S design had been rejected a grievous blow would be struck against the principle of competition.

It may be allowed that committees and public bodies find it inconvenient to see designs which they prefer seemingly undervalued by the assessor. But they ought to have announced that, although an assessor would be called in, his decision was not binding on the promoters, and that his selected design, as well as all the designs, could be set aside. That would correspond with the intimation which used to wind up invitations to builders, and which announced that "the lowest or any of the tenders will not be necessarily accepted." Respectable contractors began to decline such invitations, and there is no reason to imagine that architects would care to contribute plans if they were aware of the uncertainty of meeting with fair play.

An example of the spirit now re-arising is afforded by the competition for a workhouse at Leith. The first intention was to ask a local architect to prepare a design, and there would be no objection to that course. But a majority of the Parish Council came to the conclusion that in the ratepayers' interests it would be preferable to hold a competition. As Leith may now be considered to be a part of Edinburgh it was not necessary to go far to find competitors. In Edinburgh there is no society that can be said to represent practising architects, and when the Edinburgh Architectural Association offered suggestions these were rejected, probably in the belief that the members were only students or apprentices. The Council in their instructions enjoined that "the plans must provide for a poorhouse, well finished and complete in every respect, planned on the latest and most approved principles, and equipped with all the latest sanitary and other appliances for the efficient working thereof." The command was excellent, but the result will show it was only a blind.

On February 25 the chairman was able to announce that eight sets of plans were sent in. In order that they might be exhibited it was agreed to hire a room for two or three weeks at a rent of 20s., and to employ joiners to set up screens to carry the drawings. Some of the members wished to retain the power of dealing with the collection, but a majority were in favour of appointing an assessor, on the condition that no architect practising in Edinburgh or Leith was eligible. On March 17 it was decided to engage Mr. R. D. SANDILANDS, of Glasgow, as assessor, his fee being fifty guineas, and Mr. DAVID REID, of Edinburgh, as measurer, at a fee of six guineas. On April 29 Mr. SANDILANDS informed the Council that before he examined any of the designs he had visited the site and then considered the adaptability of each design to it. Out of the eight before him he selected those numbered 2, 3, 4 and 7, and asked the measurer for estimates of their probable cost. The amounts he received were the following:—No. 2, 92,939l.; No. 3, 71,607l.; No. 4, 75,540l.; No. 7, 84,712l.

The variations in cost were explained to be mainly due to the amount of accommodation. In No. 3 merely the minimum space was allowed, and would require to be enlarged, while in No. 2 excess space was provided which could be reduced. Finally the assessor said:—"In my opinion No. 2 is entitled to first place, No. 7 to second, No. 3 to third and No. 4 to fourth. The first (No. 2) commends itself to me for its grasp of the essential features of poorhouse and hospital construction and requirements. While architecturally it is very plain, the excellent arrangement of the plan and the way that every department is cross-ventilated seems to me to outweigh all other considerations. As I before mentioned, the extra cost is mainly due to the extra accommodation provided, and could be greatly reduced if brought down to the same dimensions as the others."

The committee did not at once adopt Mr. SANDI-

An Exhibition of Posters will be opened in the White-chapel Art Gallery on the 30th inst. It will contain foreign as well as British examples.

LAND'S recommendations. They found that the majority of the plans were on the pavilion system, whilst they maintained that when they said the new poorhouse was to be planned on the latest and most approved principles, what they wished to convey was that the block system was the one they had in view. Now the block system is considered everywhere except in Leith to be an obsolete arrangement. The Council, however, wrote to Mr. SANDILANDS, asking him whether three of the four plans he selected, including the first, could be held to conform with the prescribed conditions. We suppose it was their endeavour to have the design recommended as well as two others set aside on the ground of informality. Mr. SANDILANDS in his reply showed he possessed the judicial spirit, for he wrote:—"I see nothing in the conditions of competition to lead any competitor to the conclusion that the Council desired the corridor system to be adopted. On the contrary, the top note states that the poorhouse is to be planned on latest and most approved principles. This, in my opinion, points to the pavilion system. If the Council considers that the corridor system will suit its purpose best, then there is no doubt design No. 7 is the most suitable. I will even go further by stating that if the Council put the corridor and pavilion systems on an equal footing, I would say No. 7 is the best. But as I consider the pavilion system much superior to the other, I placed No. 2 first." If an assessor is not to be allowed to be guided by principles derived from his own experience, and if he is to be only an exponent of the opinions of a section among the promoters of a competition, his office is nothing but a sham, and it would be better to let it be known that what is desired is not a design which exemplifies the most modern ideas, but rather one which will gratify the whims of an untrained majority.

The committee then requested him to express an opinion on the four remaining plans. He stated he had considered them to be inferior as compared with the others. In the course of his remarks on No. 6, which eventually was selected, he pointed out that the wards in this design were badly ventilated, and that the cost, which was given at 52,000*l.*, was insufficient. The committee awarded the 100*l.* premium to design No. 2, by Messrs. SCOTT & CAMPBELL, of Edinburgh, and the 50*l.* premium to No. 7, by Mr. W. C. LAIDLAW, of Edinburgh. Here may be said to have ended the first act of the comedy.

The proceedings of the Leith Parish Council, although conducted in private, quickly find their way by means of reports in the newspapers to the public. On account of the rumours that their design was considered too expensive, Messrs. SCOTT & CAMPBELL wrote to the Council explaining how reductions could take place. Their aim was, they said, to provide a well arranged and convenient plan at such a cost as might be reduced, but not exceeded. Mr. LAIDLAW also wrote stating that his estimate of cost was 66,465*l.* and not 84,712*l.*, as stated by the measurer. As the cubic capacity in the day-rooms, dormitories and wards was in excess of the requirements of the Local Government Board, it would be possible to have reductions without altering the plan or affecting the appearance of the buildings.

The next step on the part of the Council was to decide on the adoption of the corridor arrangement. That signified the rejection of Messrs. SCOTT & CAMPBELL'S design. A proposal to call in a new expert was carried, but was not acted on. Then it was boldly resolved to select plan No. 6, on the condition that it was to be subject to such modifications or otherwise as might afterwards be determined. One of the members pointed out that the designer of No. 6 had estimated the cost as 44,000*l.*, while the measurer appointed by the Council had given it at 68,784*l.* No. 2, the first premiated design, was, according to the architects' estimate, to cost 94,939*l.*, and the measurer made out the amount at 92,939*l.*

Although the names of the competitors who had failed to receive premiums were not published officially, it was mentioned in the local papers that the favoured design was by a local architect, Mr. JOHNSTON. A builder also announced that he had seen plans No. 6 and was prepared to carry them out for 55,000*l.* A difference of 11,000*l.* might be supposed to call for a specialist's examination, but a majority of the Council had evidently resolved that

Mr. J. M. JOHNSTON should be appointed architect, and the end of it was that he received the commission. It was no more than a formal act, for two or three weeks earlier his success had been announced in the journals.

It is quite possible that in No. 6 the Parish Council have the plans for exactly such a poorhouse as was desired. Judging by the cost of similar buildings in Scotland, and calculating at the rate of 175*l.* per bed, a normal building would need 95,000*l.* The buildings at that price may, however, be of a more luxurious kind than is desirable in Leith. Official sanction has to be obtained, and as economy is recommended the selected plans probably will be approved. The questions of cost and suitability are for the people of Leith to determine. We have nothing to do with that part of the subject. It is enough for us to express the wish that the system of competition which has been exemplified in Leith will not find many imitators. If conditions are to be issued which are not precise and which by most people would be interpreted in an opposite sense to that really intended by the promoters; if an assessor's award is to be set aside and if a particular design is to be exalted into an emblem of the spirit of a town in its competition with a city—for Leith and Edinburgh are at war—then, we say, it is useless for architects to take part in contests conducted in that way. The insignificant premiums paid are no compensation for the labour which has been gone through, and for the disappointments which must arise when it is found that some other cause besides consistency and equity is the potent factor in the struggle.

ST. MICHAEL'S COLLEGE, TENBURY.

By J. S. BUMPUS.

(Concluded from last week.)

NO account of St. Michael's College, Tenbury, could be complete without some reference to the life and art work of its founder, whose position as an English Church composer seems to be unique, when the excellence as well as the number of his sacred compositions is borne in mind.

Frederick Arthur Gore Ouseley, son of the Right Hon. Sir Gore Ouseley, G.C.B., F.R.S., was born in Grosvenor Square, August 12, 1825. At his baptism in the church of Hertingfordbury, Herts, the Duke of Wellington and the Duke of York acted as sponsors. Like Mozart, Lord Mornington, Samuel Wesley and Dr. Crotch, extraordinary stories are related of his musical precocity. There is extant, in MS., an opera composed by him when eight years old. He was educated privately at Dorking by the Rev. James Joyce, vicar of the parish, and afterwards as a gentleman commoner at Christ Church, Oxford. He succeeded to the baronetcy in 1844, which, as he died unmarried in 1889, became extinct. He graduated B.A. in 1846, and M.A. in 1849. He was ordained deacon by Bishop Blomfield on Trinity Sunday, 1849, and was licensed to the curacies of St. Paul's, Knightsbridge, and St. Barnabas, Pimlico. The cause of his resignation of these appointments has already been stated. He did not take priest's orders until 1855. In 1851 Sir Frederick Ouseley travelled in Spain, Italy, Germany, Holland and France, and on his return made the Rev. Henry Fyffe's school for the dispersed St. Barnabas choristers at Langley his headquarters, pending the erection of the buildings at Tenbury. In 1855 Bishop Hampden appointed him Precentor of Hereford, and in the same year he succeeded Sir Henry Bishop as Professor of Music in the University of Oxford, where he speedily introduced many much-needed reforms. He had five years previously taken the degree of Bachelor in Music at Oxford, and the year before his succession to the professorship had proceeded Doctor in the same faculty. In 1856, 1862 and 1888 the degree of Mus.D., *honoris causa*, was conferred upon him by the Universities of Durham, Cambridge and Dublin respectively. He received the honorary degree of LL.D. at Cambridge in 1883, and the same at Edinburgh in the following year. On the death of Dr. Jebb in 1886 he received a residentiary's stall in Hereford Cathedral—the only piece of ecclesiastical preferment he ever got—which was but a tardy recognition of the great services he had rendered to the Church. His institution

as warden of St. Michael's College, Tenbury, and first vicar of the parish, had taken place in 1856. While in residence at Hereford, on Saturday, April 6, 1889, he was, during an afternoon walk, seized with an epileptic fit, and died within an hour of the attack. He had long suffered from a weak heart. On the Thursday following he was buried, after a solemn funeral service, under the east window of the church which his munificence had reared, and on this occasion the psalms and anthems spoke of him to the hearts of the mourners as nothing else could. This sad event called forth the subjoined touching stanzas. They are from the pen of the Rev. Dr. Wood, canon of Christ Church, Oxford, vicar of Cropredy, and from 1866 to 1871 warden of Radley College:—

Gone! ere we could again have grasp'd thy hand,
Gone! and no words of parting have been said,
Gone to that Land so near, that silent Land!
Gone by the path we all shall have to tread!

Ah, why so soon, so suddenly remov'd
From friends and noble Art, and work for God!
How much of that sweet Art which thou hast loved
Lies buried with thee 'neath the daisied sod!

Nay, say not so! God's servants serve Him still
In better ways than we could e'er devise;
And who shall say what Angel voices thrill,
What harmonies are heard in Paradise?

Sir Frederick Ouseley was a voluminous composer of Church music. To his facile yet masterly pen we owe some fifteen services and over a hundred anthems, the majority printed, but some still in manuscript. Some of these have orchestral accompaniments. These services and anthems, several of which are in eight real parts, while modelled on the great English Church school, are also worthy of comparison for purity of style and elevation of thought with the works of the old Italian masters, which their composer so much admired and in which he was so learned—Leo, Carissimi, Clari, Colonna, Durante and others of that school. The religious

tone and earnestness of Ouseley's compositions, joined as this is to so much that is modern in style, gives them a devotional character that must be apparent to all who can reflect and can judge. With our parish church choirs his "From the rising of the sun," "How goodly are thy tents," and "Lord, I call upon Thee" are perennial favourites, while those longer and more elaborate compositions, such as "It came even to pass," "Give thanks, O Israel," and "There was a Pure River" are in the service lists of every musically well-ordered cathedral.

To Churchmen, Ouseley is endeared by his tunes to such hymns as "The radiant morn hath passed away," "Thou, Whose Almighty Word," and "They come, God's messengers of love." His two oratorios, "St. Polycarp" (1855) and "Hagar" (1873), though far from being dry, are perhaps too solid and severe in style to ever achieve great popularity, but they are works which will command the respect and, in some aspects, the admiration of musicians.

Amongst Ouseley's more important publications for the Church must be mentioned a collection of his own cathedral music and a volume of rare and hitherto unedited services by early English masters, which, but for his exertions, would perhaps now be practically unknown. Both volumes were printed by Novello in 1853. These were followed in 1861 and 1866 by two volumes of "Anthems for Certain Seasons and Festivals of the Church," to which contributions were made exclusively by living writers, many being by the editor himself. Most of these are now acknowledged classics in our cathedrals. Finally, in 1873, he edited the "Sacred Compositions of Orlando Gibbons," a work involving immense labour and research, as any well-informed Church musician may imagine.

Besides Church music, Ouseley's compositions include voluntaries, sonatas, preludes and fugues for the organ; music for a full orchestra and string quartets; songs, glees, madrigals and part songs. His treatises on harmony, counterpoint, canon and fugue, musical form and composition, published by the Clarendon Press, are valuable contributions to musical litera-



ST. MICHAEL'S COLLEGE, TENBURY. INTERIOR OF THE CHURCH, FROM THE S.W.

ture, and have taken their places as standard works. To Grove's "Dictionary of Music and Musicians" he contributed many learned articles. He read several valuable papers before the Musical Association, of which he became, in 1874, the first President, and as a speaker at several Church Congresses he was always welcomed by reason of his lectures illustrated by musical examples. The same remark applies to the lectures he delivered at Oxford in his capacity of University Professor of Music. Another of Ouseley's literary achievements was his edition of Praeger's translation of Naumann's "History of Music." To that work were added some important chapters on English music from his pen.

A complete list of Ouseley's compositions and works on music was published by the writer of the present sketch in 1892, and incorporated four years later in the "Life" by the Rev. F. W. Joyce, now vicar of Harrow.

Sir Frederick Ouseley, as a musician, was endowed with extraordinary abilities. Like Sir Robert Stewart, his mnemonic powers were astonishing, and his skill in extempore playing upon the organ and pianoforte unequalled. "I know," once remarked Sir Herbert Oakeley, "of very few published fugues for the organ by Englishmen better than some of his improvisations."

Sir Frederick was also an able cellist, he had a considerable gift for mathematics and was an excellent linguist. As a divine, Ouseley was deeply read, and the large collection of theological books in the college library was not brought together merely for show. In the pulpit he was earnest, animated and eloquent. With the attraction of a clear, high-pitched voice, he had an exceptionally clear and logical mind. "This enabled him" (says his biographer) "to make, to a certain extent, deep subjects clear to the simplest people." As a priest he was as active and zealous among the cottage folk of his scattered country parish as he was when a young man in deacon's orders, ministering to the poor in the populous district of St. Barnabas. Having been brought up in his early days in the very highest society in the land, he was a very charming companion. His schoolboys idolised him, as did all who were associated with him in his work. "The most marked feature of his life was the self-sacrifice with which he carried out his plan of building the church and college of St. Michael's. A most loyal and devoted member of the Church of England, he formed the impression, when still a youth, and at a time when not many would have got beyond the idea of taking the pleasures and enjoyments of life as they came, that the skill which had been given him in the art of music might best be made promotive of the glory of God by raising an institution that should provide training in music and give encouragement to its study, as well as to provide illustration of what he conceived to be its best and fullest development as applied to the worship of the Church. . . . There is room for difference of opinion as to the quantity and kind of music with which our Church services, under ordinary circumstances, may be accompanied; but there can be none, amongst churchmen worthy of the name, as to whether we ought not to give the best we can in what we attempt in that respect, and here it is that the example of Ouseley shines as a beacon light amongst the too often sordid imperfections of our offerings."*

At St. Michael's, Sir F. Ouseley formed a musical library of some 3,000 volumes, still regarded as one of the most valuable and exhaustive private collections in the kingdom. Perhaps its greatest treasure is the fine copy of the "Messiah," partly in the handwriting of Handel, and partly in that of his amanuensis, J. Christopher Smith. This, which is known as the Dublin MS, was used by the great composer as a "conducting score" for the first performance of the work, which took place at Dublin on April 13, 1742. The library is rich in printed and manuscript music of the Palestrina and Roman school. There are also many autographs of celebrated composers, and a number of exceedingly rare musical treatises in a variety of languages.

The contents of the library have been fully described in Sir George Grove's "Dictionary of Music and Musicians" (vol. ii. p. 423); by Mr. J. S. Shedlock in the *Monthly Musical*

Record of October 1896, and by the present writer in the *Church Review* of November 10, 1898.

During the closing years of the founder's life, the financial future of St. Michael's College, owing to his reduced income, was a source of considerable anxiety to him. More than once his good friend and neighbour, the Hon. Miss Georgina Rushout, of Burford House—sister-in-law of the present Lady Northwick—who had always taken the deepest interest in the church and college, stepped into the breach and rendered him timely and generous assistance. Eventually, but after Sir Frederick's death, this lady, in 1890, left a legacy of 20,000*l.*, supplementary to the founder's own benefactions and the Ouseley Memorial Fund, and thus the future maintenance of the college, on its original lines, has been assured.

Other instances of Miss Rushout's munificence towards the college may be here adduced, such as the magnificent sacramental plate and altar vestments, the stained-glass windows of the apse, as well as many valuable and extensive additions to the already well-stocked library. When, in 1852, her sister, Miss Harriet Rushout died, she left, among other charitable bequests, 600*l.* towards the foundation then in course of projection by Ouseley at the Old Wood.

Sir Frederick Ouseley was fortunate in having throughout his whole life at St. Michael's the ever-present aid of his friend and his now successor, not only in the wardenship but also in the precentorship of Hereford, the Rev. John Hampton. He, in all practical matters, whether as choirmaster, curate, or sub-warden, proved an invaluable helper. To him, especially, must be attributed not only the splendid choral training of the boys, but also the loving care with which the whole place has been always kept—church, college, churchyard and college grounds alike.

Visitors to St. Michael's will invariably meet with a hearty greeting from the kind and genial Warden, who, if his engagements permit, will be only too happy to conduct them round the buildings and to point out the chief objects of interest.

The photographs have been taken specially for this article by Mr. F. Lowe, St. Michael's, and Mr. C. Davis, Tenbury.

PLANNING LARGE SHOPS.*

IN considering the question of the planning and arrangement of large retail commercial establishments, there are at least four points to be taken into consideration. Firstly, the interests of the proprietor; secondly, the safety and convenience of the customer; thirdly, the local building regulations; and fourthly, the claims of the fire department.

Considering firstly the interests of the proprietor, they may be detailed as follows:—Plenty of window space, plenty of floor and wall space upon which he may erect his counters and fittings, and plenty of light, preferably from the north.

The customer requires ample staircase and elevator accommodation, plenty of gangway space, and easy exit and egress.

The building regulations may require a limited amount of cubical space; therefore the building, if a large one, will have to be divided into compartments, and these shut off from one another by fire-resisting doors.

The fire department claims that any outbreak of fire may be quickly localised, the occupants passed to a place of safety, and that short work be made of any outbreak by reason of its being attacked from more than one point. Also that adjoining premises be not unduly endangered.

This is the problem set the architect in planning and designing a building of this character.

Much, of course, depends upon the site and its disposition, and I feel that any observations I may make would be of more practical importance were I to submit the problem to you in a concrete form rather than discuss it in the abstract.

I shall therefore assume a site with the not unusual accompaniment of a frontage to two streets. The site, for the purposes of this paper, will have a frontage to the respective streets of 70 feet, or 22 metres, and a depth of, say, 200 feet, or 66 metres.

It is also assumed that the building regulations limit the cubic capacity of buildings of this class to 250,000 cubic feet, as in the London regulations. This is done because I feel that dividing a building of this description into compartments is a

* From a sermon preached at St. Mary's Church, Tenbury, by the vicar, the Rev. Prebendary Ayscough Smith, on the Sunday following the funeral of the Rev. Sir F. A. Gore Ouseley, Bart.

* A paper on "The Planning and Arrangement of Large Retail Commercial Establishments," prepared for the International Fire Prevention Congress by Ellis Marsland, district surveyor.

right course, in the same way as it is considered the right principle for a vessel to be divided into water-tight compartments.

It is also assumed that the fire department is efficient, and would be soon upon the scene in the event of an outbreak.

With these conditions in view, we will proceed to deal with our site, upon which I propose to place a building four storeys in height, which would mean some 55 feet from the ground floor to the level of the top of the topmost storey. The cubical contents of such a building would require that it be divided up into three compartments.

The plan and section shown indicate generally the attempted solution of the problem. I have, it will be seen, adopted what may be termed the well and compartment system, and we will proceed to determine how far it meets the requirements of the four points with which I commenced this paper.

The proprietor has, I suggest, ample floor and wall space; his counters, fittings and show-cases can be disposed as he wishes, and the light is provided by means of large lantern lights from the roof, throwing a flood of light down the well on the several floors, in addition to any side lighting that perhaps might be available.

The customers have six ample staircases running from ground floor to roof, with an elevator provided to each. The door openings in the compartment walls are opposite one another and in direct line with the exits into either street. Should an outbreak of fire occur in any compartment the customers on each floor would pass through the doorways and could make a safe exit in either direction.

It is necessary that all the floors and supports be of fire-resisting construction, and all iron and steelwork protected by concrete or hollow tile casing. There being nothing but the contents to burn, the task of the fire department would be a simple one for the following reasons:—That a fire on any floor could be attacked from above and below. The openings in the party walls would be a means of getting readily at the seat of the fire, and at the same time affording a chance of escape in an emergency. The well and lantern would form a shaft for the escape of smoke, and the flat roof would afford access to this from the several staircases. The fire-resisting doors in the openings could with facility be closed, and the fire confined to one compartment.

In a building of this class it would be necessary to provide for receipt and despatch of goods, also for offices and staff accommodation. Any unpacking, packing, or bulk store department, if situated in the basement, should not communicate with the upper part except by lift placed outside the building, enclosed with walls carried up through the roof and covered with a light roof of iron and glass, and the openings on each floor protected with fire-resisting doors.

It is advisable that the offices and counting-houses be in an adjoining annexe, and the dining and sleeping accommodation for the staff placed over and in this annexe, with separate exit and staircase and fire-resisting floors.

The general scheme can, I think, without further explanation, be gathered from the diagram, and I invite the criticism of the meeting to my conclusions.

HOSPITAL CONSTRUCTION.

A PAPER was read at the Liverpool Health Congress by Mr. T. Shelmerdine, the Corporation surveyor, on "Emergency Hospital Construction and Accommodation." His object, he said, was to give his personal views, from an architect's standpoint, of the best manner of meeting an emergency notification from the health authorities of a large city. He presumed that there was an outbreak of an epidemic of a contagious character that had resulted in the ordinary hospital accommodation provided by the municipal authorities being found insufficient to meet the special requirements of the disease, and that an increased number of beds should be provided as rapidly as possible. It was of course taken for granted that the municipality was in possession of administrative accommodation of the ordinary kind. The architect responsible for the carrying out of the work of housing the surplus patients was fully cognisant of the fact that speed, with a due regard for economy, was imperatively necessary. In conjunction with these two important factors, it should be the aim of the architect, and at the same time to carry out his work, so that when completed the interior surroundings would favourably compare with those in a permanent pavilion. Mr. Shelmerdine explained diagrams that illustrated the subject of his paper. Rapidity of construction was the first element for consideration, as every hour was of the greatest importance to the medical authorities in obtaining the necessary emergency accommodation. The life of these buildings was not of course so great as that of a permanent hospital, but having had experience of this class of construction, he found that after thirteen years' wear,

with ordinary care in the matter of maintenance and repairs, the main structure showed very little sign of real wear at the present date, and would appear to have at least a life of thirty years. On the face of it the cost of the wooden structures might seem to be high, but it must be borne in mind that the foundations, drainage, floors and roofs were practically similar to what would be carried out for a permanent building. The comfort and surroundings from a patient's point of view were equally good with those of permanent structures, and, the buildings being of only one storey, the risk of danger in case of fire was reduced to a minimum.

Professor Simpson contributed his views on "Infectious Hospitals and Return Cases." He had certain doubts whether the general hospitals of the present day were the best adapted for the comfort and welfare of the patient. There was no objection to the aggregation of patients in a common building, but that was on a different footing from their aggregation in wards, in each of which there were from twelve to twenty beds. In his opinion there were great drawbacks to this communal life of the sick, the defects of the general ward being the want of privacy and the impossibility of placing the patient under the best mental conditions for recovery. These objections to a large ward system would, he believed, lead to a great change in the new hospitals of the twentieth century, in which common wards would be abolished for the treatment of the sick, and would only be retained for the recreation and meals of convalescents. He was also of opinion that no length of detention in an infectious ward would have any effect on the reduction of return cases. It appeared to him that in future hospitals for infectious diseases the cubicle system was the one to be adopted.

LAMBETH BRIDGE.

THE bridges committee of the London County Council intend to recommend that application should be made to Parliament in the next Session for powers to rebuild Lambeth Bridge. Although certain works for the strengthening of the bridge were carried out in 1888, it still has to be used under restrictive conditions, and, having regard to the increasing traffic, the committee consider the building of a broader and more substantial bridge has now become imperative. In considering the kind of bridge which should be erected in place of the present structure, the committee have had due regard to the position of the bridge in the river.

The question of the gradients practically decides whether it is to be built of steel or masonry. At present the gradients are very steep, being from 1 in 19 to 1 in 22 on the north, and from 1 in 20 to 1 in 23 on the south. Even if the restrictions placed upon the Council with regard to the headways and waterways of Vauxhall Bridge were considerably relaxed in the case of Lambeth Bridge, a masonry structure could not be built with a better gradient than 1 in 25, which is about the same as the northern approach to Southwark Bridge, and which, on account of its steepness, is little used for vehicular traffic going southwards. On the other hand, with a steel bridge a gradient of 1 in 30 can, according to the calculations of the committee, be obtained, and better facilities for navigation afforded during construction than has been the case at the new Vauxhall Bridge.

As the result of a conference between the Thames Conservancy Board and representatives of the river traffic interest, certain conditions as to the rebuilding of the bridge have been imposed, one of which is that the headway of the openings of the temporary works in the two side arches adjacent to the centre arch should not be less than 15 feet above Trinity-high-water mark. This condition, in the opinion of the engineer to the Council, would preclude the construction of a granite or masonry bridge with reasonable gradients. In the circumstances the committee have decided to recommend the construction of a steel bridge, which is to have a width of 60 feet. The estimated gross cost is stated to be 872,000*l.*, of which the cost of the acquisition of property necessary to provide adequate approaches amounts to 410,000*l.* The actual cost of the construction of the bridge is set down at 350,000*l.* The committee urge that it is important that an early decision should be come to in the matter of rebuilding the bridge, as it is necessary, in view of the rebuilding operations connected with the Westminster improvement, that the levels of Horseferry Road and Millbank Street, which form approaches to the bridge, should be fixed.

Herr Bernhard Hertel has been appointed as superintendent of Cologne Cathedral. He has practised as an architect for several years, and in the course of his travels as a student has visited England. As official architect he designed several public buildings, and has lectured on Mediæval architecture in the Berlin Technical High School.

NOTES AND COMMENTS.

THE County Council of London on Tuesday adopted the recommendation of the general purposes committee and the technical education board to contribute 20,000*l.* a year towards Lord ROSEBURY'S scheme whenever land, buildings and equipment for the proposed additional technological teaching and research are provided to a value of not less than 500,000*l.* Among the stipulations are that due provision be made in the scheme to prevent overlapping and secure co-ordination of the work already carried on by the University colleges, polytechnics and other science and technological institutions, and the proper connection of the whole with the University; that a sufficient number of scholarships, including free places, be placed at the disposal of the Council. It is proposed to obtain a site containing 4 acres at South Kensington, on which suitable laboratories and lecture-rooms could be erected for those departments of technology which have yet to be provided for. We have already remarked that the scheme was likely to interfere with some of those already in existence. But as it is not suggested to omit anything which would be independent and complete, the risk of competition has been minimised.

THERE was a time when the city of Paris was without any organisation of its own for the display of works of art. It was then easy to obtain loans of treasures from the Municipality for museums and galleries which belonged to the State. As all visitors are aware, a change has taken place. Paris possesses buildings and collections, and is endeavouring to bring to perfection an art department which will control them. Like men of business, the municipal councillors have ordered an inventory to be prepared, not only of the property which is now in charge of their officers, but of the objects lent to the State. Application has been made for the return of the latter. But the Government collections resemble those of the British Museum, and any object received is not allowed to be withdrawn. Defective works are sent to inferior museums rather than be sold by auction. It seems to be inevitable that the Courts will have to decide the fate of works of art of various classes lent from time to time by the city.

ILLUSTRATIONS.

NEW HOUSE WOKING, SURREY.—FROM SOUTH-WEST. FROM SOUTH-EAST.

THIS house was completed rather more than twelve months ago for Mrs. T. H. WHEELER, and the object was to obtain a small and compact house which should afford the maximum of accommodation without being costly to keep up. It contains three good sitting-rooms and a square hall on the ground floor, with servants' offices all on the same level; five good bedrooms, dressing-room and bathroom on the first floor, and three large attics and two boxrooms on the top floor. The materials are Knap Hill red bricks for the walls, and bright red Surrey tiles for the roofs. The contractors were Messrs. HARRIS & SONS, of Woking, and the architect Mr. H. O. CRESSWELL, of 17 Buckingham Street, Adelphi.

HOUSE, KINLEITH, NEAR EDINBURGH.

CAPITAL AND COUNTIES BANK, REDHILL.

THIS building occupies one of the best sites in the borough of Reigate, at corner of Station and London Road, Redhill. It has recently been completed at a cost of about 5,000*l.* Externally the ground floor is in Hamhill stone, and upper part in warm buff terra-cotta and red bricks, with a wide granite plinth. There is ample banking space on ground floor, large strong-room, manager's-room, lavatories for clerks, &c., with separate entrance and staircase to two floors of offices and caretaker's apartments over. The internal fittings, desks, counters, &c., are in Austrian oak, the walls throughout are plastered in siripite, with an oak panelled dado to bank. The floor of public space is laid with terrazzo and the remainder in wood blocks.

Messrs. TURTLE & APPLETON were the general contractors, and they were well represented on the work by Mr. W. LONG. They also executed all the oakwork. The terra-cotta was supplied by Messrs. EDWARDS, of Ruabon,

the granite by Messrs. FENNING, and Messrs. RATNER supplied the strong-room fittings. Mr. SPENCER W. GRANT, A.R.I.B.A., of 63 Finsbury Pavement, was the architect.

NEW PREMISES, Y.M.C.A., MOUNTPOTTINGER, BELFAST.

THE building plans of the new Young Men's Christian Association consist of three blocks:—Block A, containing the main entrance and six shops to Albertbridge Road, and the minor hall, reading-room and all the offices required in connection with the work. The building will comprise three floors of 126 feet long by about 35 feet wide; block B consisting of the large hall with a frontage to Frank Street; block C contains the gymnasium and offices connected therewith. To give a more detailed description of block A the accommodation is as follows:—Six shops 33 feet long by 16 feet wide, with large open fronts and all requisites for offices or shops. In the centre of the block is the main entrance of the Y.M.C.A., 10 feet wide, leading to a large central vestibule or hall, from which the main departments of the building are reached. To the left the general office and the secretary's office, and in the corner of the hall a fireplace and ingle-nook, which will give a homely character to the entrance and afford a good meeting centre for the members. The main stairs lead off to the left. Behind these are the lobby and entrance to the lavatories and cloak-rooms. At the top is the entrance to the large hall and gymnasium, and to the right the public cloak-room and kitchen offices, and also a bicycle store with entrance from Frank Street. Ascending the stairs we arrive at a large square gallery, with entrance to large hall, and also to the accommodation on the first floor and front block, which comprises:—Minor hall, 54 feet by 33 feet; reading-room, 32 feet by 32 feet; parlour, 32 feet by 32 feet; games room, 20 feet by 16 feet 6 inches. All these will be well lit with bay windows and finished with pitch-pine dadoes. The top floor comprises a central lounge, with seats round, from which access is obtained to the following rooms:—Athletic club-room, 32 feet by 15 feet; camera club-room, with dark-room attached, 33 feet by 11 feet; boys' club-room, 16 feet by 16 feet; cycling club-room, 16 feet by 16 feet; choral society, 20 feet 6 inches by 16 feet; Christian workers' parlour and library, 32 feet by 18 feet; committee-room, 17 feet 6 inches by 12 feet; large classroom, 34 feet by 16 feet; small classroom, 16 feet by 12 feet. Behind the platform accommodation is provided for ante-room, lavatories, cloak-rooms, speakers' room and ladies' room. The site is one of the most commanding in Mountpottinger, being bounded on two sides by the two main arteries of this district. It has a frontage of 137 feet to Albertbridge Road, with a depth of 115 feet. The complete scheme will involve an outlay of about 12,000*l.* Plans have been prepared by Mr. W. J. W. ROOME, M.R.I.A.I. A contract for building has been entered into with Messrs. McLAUGHLIN & HARVEY, of Belfast.

HOUSE NEAR LENHAM, KENT.

THIS house is proposed to be executed in red bricks, and certain portions covered in white rough-cast. The half-timberwork and verandah would be in oak, and the roofs covered in sand-faced red tiles of uneven colour. The hall and stairs to be treated in walnut wood, with a deep canvas-stencilled frieze. The whole design is kept very simple with a view to economy and picturesque colouring. The architect is Mr. SYDNEY E. CASTLE.

CATHEDRAL SERIES: EXETER.—THE NORTH TOWER. THE NORTH PORCH.

ALREADY pointed out, will be found in the two towers now forming parts of the transepts. History is silent about their erection. The northern tower, of which we publish an illustration, is assumed to be from its treatment the later of the two, and mainly on account of the character of the arcading. Whether they were ever detached from the main structure cannot be ascertained. MACKENZIE WALCOTT believed they were erected to contain the bells which summoned the canons for service in the choir, while other bells found elsewhere were used to summon the congregation to festivals. The north porch is too low for so important a building, but the defect is to some extent atoned for by the height of the gable or canopy. It is thought that at one time the porch led to a music gallery which has been removed.

BEXLEY HEATH AND CRAYFORD.*

BEXLEY HEATH extends from Crook Log to Crayford; it is about one mile square. The Roman Watling Street (Vitellina Strata, which takes its name from Vitellius, the ninth Roman emperor) passes through this district, being the high road from London to Dover. Christchurch, Bexley Heath, is an ecclesiastical parish formed in 1866 from the mother parish of St. Mary, Bexley. In this locality are many dene holes. Hasted says:—"In the opinion of some they were formerly dug for the use of the chalk, but it is most probable that some of them were made by our ancestors as secret hiding-places for their wives, children and goods as well in times of civil war as of foreign invasion." Tacitus, treating of the manners of the old Germans, says:—"They used to dig certain caves under the ground, that when the enemy came and spoiled all that was abroad, then such things as were thus hidden either lay unknown or by this very means deceived him who sought after them." The Roman road is plainly visible on Bexley Heath.

Crayford is supposed by some to be Noviomagus, mentioned in the Itinerary of Antoninus. In 457 Hengist, the first Saxon king of Kent, met the Britons at Crecaford (Crayford) and gave them battle, slew four of their chief commanders and 4,000 men, and gave them such a defeat that they entirely abandoned this part of the country and fled with great fear towards London. The manor and church and three mills are described in Domesday. The church is dedicated to St. Paulinus, and stands at a short distance north-west of the village. It consists of a nave, chancel, side aisles, a square tower and five bells. The nave has the very singular plan of a row of columns and arches down the centre abutting against the chancel arch.

Rolls that many lands in Crayford were held of this manor, the Court Barons of which were formerly regularly kept, though they have been a long time disused. The manor-house is now made use of only as a farmhouse. It is deeply moated and the walls are very thick. An excellent illustration of this house appears in the volume of the Woolwich District Antiquarian Society for the year 1897. The manor-house of Newbury was formerly the seat of Mrs. Sarah Barne.

May Place is a handsome mansion about half a mile north-west from Crayford Church, and has been greatly modernised. It was erected in 1621, in the reign of James I. In 1694, on the death of Colonel Draper, the then owner, the manors of Howbury, Newbury and May Place were purchased by Sir Cloudesley Shovel. He was born in 1650, and went to sea as a cabin boy under Sir John Narborough. For his gallant conduct against the French at Bantry Bay he was knighted by king William III. and created a rear-admiral. He also took part in the victory of La Hogue in 1692. In 1705 he held command of the Mediterranean fleet, and in 1707, after the blockade of Toulon, he set sail for England, but was shipwrecked on the rocks of Scilly, where the ship foundered, not a soul of 800 on board being saved. His body being buried with others on the sands (at Scilly), was soon afterwards taken up and taken to London and interred in Westminster Abbey. Lady Shovel continued to reside at May Place till she died, April 15, 1732, and was buried in Crayford Church.

May Place is now occupied by the Barnehurst Golf Club, and by the kindness of the proprietor, Mr. C. H. Gray, we are enabled to inspect the house. Barnehurst, as well as Barne chapel in the church, takes its name from the former owners of



HOWBURY MANOR HOUSE.



HOWBURY MANOR HOUSE.

am informed by Mr. W. T. Vincent, the antiquary, of Woolwich, that he believes the only other example of this kind in England is in the church at Grasmere, Westmoreland.

In the fifteenth year of King Edward I. this church was valued at 40 marks. It is valued in the king's books at 5*l.* 13*s.* 4*d.* There are several fine monuments, and there as formerly an altar-piece given by Sir Cloudesley Shovel, of May Place. At the east end there is inscribed:—"Near this place an inscription formerly recorded that this church and chancel, being of late much injured and damaged, were restored and beautified at the proper charge and sole expense of Sir Cloudesley Shovel, Knight, Rear-Admiral of Great Britain, and Admiral and Commander-in-Chief of the Fleet. The present tablet was erected at Easter, 1879, by a later generation of worshippers, to keep in memory the pious munificence of one of the greatest seamen of his age. A.D. 1650-1677." There are monuments to Lady Shovel and other members of the family who are interred in this church.

Howbury Manor is described in Domesday Book when it was given by William I. to his brother Odo, Bishop of Baieux. After this it became part of the possessions of the family of Auberville. William de Auberville owned this manor in King Henry III.'s reign. It next became the patrimony of the ancient family of Northwood. Sir John Northwood paid knight's fee at the making of Edward the Black Prince a knight. It next passed in the reign of Henry IV. to Nicholas New, of Surrey, and into the hands of several families who are all described in Hasted. It appears by the ancient Court

Newbury Manor. The river Cray crosses the Roman Watling Street in this parish just before it falls into the Darent.

Red House.

Retracing our steps, we come to the Red House, Bexley Heath. This beautiful house was erected by the late William Morris, the poet and artist, in 1859. It was the first red-brick house built in the reign of Queen Victoria, and was intended as a revival of that true style in opposition to the shams of cement and stucco to represent false stonework. Red-brick architecture may be divided into four periods in this country—the Roman, the Mediæval, Queen Anne and Victorian. Of the Roman we have only a few old walls left, but plenty of their materials which were afterwards used in subsequent buildings, as at St. Albans. Of Mediæval brickwork the earliest and best example may be seen at Hurstmonceaux Castle, near Hastings. A good example has recently been revealed to us in the hall of Gray's Inn, erected in 1559, and which was formerly covered with cement. Of Queen Anne brickwork we have many examples in London, particularly in Great Queen Street, Lincoln's Inn Fields. After this came the deluge of cement and stucco, sham windows and bad workmanship. It was to remedy this state of things that William Morris built his charming residence.

William Morris was born in 1834 and was educated at Marlborough and at Exeter College, Oxford, where he formed the important and lasting friendship of Sir Edward Burne-Jones, the famous painter. In 1858 he published his first and greatest work, "The Defence of Guinevere." Soon afterwards, on March 24, 1859, he purchased this site and erected

* A paper read by Mr. W. F. Potter before the members of the Norwood Athenæum.

his house, Mr. Philip Webb being his architect. It stands on an acre and a half of ground, a large portion of which was converted by him into a lovely old English garden. The stained-glass windows were from his own designs, and the walls were painted with characteristic scenes by Sir Edward Burne-Jones. Among the visitors to his house, being his most intimate friends, were Ford Madox Brown, Swinburne, Burne-Jones and Dante Gabriel Rossetti. Morris had just met at



MAY PLACE.

Oxford the beautiful Jane Burden, whom he married, and whom Rossetti never tired of painting. Rossetti wrote in a letter in 1862:—"Above all I wish you could see the house Morris has built for himself in Kent. It is a most noble work in every way, and more a poem than a house, such as anything else could lead you to conceive, but an admirable place to live in, too." A good descriptive article of this house appears in *The Architect* of November 28, 1902, reproduced from the *Daily News*. In it we read:—"It was the first example of the



THE RED HOUSE, GARDEN FRONT.

revived use of red brick for Domestic architecture, and thus became readily known throughout the district as the Red House. It was the mother of thousands of such houses which now grace our English landscape from sea to sea, and Mr. Norman Shaw owed much of the inspiration of his fine work in our London streets to this original."

Besides the works of Morris and Burne-Jones, which are still to be seen in the house, Mrs. Morris stencilled with her own hands the decorations of some of the walls and ceilings, and so contributed to make it as it was afterwards described "An earthly paradise." After the death of William Morris this charming retreat was sold by auction December 8, 1902, and it is by the extreme kindness and hospitality of Mr. and Mrs. H. Muff, the present owners, that we have been enabled to inspect it this afternoon.

I will conclude with quoting a very curious epitaph to an old parish clerk in Crayford Church, as follows:—

The life of this clerk was just three score and ten,
Nearly half of which time he had sung out Amen.

In his youth he was married like other young men,
But his wife died one day, so he chanted Amen.

A second he took—she departed—what then?
He married and buried a third with Amen.

Thus his joys and his sorrows were treble, but then
His voice was deep bass, as he sang out Amen.

On the horn he could blow as well as most men,
So his horn was exalted in blowing Amen.

But he lost all his wind after three score and ten,
And here with three wives he waits till again
The trumpet shall rouse him to sing out Amen.

The illustrations of the Red House are from photographs by Mr. John Matthews, the others are from photographs by Mr. Charles Wheeler.

MEZZOTINTS.*

THERE are two distinct ways of engraving metal plates so as to be able to make prints from them, the intaglio and the relief.

The intaglio forms of engraving comprise line engravings with the burin, dry point and all forms of etching with acid.

The relief forms of engraving comprise such blocks as those cut for Pigouchet's "Books of Hours" in the fifteenth century, and those etched by William Blake for the cheap reproduction of his poems in the eighteenth century. The first of these two kinds of engraving has been most used as far as metal is concerned, as wood is easier and cheaper to make for relief blocks.

To print from a metal plate, engraved in the intaglio manner, a strong pressure is required, but to print from a relief block only a slight pressure is required, and in either case an impression can be made either in white or in black, according to the manner in which the intaglio or the relief block is inked and printed.

A mezzotinted metal plate is at first clearly an intaglio, but as the rocking proceeds and becomes closer, the resulting burrs are actually raised above the level of the normal surface, and to that extent the plate becomes a relief block. Like a relief block also it will print black, and as the surface is scraped away or burnished down, so also the resulting effect on the print is towards white.

The difference of the commoner lines made on a metal plate for the purpose of reproduction by printing shows clearly on one of my diagrams. The upper line is a clear cut out of the surface of the metal, a thread of corresponding size to the cut being removed. The next line shows the effect of an etched line on metal. In this case the metal is first covered with a thin coating of wax, specially prepared, and upon this a design is marked with a sharp point or needle cutting down to the copper. Then the plate is dipped in a solution of nitric or other acid, which attacks the metal in the places where the wax coating is removed and corrodes it away rapidly. If the plate is left too long in the acid this will undercut beneath the wax and make broad lines. I mean to say that the acid will, of itself, give other effects than those intended by the etcher, and of course it removes some metal. The next shows a dry point line, no metal being removed, but only a scratch made, throwing up at one side the same amount of metal as is moved by the hard scratching point; the action is similar to that of a plough driving a furrow and throwing up a ridge. On the metal this ridge is called a burr, and it has a very important effect on a print as it catches a quantity of ink behind its sheltering crest, and produces a thick, soft effect on the paper.

* A paper by Mr. Cyril Davenport, F.S.A., read at a meeting of the Applied Art Section of the Society of Arts.

The mezzotinting process removes no metal, except by accident, as, for instance, when the rocking is carried too far, then the burrs will get so small that they are apt to tumble off and leave only a roughened depression.

The most distinctive tool used in the process of mezzotinting metal plate is called a "rocker." It resembles a small spade, and is bevelled at the broad end, which has a curved outline. The flat side of the rocker is channelled finely or coarsely according to the wish of the engraver, and whenever the tiny teeth get worn down or perhaps broken in places, it is easily remedied by simply sharpening the edge as if it were a chisel, the effect of the channelling being to produce a toothed edge resembling that of a tooth-comb. In the early times of mezzotinting rockers were made so as to be used in the hand, but of late years an arrangement with a short pole has been substituted, and with this simple appliance it is much easier to roughen a plate than it was when the rocker was handled like a gimlet. The rocker as now used is no doubt a development from a roulette. The first mezzotinters were roughened by means of roulettes held in the hand. They were of many different forms, ranging from the small toothed wheel like the rowel of a spur, with a single line of points, to the broad disc, resembling a small garden roller, which was used by Prince Rupert and his followers. Between these two extremes the varieties of roulettes were many, and it is likely that each mezzotinter designed the form which he preferred for his own use. Roulettes were first used to roughen metal plates by L. von Siegen, who found that they were able to produce an effect, rapidly and easily, which, if done point by point in the known "pointillé" manner, would be slow and difficult.

The most valuable use of a roulette is not in its use alone, but as an accessory to rocked work; being quite small it is valuable to deepen the roughening in particular places, and it is also of great use in the event of too much scraping having been accidentally done. In former days mezzotinters generally had their own grounds, very often only working them where required, but now the whole of the plate is evenly covered with the rough grain, and this laying of a mezzotint ground is, moreover, done professionally, so that a modern engraver works on a ground with which he is in doubtful sympathy. I think that the professional laying of a mezzotint ground militates much against the true art value of the work of any engraver who works upon it. It is, however, a slow and tedious process, the plate having to be crossed some eighty times, and in these days of hurry we must perforce forgive it, as very few mezzotinters could, or would, spare the time to do it for themselves as they ought to.

The next important tool used in the production of a mezzotint is a scraper. Like the rocker, the scraper is of hard steel. It is a short sharp cutting edge set in a handle, and by its use the mezzotinter scrapes away the roughness on his rocked plate as much as he considers necessary. If the scraping is carried far enough all the marks made by rocker or roulette can be removed, and every scrape, when printed, shows more or less as a light place. Scrapers should be very carefully kept dry, as a sharp edge soon loses its value if any rust gets on it, and instead of a clean sharp cut, it makes a jagged scratch. The difficulty in engraving a mezzotint is in the use of the scraper, so much so that the phrase "scraped" by so-and-so is often heard referring to the engraver. Indeed it may almost be said, especially now that the grounding is usually done professionally, that the art of the mezzotinter consists of his skill with the scraper alone. There is, however, one more argument that is a dangerously powerful one. Dangerous because it can be made to do easily work of the same kind as can be done with some difficulty with the scraper. This instrument is a burnisher, and the work of flattening out the small roughnesses which are left by the scraper falls to its lot. A burnisher is a more delicate instrument than is a scraper, because its own function requires a perfectly polished surface to work with. If there is the smallest trace of rust on a burnisher it is not safe to use it. Early mezzotinters were by no means so careful about this as they might have been, and the result can be seen in numberless instances where places intended to be pure white show hair lines along their length. Such marks are probably due to small inequalities on the surface of the burnisher.

A hard steel burnisher acting on soft copper which has been rocked is capable of polishing out all marks, and consequently of creating a form on the plate which will show white in a print. Such a small point will be, however, a depression in the copper, and although polished, nevertheless a layer of copper is always likely to remain in it, so it is advisable to go over such points with a soft wooden point armed with a little emery, in order to get every atom of the ink out. Such spots can often be seen on the points of noses, and about the eyes, and for greater effect they are also often helped by the near neighbourhood of burnwork—sharp and black. Practically then, a mezzotinted plate is burred all over, and the artwork upon it is done by means of scraper and burnisher,

the effect of each of which is towards lightness. The more it is worked upon by these two instruments the lighter the print will be, and in a few places where greater strength of tone may be required, a roulette can be effectively used to restore the requisite darkness. Many fine mezzotints owe much to line engraving, dry point and etched work, but when any of these are found in any considerable quantity the engraving should properly be called in "mixed manner."

Much importance attaches to the inking of a mezzotint plate, more importance than has been credited to it. A bad inker and printer cannot make a good print from the finest plate, and a good inker and printer can make a decent print from a very bad plate.

Mezzotints were printed in colour at an early period in their history. Joannes Teyler, professor of mathematics in the military college at Nimeguen, at the end of the seventeenth century, printed several of his plates in colour, inking each plate carefully in the proper place with properly coloured ink. Then, a little later, J. Christophe le Blon began three-colour work. He engraved a separate plate to carry each colour, and used red, yellow and blue, with sometimes a key-plate in neutral tone. At least one of these plates was mezzotinted, but they are sometimes etched. He described his process in a tract entitled "Coloritto," published about 1723.

The finest colourwork of this kind is now done for the "Société des Amis des Livres," at Paris; the registering of their plates is marvellous and the effect beautiful. In England, Mr. Cadbury Jones endeavoured some short time back to introduce colour-printing for metal plates in the manner of Joannes Teyler, the plates being inked in the different colours, but his endeavours did not meet with the success they deserved.

The early exponents of mezzotint work were all amateurs. The first mention of it is contained in John Evelyn's "Sculptura," published in London in 1662, and he says it was described to him by Prince Rupert. Prince Rupert engraved a small head of "The Executioner," taken from the larger plate, for Evelyn's book, and this is, I believe, the first mezzotint ever published as a book illustration. Evelyn does not describe the process, but it was described by Alexander Browne in a book called "Ars Pictoria," published by him in 1669. In this description no mention is made of a scraper, but the directions advise the use of a burnisher for lightening the plate.

Prince Rupert was for a long time considered to be the inventor of the mezzotint, but it is now known that Ludwig von Siegen, an officer in the Hessian army, used a system of engraving which ultimately developed into true mezzotint. An excellent account of Von Siegen and his invention can be found in Léon de Laborde's classic "Histoire de la Gravure en Manière Noire," and in this book is a facsimile of a letter which was sent to the Landgrave of Hesse, accompanied with a print of a portrait of his mother the Landgravine Amelia Elizabeth, executed in the new manner. This print, of which I have an excellent slide, is in my belief all worked by means of a small single-line dotting roulette. Von Siegen's letter is dated August 19, 1642, and his print is considered to be the first important mezzotint. In places where the roulette has been used closely and strongly a certain velvety effect is found, and this, no doubt, being entirely new, gave the idea a start, which was followed up by Prince Rupert and others, and eventually became the chief characteristic of mezzotint work. I take it, however, that in all these early prints the mezzotinting or rouletting has only been done in the places where it was wanted, so that scraping was not necessary, whereas in a true mezzotint the rocking or roughening is systematically done all over the plate and afterwards cut away by means of a scraper as required. In Von Siegen's letter there is no mention of a scraper.

Prince Rupert learnt the new art from Von Siegen, and rapidly improved upon his master's work. Several of his plates are powerful and cleverly managed, the mezzotinting is only put where it is wanted, and there is little or no use of the scraper. The use of the burnisher on metal was well known in Prince Rupert's time, and any corrections he found it necessary to do upon his plates were probably done by means of this instrument. Prince Rupert most likely used a roller with a grooved surface to roughen his plates, and some of them show broad curved impressions from such an instrument. The early mezzotinters were not only amateurs but Dutchmen as well, the Canon von Fürstenburg being a contemporary with Prince Rupert. Wallerant Vaillant, a Dutch portrait-painter, assisted Prince Rupert, and himself worked a few plates in the new manner, but neither his work nor that of the Canon was particularly good. Under one of his plates, a portrait of Prince Rupert, occur the words "Prins Robbert, vinder van de Swaarte Prent Konst." The Van Somers and Abraham Blooteling also worked in England; in the case of Blooteling this is particularly fortunate, as his work is in every way excellent, and in consequence of his working here so largely, we count him in the list of English mezzotint engravers. Blooteling was the first to perceive the great artistic possibilities of the new process of

engraving, and he taught an assistant, Blois, to prepare his grounds, and these are well and evenly done. Also Blooteling used the scraper, which does not seem to have been used before in the particular way of lightening on all-over darkened plates. The question naturally occurs here as to whether it is possible to say from a print whether a pale place on a mezzotint has been produced by means of a scraper or by a burnisher. I have not time now to go into this question, but will only say that there are certain signs on all such pale places by which it can be said with some certainty how they have been produced. Blooteling came here in 1673, and his work quickly became much admired by line engravers, many of whom took up the new process as an amusement; but gradually its powers became more and more appreciated until at last our native engravers became so pre-eminently skilful that mezzotinting was known as an English art.

The early mezzotinters engraved principally after their own drawings, but very soon they became interpreters of the work of other men. At the same time, in a first-rate mezzotint, we must acknowledge a considerable amount of original merit, in addition to the skill of the copyist.

Like the Dutch the first English engravers in mezzotint were amateurs, the two first being William Sherwin and Francis Place. Sherwin counts first because he dated one of his prints, a portrait of Charles II. "1669," and Place dated none of his, though they may have been done earlier than Sherwin's. Isaac Beckett may be considered the first English professional mezzotint engraver. He worked about 1670 and took pupils, among whom was John Smith, afterwards one of our most famous engravers, and a very prolific one.

After Isaac Beckett English engravers in mezzotint increased rapidly in number, and they gradually took the art away from its Dutch votaries. At the same time, the foreigners remained here for some time, and executed much good work. Among these were some well-known artists—Vandervlaet, Verkolje, Van Bleek and Van Haeken.

During the eighteenth century we do not find the same preponderance of Dutch workmen, but the English names occur almost exclusively. In the beginning of the century John Smith worked most successfully, and was followed by a numerous band of famous engravers, many of whom, owing to the revived appreciation of mezzotints, are now well known.

John Faber, jun., is best known for his engravings after the portraits of the members of the Kit Cat Club painted by Sir Godfrey Kneller. The club was originally political, but soon lost that distinction, and the club-room in Jacob Tonson's house at Barn Elms was too low to admit the usual full-length figures, so Kneller made his canvases 36 by 28 inches, and christened this size of picture after the name of the owner of the original meeting-house, Christopher, or Kit Cat.

About 1714 George White inaugurated the introduction of etching into the mezzotint world: he strongly etched his subjects before putting in the mezzotint tones. This principle was afterwards much followed, especially in the case of large subject pieces.

A large proportion of eminent eighteenth-century mezzotint engravers came from Ireland, the most eminent of whom was James MacArdell. He largely engraved after Sir Joshua Reynolds, who himself declared his belief that he would be immortalised by MacArdell's work. Then there was his fellow pupil with Brooks, Richard Houston, and Thomas Frye, who engraved large portrait heads after his own drawings about 1740. Other noted Irish engravers were E. Luttrell, Thomas Beard, W. Baillie, John Murphy (who, unfortunately, has only left a few rare plates, all very fine), J. Brooks, Ed. Fisher, Ch. Spooner, J. Dixon and Richard Purcell.

These engravers and their English contemporaries of the eighteenth century have left an unequalled series of magnificent portrait engravings after the works particularly of Sir Joshua Reynolds, P.R.A., J. Hoppner, R.A., Sir T. Lawrence, P.R.A., G. Romney and T. Gainsborough, R.A., all notable for the beauty of their female types, and in the matter of subject pictures they have engraved chiefly after the works of G. Morland, W. Hogarth, Benjamin West, P.R.A., and J. Zoffany. Among the most notable of the English mezzotinters of the latter half of the eighteenth century, Valentine Green is one of the best known. He had several pupils, of whom John Dean, one of the most delicate of engravers, is perhaps the most eminent. In 1777 Richard Earlom engraved a set of mezzotinted etchings after Claude Lorraine, one of which I have to show you as an experimental slide. J. R. Smith, son of Smith of Derby, was one of our greatest engravers in mezzotint; he made some plates after his own drawings, but is chiefly known for his beautiful interpretation of the works of Sir Joshua Reynolds.

J. Walker, Jonathan Spilsbury and C. Turner were all first-rate engravers in mezzotint. C. Turner was a relation of J. M. W. Turner, our greatest landscape-painter, and he assisted his eminent kinsman in the engraving of some of the plates of the "Liber Studiorum."

During the early part of the nineteenth century portraiture

still maintained its supremacy, but the application of mezzotint to landscape art is characteristic of a later period. S. W. Reynolds, a pupil of J. R. Smith, was a very successful and skilled engraver. He engraved a series of 357 small mezzotints after the work of Sir Joshua Reynolds. These small plates form an illustrated index of Sir Joshua's work, as far as S. W. Reynolds could find it. They are, however, not quite satisfactory, as the process of mezzotinting does not suit very small work any more than it suits very large work. S. W. Reynolds also engraved several plates after his own drawings.

William Say is noteworthy among the earlier nineteenth-century engravers, as he executed a small portrait of Queen Caroline in 1820, which is the first mezzotint engraved upon steel. Underneath the first proof made from this plate is a note:—"This attempt to engrave on steel was made in 1820—W. Say." The portrait is not very pleasing, but many mezzotinters have worked in steel since with much success. No doubt the great durability of steel is much in its favour, but there are several technical difficulties connected with its actual use for engraving upon directly, and this has led to the modern evil of mezzotints engraved upon copper being covered with a thin film of steel, so as to give them a lengthened life. From such a steeled plate an infinite number of identical prints can be drawn. From mezzotints engraved upon a copper-plate about fifty prints of the finest quality can be drawn, after that the plate begins to deteriorate. The beauty of a print from a copper-plate is a rare beauty; that of a print from a steeled plate never can be rare, neither is it equal in quality to a print made before the steeling operation was done. There are certain checks upon the indiscriminate production of prints from steeled plates, but I doubt if they are reliable.

J. M. W. Turner no doubt admired R. Earlom's etched mezzotints of Claude Lorraine's "Liber Veritatis," and it appears likely enough that this gave the former the idea of his "Liber Studiorum," issued in parts between 1807 and 1819. Turner made small sepia sketches, from which he etched the outlines on copper, and then had the light and shade filled in by various engravers in mezzotint or aquatint. Turner himself mezzotinted some of them. Of their kind they are the finest things that have been done, and they have always been favourites with collectors because of the difficulty of getting a complete set of proofs. Turner issued the prints in sets, "Prints" and "Proofs," but as a fact they were all mixed, so that to get a real set of proofs together involves a long search and much tribulation.

Quite recently Mr. Frank Short, best known as an etcher, produced a few etched and mezzotinted plates from sketches by Turner, done in the same manner as the old ones, to which they clearly approximate in every way.

T. G. Lupton was the first mezzotinter to work largely upon steel, and he chiefly engraved landscapes. For his success in working this process upon soft steel he received the medal of the Society of Arts in 1822. His work is, I think, the most pleasing of any mezzotinted landscapes; this is partly due to the fact that he used a brown ink by preference. Brown ink is troublesome to manage on steel. I think, altogether, that landscapes are hardly satisfactory in mezzotint, but that the finest effects are to be found among the splendid series of full-length portraits of ladies, after Sir Joshua Reynolds, or one or other of the artists of his period. Three-quarter lengths are perhaps the more usual form in portraiture, both in portraits of men as well as women, but there is a completeness about a full-length which is necessarily wanting in a portrait representing any lesser degree.

David Lucas is particularly known for his interpretations in mezzotint after the landscapes of John Constable, R.A. They are as a rule too dark, and are printed in black ink. Some times pleasanter prints have been drawn from a worn plate than from a new one, as they are paler. At the same time the original pictures are dark, but I think that if Lucas had used a browner ink, as Lupton did, his landscapes would have been pleasanter. He nearly always engraved on steel. Lucas died in 1881.

Samuel Cousins brings us up to modern times; he gave up work in 1883. His work is always delightful. In 1814 he was apprenticed to S. W. Reynolds, and presently set up for himself at 104 Great Russell Street. He engraved largely both portrait and subject pieces, and his plates are very fully etched before the mezzotinting is put on them. His style may be considered as the modern one, as it has formed the keynote for most of his successors. A large plate engraved by him, after Landseer, "Bolton Abbey," executed quickly and very effectively in etching and mezzotint, is supposed to have given the death-blow to the old-fashioned, slow and expensive process of line engraving. It was published in 1837. He engraved largely upon steel.

Mezzotints can now be very efficiently copied by means of photogravure—a form of etching—and probably this process may yet attain greater perfection. At present it leaves something to be desired in the matter of brilliancy—there is too

much loss of light. But a photogravured plate can be worked over to almost any desired extent by rocker or roulette, burnisher and scraper, so that it can be made almost identical with the original. A photogravure made direct from a painting is often very good, but here again it generally needs a little skilled handwork in weak places.

What with steel-plating of copper-plates and the direct competition of photographic processes, it is probable that mezzotinting as a high art has had its day. Except for the work of a very few living engravers of the first rank in this method, mezzotinting has already reached its highest development, and we may well be proud of the beautiful examples which have been left to us by MacArdell, Valentine Green, J. R. Smith and others of their period, men whose talent has been great enough to earn for their particular art of engraving the title of "La Manière Anglaise."

FIRE-RESISTING BUILDINGS.*

As you may imagine, the subject of this paper is not one which I should have chosen, and if it turns out that it has no fresh information to offer you, the excuse must be that nearly all that can be said on the subject has already been dealt with. Still, renewed consideration on the subject may bring out some fresh points, and if I cannot give any useful hints I always console myself with the hope that the discussion may bring out forgotten or overlooked information.

One might admit at once that to make all existing buildings in London fire-resisting is a practical impossibility, so that you must take my remarks only as suggestions as to what might be done towards making buildings less inflammable than they are at present; even this might involve such an enormous expense that the owners of all classes of property would, I fear, look on my ideas as not in their particular interest; however that may be, we all have a duty to do towards our neighbours, and that consists partly in making buildings as safe as can reasonably be expected against danger to life and property therein contained.

To carry out the idea of this paper in a logical manner I should begin by dividing up the districts of London into risks, and then the buildings in these districts into subdivisions of risks, but this sort of work, I think, I may safely leave to those whose particular business this is, from an insurance point of view; my chief concern will be to deal with constructional details only, combined of course with the inherent danger there always is in the proximity of one building to another—always a source of real danger in large cities such as London. For instance, particular portions of the City of London have unfortunately got the reputation of being what are called dangerous areas. This may be due not only to the buildings themselves, but also to the nature of the goods stored therein, and for this class of building I am afraid little can be done. The only thing we can hope for in this division of the subject is to render them less liable to communicate fire to those adjoining.

On the other hand, large numbers of buildings not having within them goods or materials of a particularly inflammable nature are built or fitted up, and particularly the latter, in such manner as to render them very dangerous when by some unfortunate accident they do get on fire.

Many of these buildings in their construction contain all the elements of danger, both to themselves and to their surroundings, and it is more particularly with regard to these that I consider a paper of this nature should call your attention. The idea of pulling down London wholesale, or converting all its buildings at one time into what are erroneously called "fire-proof" structures, is eminently absurd. Still, much might be done at a moderate expense, which would render buildings and whole areas much less dangerous than they are at present.

Match-Board.

For instance, take the one item "match-boarding." It is used in all sorts of places, in most of which it could very well be done without as regards the construction, and it is a material which, so far as safety in case of fire goes, should not be allowed to come under any consideration whatever. And yet one hears very often against it, probably because no one thinks of the extra danger involved in its use, or does not want to think, simply because it has been used heretofore and it is convenient, easily put up and just as easily removed, requires no time to dry, and is easily painted or decorated. Its use on walls and ceilings, particularly the latter, is much to be deprecated. I am now thinking more particularly of boarding made from soft woods, which when dry and painted or varnished is highly inflammable, and fire passing along it at a high speed, often rendering escape from a building impossible, even in the early stages of fire.

A paper prepared for the International Fire Prevention Congress, at London, 1902, by Mr. Max Clarke, A.R.I.B.A., entitled "How to make existing buildings more fire-resisting."

The limited use of hard woods as wall covering for decorative purposes is not objectionable, particularly if fixed without any air space at the back. In all discussions of the present nature we should be most careful not to advocate views which would prove to be what may be called so excessive as to frustrate the very object intended. I would only make one further remark with regard to this class of material, and that is how fatal the results are when it is used as a ceiling covering with plenty of air-space behind, seemingly specially arranged to create rapid and intense combustion.

In making these remarks I am quite aware that in the opinion of many this class of wall and ceiling covering possesses certain advantages, being suitable for buildings in which certain trades are to be carried on. My object is to impress upon you that these ideas are already antiquated, and that for every class of building and every trade some form of covering can be found equally suitable from all points of view, without any of its special element of danger.

Naked Ceilings.

We may now pass on to a form of construction which, alas! is even more common in London than the one above mentioned, viz. leaving large areas of the floor joists of buildings without any covering whatever on the underside. This is done, of course, with the clearly defined object of saving money in first cost, and it does save a certain amount; but whether that saving is commensurate with the greatly increased risk such a system of construction involves is for you to decide.

I hope it will not be one of the arguments during the discussion that numbers of buildings constructed in this manner have never had a fire in them. This does not seem to me to be a discussion at all, at any rate it is not fire preventive discussion.

There is one aspect of the case which must not be overlooked, viz. What is fire protection worth? In these days of commercial speculation most buildings have a remunerative value, beyond which the speculator will not go; his idea is that, given a building which can be insured at a reasonable rate, it would pay better to build it in the cheapest manner than to expend a larger sum on a more fire-resisting building. The risk of its being burnt down is taken as a quantity worth so very little consideration that in many cases it is accepted in preference to the safer building. This, of course, is the difficulty met with in any attempt to make fire prevention general. But for this London would be fire-resisting, and I should not be before you at this moment.

However, I have to try and bring to your notice items in everyday construction which could be brought into line with modern ideas without wholesale reconstruction.

The cure for the evils which I have already pointed out is that in future match-boarding should not be used in new buildings, and after a certain date it should be removed from all old buildings. The naked joists in ceilings could easily be corrected, and the ceilings made fire-resisting by covering them with wire netting or some form of expanded metal and plaster.

Studded Partitions.

I need hardly remind you that the ordinary wood partition, with its wood lath and plaster covering, leaving hollow spaces from top to bottom, should be a thing of the past. Unfortunately such is not the case, in spite of the numerous forms of light partitions made which are non-inflammable and have no open spaces. Why the latter are not used it is hard to say, but if after a certain date stud partitions were to be abandoned it would render London as a whole much more fire-resisting than it is at present, and at a moderate cost.

Lift Enclosures and Doors.

I must now turn to a matter which seems to me to be most important in buildings of the warehouse class, namely, the means adopted at present for the prevention of the spread of fire in lift wells and generally in vertical shafts of this class. There is no doubt that this particular risk is not sufficiently considered, and great improvement could be made as regards retarding the spread of fire if all lift shafts were properly enclosed with some form of non-combustible material. The particular nature of the material I need not attempt to specify, as it would largely depend upon whether the building was an old one or in course of construction. If the latter, there is no doubt brickwork would be the most suitable, but some other enclosing material would be efficacious, at any rate for short periods, and it is these short periods which in the initial stages of a fire are of the utmost importance.

The doorways or openings to the lift shafts should not be mere openings, as is so often the case at present, or if the openings are fitted with doors they are too often of an open type, not in any degree preventing the passage of smoke and flame up the shaft. Iron doors are often fitted to openings in cases where there is a solid enclosure; but the doors are not close fitting and the fastenings are not designed with a proper regard to ease in opening and closing, and quite regardless as

to their adequacy for preventing the doors bending or twisting when heated to a high temperature. Where the latter is possible, of course flame and smoke pass through the small openings and ignite inflammable material on the other side, thus contributing to the spread of fire to an alarming extent.

Fire-resisting Doors.

Another small matter I have observed in connection with iron doors, which should be avoided if proper fire-resisting qualities are to be obtained, is the total neglect displayed in keeping inflammable material at a sufficient distance from iron or other forms of fire-resisting doors. Only by exercising proper attention to this point can the full value of such doors be obtained. A door may in itself be a good stop against fire, though it become red-hot; but it is useless if in contact, or in close proximity to combustible material on one or both sides. Attention to this matter is sadly wanting at the present time. Wood floors should not be carried up to the iron door frames, but a fairly wide threshold of concrete, stone or the like should be formed on each side, and the same remark applies to the whole of the opening on both sides, as it is impossible to foretell on which side of the opening or shaft the fire may occur.

Fittings.

The same remark applies to fittings in shops and warehouses, not to say public buildings. Often after the building has been left fairly secure in the direction above mentioned, shop or other fitters come on the scene and fix woodwork everywhere as trade fittings, totally regardless of the fact that should a fire occur—and I presume we are all agreed that they do occur—when least expected, from one form of accident or another, and it is only by bearing these facts in mind always when designing, constructing, altering or fitting up a building that the fire-resisting qualities of a structure, district or city can be improved.

Fireplaces.

I shall now call your attention to some of the defects in fireplaces and flues which are being repeated every day in modern building work, and I hope you will understand that throughout my paper my attempt is to show the defects in London building, as it is only by deciding what the defects are that remedial measures can be taken.

Few know the number of fires caused by defects in and about the fireplace. Personally I am disposed to think that most of the causes are brought about by careless workmanship, and a few perhaps by the use of methods which were quite adequate in former times, before the invention of what are now called slow-combustion stoves, close ranges, boilers and the like. I place first in point of danger the practice of building half-brick trimmer arches to carry hearths in wooden floors, the arches having the centreing left in and forming an open space under the brickwork. The underside of this space is lathed with wood laths, and plastered in the same plane, as a rule, as the rest of the ceiling. This form of hearth should give place, in my opinion, to a concrete or other self-supporting hearth, the full depth of the floor joists, having a flat soffit on which the plaster could be applied direct. Next I should like to advocate the use of fireclay linings to all flues, a common practice in many districts, but not in use as a rule in London, instead of improperly bonded and badly built flues, the brickwork of which is only $4\frac{1}{2}$ inches thick, and in which bad mortar forms a considerable component part, and which after a time drops out leaving the joints open. This is often assisted or caused by the nails, spikes or plugs driven in for the purpose of fixing inflammable finishings. All these defects lead to a considerable number of fires annually, the details of which I am sure my insurance friends know a great deal more about than I do. Wood finishings should not be fixed with iron spikes in front of flues unless the brickwork is of a greater thickness than $4\frac{1}{2}$ inches; in fact, it is probable that a great safeguard against fire would be effected if woodwork in such proximity to flues was abandoned altogether. It seems to me a cause of danger that flues built with only half-brick surroundings are at times used for high-pressure boilers, kitcheners and the like, the brickwork being quite hot when work is in progress, and in many cases much too hot for safety.

New types of stoves of either the "slow combustion" or "well fire" classes should not be fixed in old houses unless a thorough examination of the hearth and its surroundings is made, numerous fires having been caused from timbers being in close proximity to chimney-breasts quite unknown to the people who fixed new and powerful stoves in old openings.

Areas, Light Wells and Narrow Streets.

In cities like London where land is of such great value the size of areas and light wells will always be reduced to the smallest possible dimensions, thereby greatly increasing the risk of fire spreading from one building to another. The same remarks hold good with regard to narrow streets and courts. In cases such as these the only precautions which can be adopted are of a protective nature.

Windows in light wells should not be directly opposite each other, should be fitted with metal, or at any rate with hard wood frames; the glass should be wired or armoured so that when cracked it would not drop out of the frames at once, thus allowing the passage of flame from one building to another with fatal rapidity. In more dangerous cases blinds of non-inflammable material might be used with advantage, or, better still, shutters which would fit the openings closely, constructed in such a manner as to prevent much twisting or buckling and provided with fastenings, which while admitting of rapid adjustment would be secure against opening by accident or from falling bodies on the outside.

Shutters or blinds for use in courts or areas might be made of woven wire mounted on frames. This form would admit of a certain amount of expansion or contraction without damage to the frame; would admit a certain amount of light, which is always an advantage, and could be seen through from the inside, also a benefit in many cases.

In connection with any form of shutters such as above advocated, the objection to having wood finishings near them cannot be too strongly brought before your notice. Any real advantage the shutters might be in case of fire in an adjoining building would be largely discounted if inflammable material was close to the openings supposed to be protected by the shutters.

My paper is practically at an end. I hope you did not expect startling theories, for most certainly you have not heard any, and for this omission I suppose I should ask your indulgence.

My opinion on these matters is that we do not take advantage of the information we possess. Knowledge is of no use whatever unless properly applied, and my contention is that there is a vast store of information on this particular subject which is not made the least use of. What has been done before is repeated without properly examining the new methods with the object of applying any which might suit particular cases.

I have not dealt with any of the modern forms of fire-resisting construction; many types are so well known that they need no words of mine either of praise or condemnation. All I would say is that as a rule the details are not sufficiently attended to. In the case of sanitation we have for many years had good pipes, but even now we sometimes have not got good drains, and only by the very closest attention to the minor details shall we ever get them. It is exactly the same with every form of fire-resisting construction and any attempt to make buildings or districts safer than they are at present. If I may digress from the subject for a moment, I would like to address a word to "the man in the street," if any such be here, as to the saving of life from fire. Has he ever thought of the value of 50 yards of moderately stout rope and a block or pulley with a hook in the ceiling in front of a window? Why such a modest equipment should not be in every house I cannot imagine. A stout belt with its ring and spring catch would be an advantage; but I say, given the rope and block, there is no reason why escape should not be practical for men—and for women also when there are men to assist them—from every building in London. With regard to such places as Eton or other public institutions, each individual should provide himself with his own rope, as he does his cricket bat or fountain pen. It might be years before it was required, but when required it should be in perfect order, ready for use at a moment's notice. We are desirous of helping all sorts and conditions of men and women, but it is also expected that they should do something to help themselves.

TESSERÆ.

Effects of the Fire of London.

WHATEVER may have been the cause of the Fire of London, no one will now doubt that the effects are as described some years afterwards in a letter from Dr. John Woodward, professor of physic in Gresham College, to Sir Christopher Wren. That "however disastrous it might have been to the then inhabitants, it proved infinitely beneficial to their posterity, and to the increase and vast improvement as well as the richness and opulence of the buildings. And how by the means of the common sewers and other like contrivances such provision was made for sweetness, cleanness and salubrity, that it is not only the finest and pleasantest but the most healthy city in the world; inasmuch as for the plague and other infectious distempers, with which it was formerly so frequently annoyed, and by which so great number of the inhabitants were taken off the year before the fire. An experience of above forty years since hath shown it so wholly free from, that it is probable it will be no longer obnoxious to, or ever again likely to be infested by, those so fatal and malicious maladies." To Dr. Woodward's forty years' experience we may now add nearly two hundred more, as additional proofs of

the beneficial effects of the Great Fire upon the health and prosperity of the Metropolis. A new city was now to be built, and as Dr. Sprat, while the ashes of the ruined city were smoking around him, said, "on the most advantageous seat of all Europe for trade or command." Well did the king and his people apply themselves to the task, particularly the citizens of London, who showed a greatness of mind, a philosophy of endurance and a pious resignation to the will of Heaven, amidst the smoking ashes of their hearths and altars, surrounded by the green graves and mounds of the remains of their kinsfolks, called away by a fatal and unavoidable pestilence, and by the crowded hospitals of their sick and wounded countrymen in a calamitous war, worthy of all Greek or Roman fame, nay higher, it was worthy of their Christian profession. "If philosophers had done this," says the before quoted historian of the Royal Society, "it had well become their profession of wisdom; if gentlemen, the nobleness of their breeding and blood would have required it; but that such greatness of heart should be found among the poor artisans and the obscure multitude is, no doubt, one of the most honourable events that ever happened."

Animal Worship in Egypt.

The worship of living animals was subordinate to that of the gods, and the animals were supposed to be incarnations of the souls of the deities they represented. The worship was referred to the most remote antiquity, and said to have been introduced by Kaiechos, a monarch of the second dynasty. The animals were attached to the temples of their respective gods, kept in shrines or other places provided for them, and their actions interpreted as ominous. The principal sacred animals were the cynocephalus ape, the lion, the cat, the dog or jackal, the bull, the white cow, the ram, the sheep, the goat, the hare, the hippopotamus, the shrew-mouse. Amongst birds, the hawk, the vulture, the ibis and the goose. Of fish, the eel, the latus, the lepidotus, the phagrus. Of insects, the scarabæus; and of reptiles, the crocodile, the uræus or cobra di capello snake and a larger snake like the boa. The sacred animals were reared, fed and taken care of with great luxury, and all the animals of the town or district where any species was worshipped were protected and not killed. It was death to slay intentionally a sacred animal, and even an accidental killing of such an animal entailed punishment and required expiation. After death they were carefully embalmed and deposited in mummy pits or in tombs specially reserved for them. The reason of their worship is involved in much obscurity, and was supposed to be owing to their utility to mankind, their supposed peculiar physical qualities indicating symbolically the deities to which they were sacred, or to the tradition that the gods formerly changed themselves into the shapes of animals. The rivalry of different towns and the quarrels with each other about their sacred animals often gave rise to fearful conflicts, and caused some to suppose that this worship had been introduced to cause dissension and disunion. The ape, sacred to Thoth and Khons, was worshipped at Hermopolis; the jackal, sacred to Anubis, at Lycopolis; the cat at the same town, the dog at Cynopolis, the lion at Leontopolis and Heliopolis, the cat at Bubastis, the otter at another site. Of the sacred bulls, Apis, sacred to Ptah, was worshipped at Memphis; Mnevis, to Ra or Atum, at Heliopolis; Paht, in the same place; Pacis, emblem of Amen-Horus, at Hermopolis; the antelope at Coptos, the ibex at Thebes, the sacred cows of Athor at Hermonthis and Atarbechis, the sheep at Sais and the ram at Thebes, the hippopotamus at the Iupremite nome in the Delta, the ichneumon at Heracleopolis and the shrew-mouse at Athribis. Among birds, the eagle, sacred to Horus, was worshipped at Thebes; the sparrowhawk, emblem of the same god, at Heracleopolis; the raven at the Emerald mines, near Coptos; the vulture at Eleithyie; the falcon had no city, but is found mummied; the ibis at Hermopolis; the stork was also worshipped, and the goose at Canopolis. Of fish and reptiles, the crocodile was worshipped at Arsinoe, Ombos, Coptos and Thebes, and found mummied at Manfalut; the fish latus, sacred to Athor, at Cynopolis; the lepidotus at Lepidotopolis; the oxyrhinchus in some of the same name, the mæotes at Elephantine; the crocodile was sacred to Hapi or the Nile; snakes worshipped at Thebes, to Theban goddesses, and the scarabæus emblems of the god Ra, elsewhere.

Egyptian and Mediæval Proportions.

The employment of diagrams of squares by the ancient Egyptian artists for the setting out of their sculptures has been described by Owen Jones. It is objected, however, that this is only a method of transferring and reducing figures, such as commonly used at the present day by artists and engravers in reducing and transferring their pictures. There must, however, be something more than this. The squares were not simply to guide the hand of the draughtsman, but actually to set out the proportions of the figure. It seems that a tablet for an erect figure was divided into nineteen squares

high and ten wide, and that for a sitting figure of the same total height into fifteen high and fifteen wide, and that in both cases the dimensions of the body and of its several members were set out by a like number of these same squares. Thus three were given to the height from the shoulder to the crown of the head, four to the length of the forearm, three to the length of the small arm, one to the hand, four to the thigh, one to the knee, four to the leg, one to the height of the foot, and three to its length. Moreover, the dimensions of the hieroglyphics were determined in the same way. And although there are several trifling (evidently artistic) deviations, there are signs of purpose and system which cannot be mistaken. And as Owen Jones remarks:—"The facility which, after constant practice on the same ever-recurring lines, some of these workmen have obtained of preserving the peculiar character of Egyptian art is very remarkable, and helps us to understand how, by the division of labour, those vast undertakings of Egypt were accomplished." And again, "Whilst obedient to religious laws, which limited the direction of their art, they combined the highest sublimity of conception with the most refined and delicate finish of execution." Why then are we unwilling to believe that the works of Mediæval art were carried out by similar processes, when it is found that their dimensions do exactly coincide with a comprehensive system of proportion of another kind? The Egyptian is called the "parent of all other arts," and the Egyptian artists were able to produce "exquisite beauty, refinement and grandeur," though they did restrict themselves to the use of such "line and rule" processes. And "whilst obedient to religious laws, which limited the direction of their art, they combined the highest sublimity of conception with the most refined and delicate finish of execution," though its artistic character underwent the same process of decline as our own art did. The most natural account of the matter is that Mediæval art like theirs was subject to the restraint of conventional rules. For such uniformity of character as shows itself not only in manner of form, but also in the proportions of the general outline, extending itself even to the proportion of details, could not have arisen simply from the imitative or from the æsthetic power of each individual architect. Against the practical utility of this theory it has been objected that if we subject ourselves to such rules "we must give up designing in the high sense of the word, and, having a base-line and the style given, we shall only have to put it into a machine and it will come out all right without any head or heart work." Rules of art without genius are like a body without a soul. No man can ever be an artist without a soul to appreciate and to create beauty; nor can he "by line and by rule" alone produce any work worthy of being called art. It was not Coleridge's knowledge of the laws of metre that made him a great poet, nor was it Haydn's knowledge of the laws of harmony which made him a great musician; yet we cannot imagine the former to have been ignorant of prosody nor the latter of thoroughbass or counterpoint.

English Roads in the Eighteenth Century.

It was soon after the year 1700 that a part of the charge of repairing roads was taken off the respective parishes through which they pass and levied on the general traveller by means of turnpike gates, but it was for many years a complaint that the roads were little, if at all, fundamentally improved by the expenditure of the money so raised. This complaint is very energetically advanced in a "Dissertation concerning the Present State of the High Roads of England, especially of those near London, wherein is proposed a new Method of Repairing and Maintaining them," read before the Royal Society in the winter of 1736-37 by Robert Philips, and printed in a small separate volume. The author's great object is to recommend washing the roads by a constant stream if possible, and at any rate washing the materials of which they are composed. In this respect, notwithstanding the existence of single roads so situated that the effects of water upon them have been very beneficially introduced, his plans for the universal employment of water have been altogether superseded by later experience; but he remonstrates with greater propriety against the practice, which has, however, continued to prevail so generally till of late years, of laying down large heaps of unprepared gravel, to be gradually consolidated into a harder mass, at the expense of the intolerable labour of the poor animals that are obliged to grind it down. As an illustration of the good effect of water, he mentions that even the sediment deposited by it at the bottom of Fleet ditch, which was supposed to be a soft mud and to require removal when the ditch was filled up, proved, in fact, to be a hard gravelly substance, which afterwards afforded an excellent foundation for the roads and buildings supported by it. The attention of the public was afterwards directed to the subject of roads and carriages by several essays which appeared in the "Communications to the Board of Agriculture," and also in a separate form. But the suggestions of these writers were in a great measure superseded by the success of Loudon Macadam, a gentleman whose practice was

marked by simplicity and economy, though he also had the merit of discovering that the simplest and cheapest methods in particular cases, especially in that of boggy soils, are also the most effectual. His leading principle was "that a road ought to be considered as an artificial flooring, forming a strong, smooth, solid surface, at once capable of carrying great weights, and over which carriages may pass without meeting any impediment."

Italian Veneering.

The practice of overlaying buildings with thin slabs of marble is open to this objection, that if the slabs are quasi-constructive in their distribution they involve a sham; if not so they disturb the constructive idea which is so desirable to keep up in dignified architecture. The practice is, however, fair and admissible, if not pretending to be constructive, but it would be much better to limit it to panels and other subordinate parts, the genuine walling material being shown around it. At St. Mark's, Venice, the slabs are placed with their longest dimension vertical, as if to prevent any thought of their pretending to be constructive. In the domestic buildings at Venice, the windows being generally of marble while the walls are of plastered brickwork, the former are made almost like a modern chimneypiece, the whole window construction being cut out from the wall into which it is built by what a modern mason would call an "out ground," or thin strip of marble (perhaps an inch and a half thick), built edgeway into the wall, and enclosing the ornamental dressings of the window. The edge of this slip of marble is cut into the peculiar Venetian dentil. Coloured marbles are often used within this framing.



The Albert Memorial Plates.

SIR,—In your admirable reproductions of the sculpture of the podium of the Albert Memorial an unintentional slight was cast upon Mr. H. Armstead, R.A., which I trust in justice to him you will put right. The two sides which you have published were his work entirely; there was none of Mr. Philip's. Pleased with these reproductions myself, I showed them to Mr. Armstead, and it is from him that I have ascertained that the description is incorrect. It is more than thirty years ago since these were completed, and it shows how little real interest the general public take in the art of sculpture in this country when even in an artist's lifetime his work is attributed partly to someone else—Yours, &c.,

THE CURATOR OF THE SOANE MUSEUM.

[We are afraid his office has had an ill effect on the curator. To live in a mausoleum cannot be healthy. If the curator would venture to brave the perils of a journey to Hyde Park he would discover that the podium of the Albert Memorial has four sides. The four were reproduced in *The Architect*. The curator has obtained two of these plates, and apparently believes he has a representation of the whole before him. If he were acquainted with the history of the work he would know that the late Birnie Philip was the sculptor of the representative figures of architects and sculptors, just as Mr. Armstead was of the painters, musicians and belle-lettrists. The two sculptors were selected by Gilbert Scott because he was aware from his own experience of their ability as architectural sculptors. The sculptors of the groups and of the statue of the Prince were not nominated by him. In the podium it is easy to see co-operation to attain one end. The four parts can be arranged in any way desired without any loss of character. They are now, and will be hereafter, regarded on account of the characteristics they have in common as the work of Henry Hugh Armstead and John Birnie Philip. We associated the two names on the plates because we believed our readers would recognise the peculiar unity of the work. There was no anticipation of a curator rising from the depths and assuming a part to be the whole. The two sculptors marked their panels, and where the names have survived they have been reproduced on our plates. On the moulding of the "Architects," J. B. Philip, sculptor, is legible, and on the moulding of the "Musicians and Poets," H. H. Armstead, sculptor. In the sepulchral gloom which environs the curator they are probably invisible. As the sections appeared care was taken to point out the share of each sculptor in the joint work. One example will suffice. In *The Architect* of January 2 it was said:— "There is so much unity of spirit in the arrangement, the names of Mr. Armstead and Mr. Birnie Philip are likely to be always conjoined in every description of the memorial. It is

well, however, to note that the series of architects as well as the series of sculptors were executed by Mr. Birnie Philip while the painters, poets and musicians were undertaken by Mr. Armstead." The last sentence of the curator is reminiscent of "Meditations among the Tombs." What the general public may think about the podium and its sculptors we dare not determine. Probably, from the general effect, they assume the groups to be a single inspiration, but executed by various hands. A similar conclusion has been drawn from the frieze of the Parthenon. But it is saddening to find a curator coming forward in defence of one of the sculptors and ignoring the facts that there were two, and that the success of the work is owing to their loyally working on the same lines at some sacrifice of their own imagination. We hope Mr. Armstead does not agree with his champion, nor consider the mention of his old comrade's name to be a "slight" on himself.]

GENERAL.

The Portrait of Rodin, by Mr. John W. Alexander, the American painter, has been purchased for the Fine Arts Museum of Cincinnati, where it will be placed in the permanent collection. The work was awarded a gold medal at the Paris Salon 1900.

A Long Inquiry was held in Bombay in connection with the collapse of a building on May 31, whereby three Europeans and one native were killed. The jury returned a verdict of culpable homicide, not amounting to murder, against the owner and constructor. Both were committed for trial at the sessions.

Mr. A. J. Gaskin has received the appointment of master of the School for Jewellers and Silversmiths, Victoria Street Birmingham, in succession to Mr. Catterson Smith.

The Work now proceeding in front of Buckingham Palace is the first portion of what is required to prepare the site for the National Memorial to Queen Victoria, and includes the levelling and laying-out of the site, and the building of the necessary retaining wall in St. James's Park. All the above work will be carried out between now and November 1.

The Foundation-stone was laid on Monday with the Masonic honours of a new parish church at Skelmersdale, near Liverpool. The building will be in the Late Perpendicular style and will consist of nave, north and south aisles, a chapel on the ground floor of the tower, and the necessary vestries, parish-rooms, &c. The total cost is estimated at 9,000*l.* and towards this amount 5,000*l.* has been raised. The designs have been prepared by Messrs. Austin & Paley, Lancaster. Messrs. J. Thoms & Sons, Lancaster, are the general contractors.

The Committee appointed to consider the choice of a site for the proposed Federal capital of Australia are in favour of the town of Tumut, which is 264 miles south-west of Sydney.

Sir William Agnew has presented to the National Gallery Sir Joshua Reynolds's portrait of Mrs. Hartley and her child known as "The Nymph and Young Bacchus," which is regarded by many as one of the painter's finest works. It will be remembered that some years ago Sir William presented "The Harbour of Refuge," by Fred Walker, to the same gallery.

The London County Council have decided to appropriate at a cost of 30,000*l.*, a site in Southampton Row for the proposed London Day Training College. The site is next to the already allocated for the Central School of Arts and Crafts.

The Additions to the palace at Laeken for the King of the Belgians, which M. G. Girault is carrying out, comprise besides the apartments for the monarch, a chapel, riding school, stables and coachhouses, all of which are on a large scale. Although the work was not commenced until six months ago, the buildings will be roofed before the winter and completed in spring.

We have Received with regret the announcement of the death, which took place on the 15th inst., of Mr. J. S. Stevens of Poundfield, Old Woking, senior partner in the old established firm of Archibald Smith & Stevens, of "Janu Works," Queen's Road, Battersea. No changes, we understand, will be made in connection with the business, which will be conducted as heretofore by the surviving partners.

The Royal Architectural Museum has now been acquired by the Architectural Association, and will be reopened to the public about April next, by which time the necessary alterations will be completed.

The Newport Chamber of Commerce has issued the year book of that thriving town. It contains illustrations of buildings, maps, &c. The statistics are abundant. From the pages the reader will be able to realise the condition of Newport and its future as a centre of industry and commerce.

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The Architect, July 24th 1903.



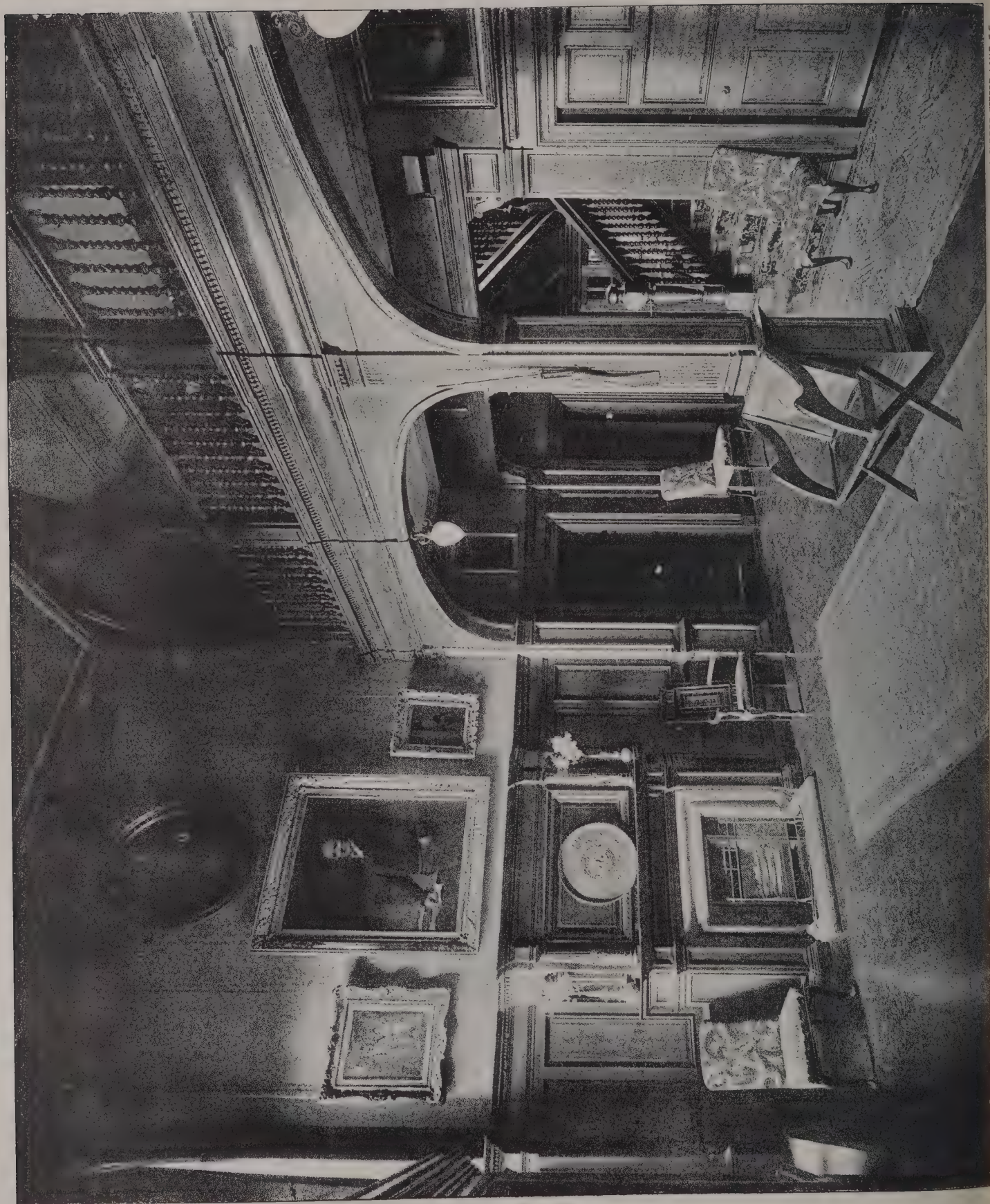
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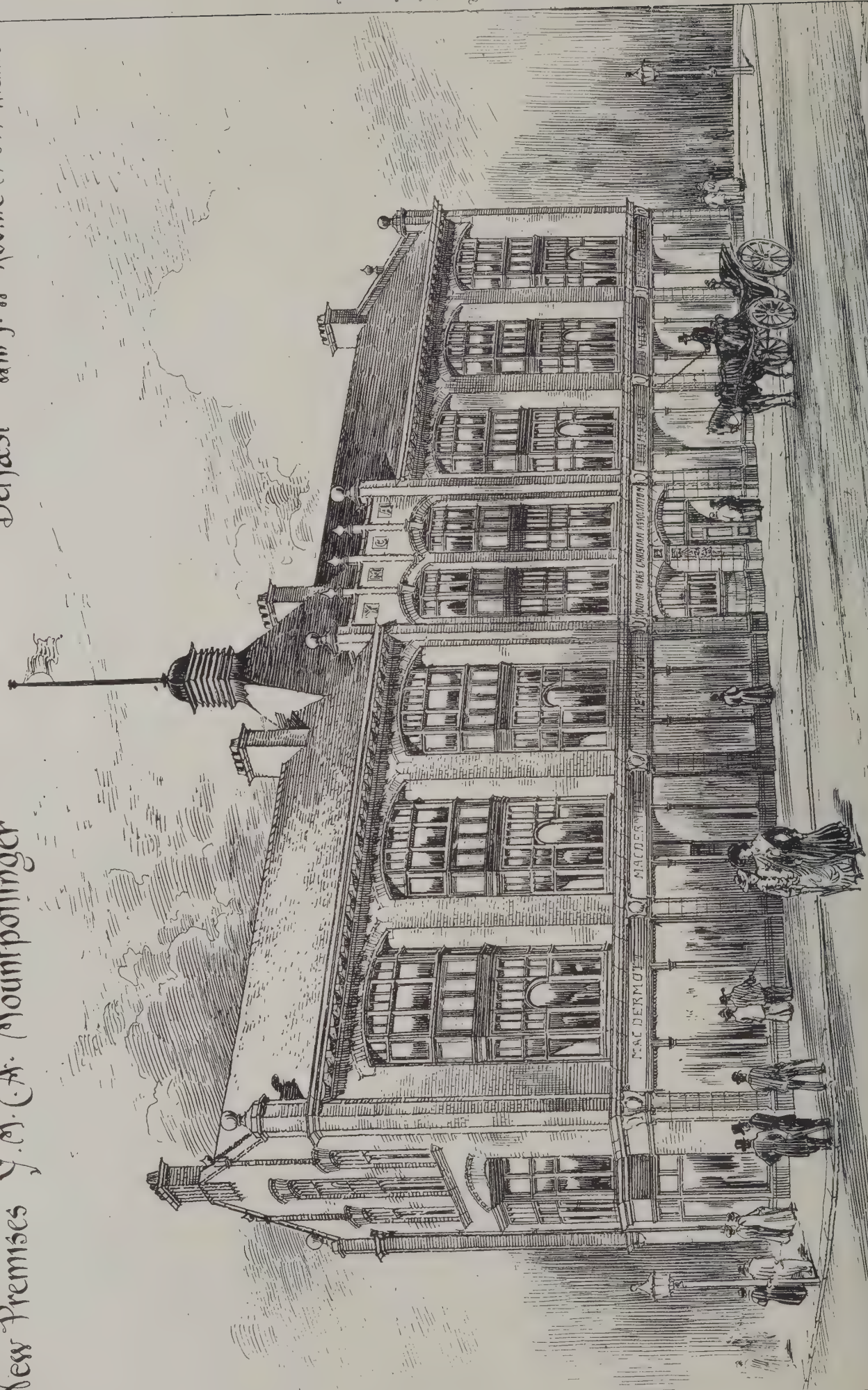
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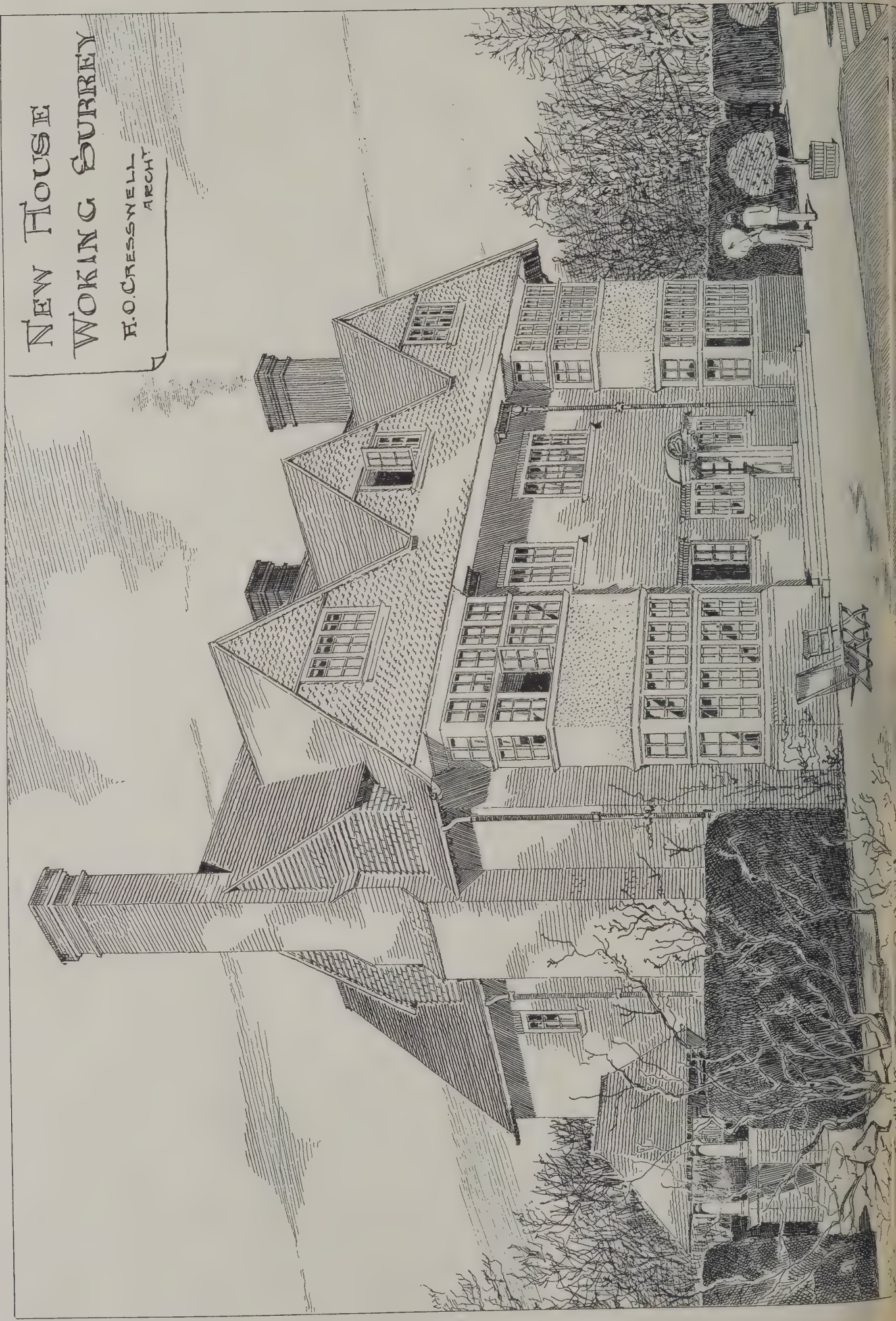


Edwin Turner del.

The Architect, July 24th 1903.

NEW HOUSE WOKING, SURREY

H.O. CRESSWELL
ARCHT.



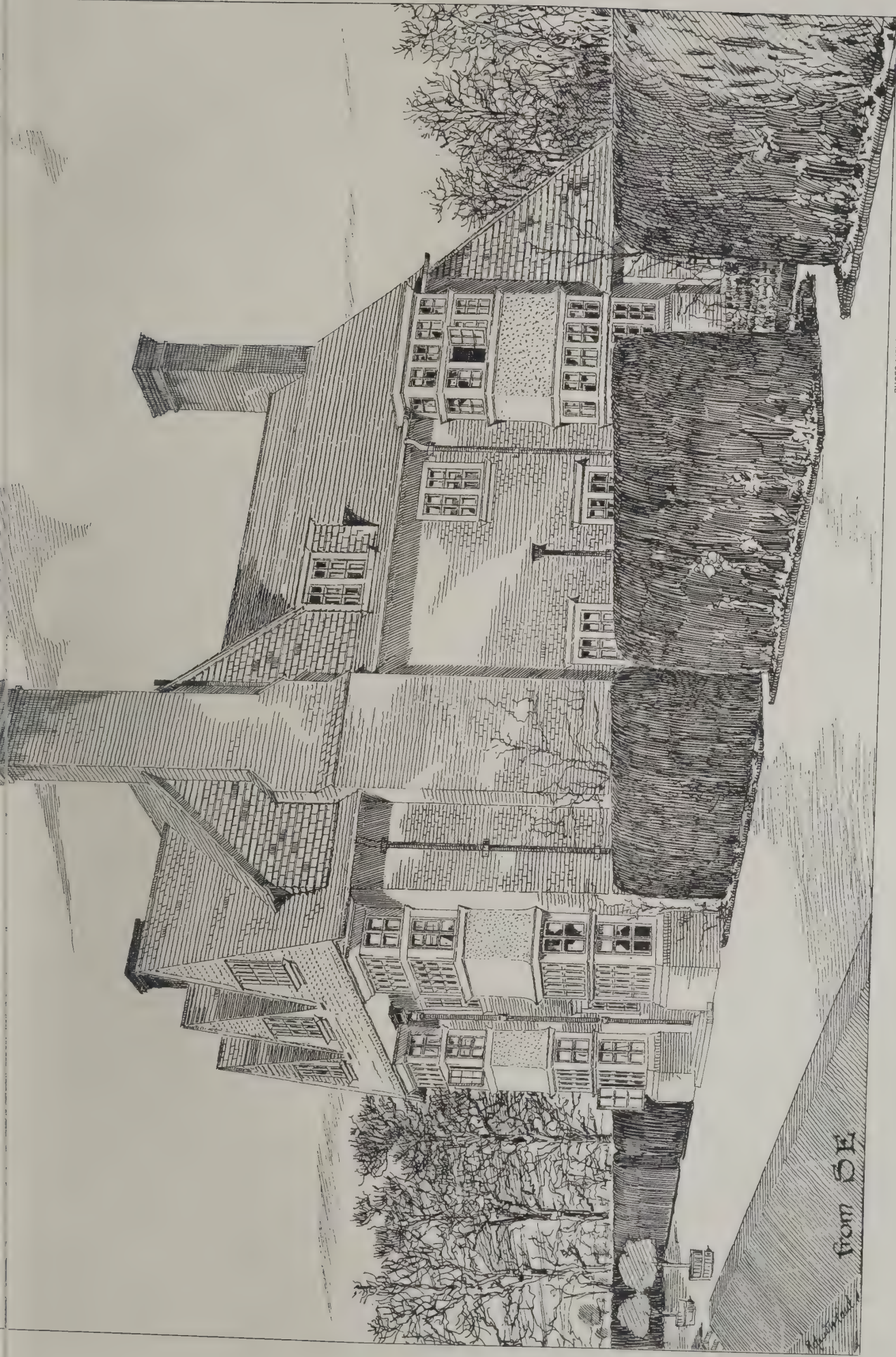


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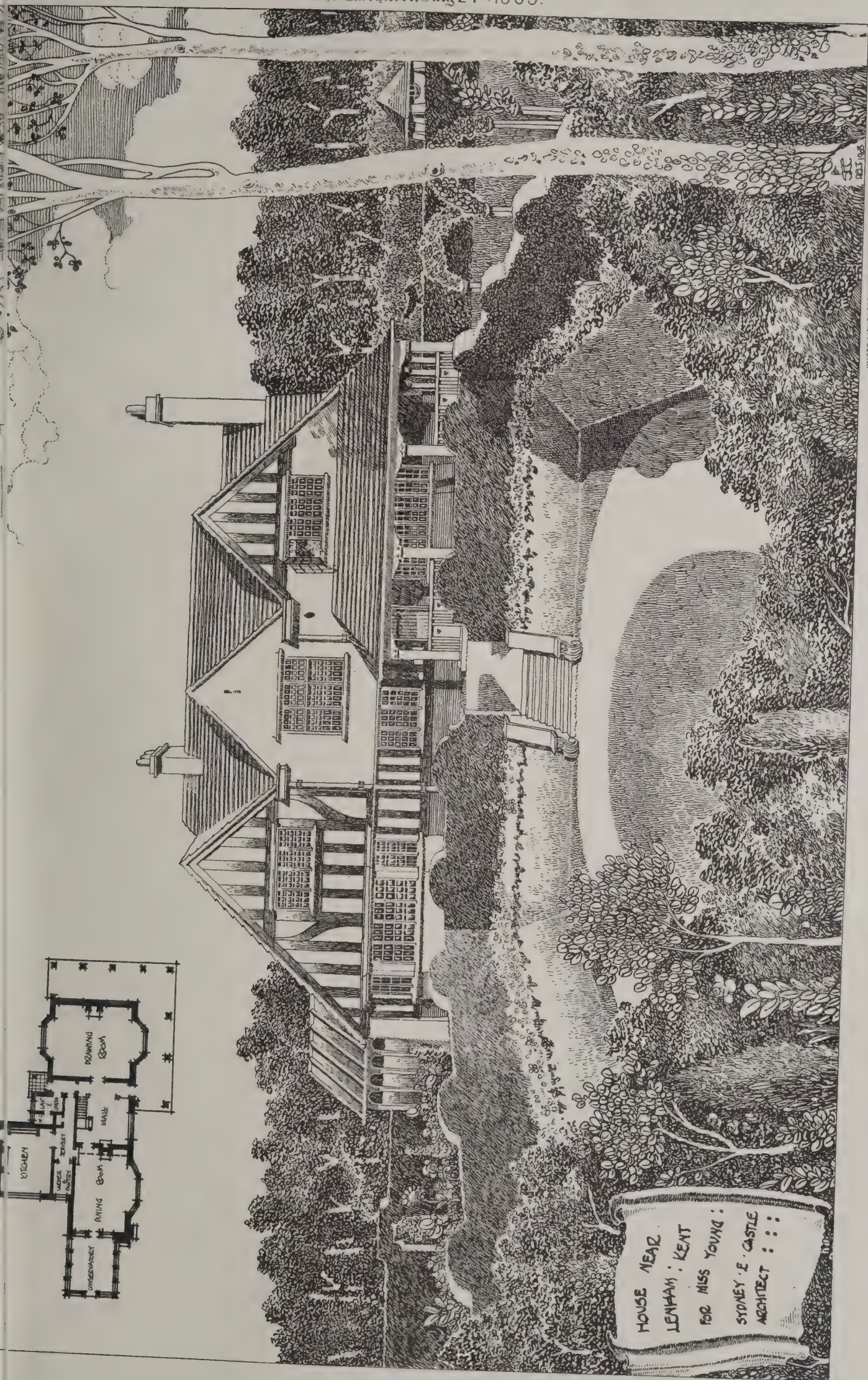


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HOUSE NEAR
LENHAM, KENT
FOR MISS YOUNG :
SYDNEY E. CASTLE
ARCHITECT : : :

The Architect, July 24th 1903.



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SPENCER GRANT, A.R.I.B.A., Architect.



The Architect, July 24th 1903.



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CATHEDRAL SERIES, No. 456.—EXETER: THE NORTH PORCH.

THE Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

ACTON.—Plans are invited for a school for 250 boys to be erected at Acton. The architect whose plans are selected as first will be asked to carry out the work at a commission of 5 per cent. The second set of plans will receive a premium of 30%, and the third set of plans 20%. Mr. B. S. Gott, clerk of the Governors, Guildhall, Westminster.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100%, 50% and 30% respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

CONTRACTS OPEN.

AMBLE.—July 27.—For new shop front and alterations to post office. Mr. J. Wightman Douglas, architect, 1 St. Nicholas Buildings, Newcastle-on-Tyne.

BACUP.—Aug. 12.—For the erection of an infants' school in Lanehead Lane, Bacup. Messrs. Smith & Cross, architects, Town Hall Chambers, Rochdale.

BEIGHTON.—For the erection of business premises at Beighton. Mr. G. Platts, manager, Central Stores, Woodhouse.

BOW BRIDGE.—July 28.—For rebuilding a portion of the relief arch, building two buttresses and other work at Bow Bridge, Devon. Mr. H. Michelmores, clerk to County Council, the Castle, Exeter.

BRADFORD.—For pulling-down and rebuilding front of Elephant and Castle hotel, Westgate. Mr. John Jackson, architect, Barry Street, Bradford.

BRIDGEND.—Aug. 7.—For the erection of an infirmary block, casual wards and porter's lodge at the workhouse. Mr. P. J. Thomas, architect, Bridgend.

BRIDGWATER.—July 29.—For the extension of infants' cloak-room and lavatory at the Albert Street Board school. Messrs. Samson & Cottam, architects, 43 and 45 High Street Bridgwater.

CALVERLEY.—For the erection of engine-house at Ravenscliffe Mill, Calverley. Messrs. Jowett Kendall & J. Harper Bakes, architects, Calverley Chambers, Victoria Square, Leeds.

CHELMSFORD.—July 27.—For the erection of a public library, museum and school of art in Market Road. Messrs. Chancellor & Son, High Street, Chelmsford.

CHIPPING ONGAR.—July 29.—For the erection of children's homes at Chipping Ongar, Essex. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

CLEETHORPES.—July 29.—For the erection of a lodge and outbuildings in the Cleethorpes Park. Mr. Egbert Rushton, surveyor, Poplar Road.

COATBRIDGE.—July 27.—For the erection of car-shed, offices, &c., in Main Street, Coatbridge. The Construction Engineer, the British Electric Traction Company, Ltd., 1 Adelphi Terrace, London, W.C.

COLCHESTER.—July 28.—For the erection of a tramcar shed, consisting chiefly of iron and steel, for the tramways committee. Mr. Herbert Goodyear, borough surveyor, Town Hall, Colchester.

COVENTRY.—Aug. 1.—For the erection of (specification No. 6) sulphate works, comprising sulphate house (54 feet 9 inches by 27 feet 6 inches), sulphate store (54 feet by 18 feet), boiler-house (48 feet 3 inches by 30 feet), lime store and warehouse over (31 feet 6 inches by 15 feet 6 inches) and chimney (80 feet high); and (7) the excavation for and construction of an underground liquor-tank (50 feet diameter by 15 feet). Mr. Fletcher W. Stevenson, engineer and general manager, Gasworks, Coventry.

DARTFORD.—July 27.—For the erection of new wards and administrative buildings at the workhouse, West Hill, Dartford. Mr. G. H. Tait, architect, Lowfield Street, Dartford.

DEVIZES.—July 30.—For converting part of the town hall into public offices, and for other alterations. Plans at the Borough Surveyor's Offices, 15 Market Place, Devizes.

DISTINGTON.—Aug. 3.—For the enlargement of Dyon school, Distington. Mr. H. Hill, Dyon Side, Distington.

DRIFFIELD.—July 30.—For additions to the infirmary at the Driffield workhouse. Mr. Joseph Shepherdson, architect, Driffield.

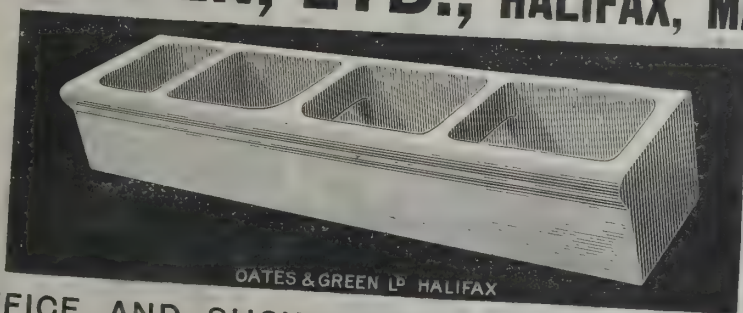
DUBLIN.—July 27.—For works and repairs at the Marlborough Street Training College, including the residential establishments at North Great George's Street, Talbot Street and Glasnevin. Mr. J. Franklin Fuller, architect, 179 Great Brunswick Street, Dublin.

DURHAM.—July 28.—For the erection of education offices, Durham. Mr. William Crozier, architect, Shire Hall, Durham.

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EALING.—July 30.—For the erection of slipper baths at Williams Road, West Ealing. Mr. Charles Jones, surveyor, Town Hall, Ealing, W.

ESHOLT.—July 30.—For the erection of two semi-detached houses at Esholt. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

EXETER.—July 27.—For the erection of offices, &c., at the Castle, Exeter. Mr. E. H. Harbottle, county architect, Exeter.

GATESHEAD.—July 30.—For the erection of stables at Tyne Road East. Mr. J. Bower, borough surveyor, Town Hall, Gateshead.

GATESHEAD.—July 31.—For the rebuilding of the Causey house, Sheriff Hill, Gateshead. Mr. L. H. Armour, 16 West Street, Gateshead.

GRIMSBY.—July 31.—For the erection of a fence wall and the widening of Brighowgate, the extension of the Haven Bridge and the widening of Old Dock Road. Mr. H. Gilbert Whyatt, surveyor, Town Hall Square, Grimsby.

HAYLING ISLAND.—July 31.—For the erection of coast-guard buildings at Hayling Island, Hampshire, consisting of houses for an officer and twelve men, watchroom, outbuildings, &c. Particulars may be obtained on application to the Superintending Engineer, Portsmouth Dockyard.

HEMSWORTH.—For the erection of fifteen houses at Hems-worth, near Wakefield. Mr. James Simmons, off Hague Lane, Hems-worth.

HULL.—For the erection of classrooms at St. George's Road Primitive Methodist schools. Mr. T. Beecroft Atkinson, architect, 11 Trinity House Lane, Hull.

HULL.—July 29.—For the erection of a park-keeper's lodge in the East Park. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

IRELAND.—July 27.—For repairs to labourers' cottages at Glenealy, Rathdrum. Mr. S. G. Gallagher, Corballis Castle, Rathdrum.

IRELAND.—July 27.—For the erection of two cottages in the townland of Drumsurn. Mr. William Crawford, clerk, Rural District Council Offices, Limavady.

IRELAND.—Aug. 1.—For the erection of a dwelling-house at Hillsborough, co. Down. Mr. Henry Hobart, architect, Dromore, co. Down.

KEW.—July 31.—For the reconstruction of the old herbarium, Kew Gardens. Conditions and form of contract may be seen on application to Mr. J. B. Westcott, H. M. Office of Works, Storey's Gate, London, S.W.

LEEDS.—For the erection of five houses and shops in Hare-hills Lane, Leeds. Mr. W. Mason Coggill, architect, Stourton, Hunslet.

LEEDS.—July 27.—For additions and alterations to offices and the erection of new workshops, &c., at Whitehall Road. Mr. William Bruce, architect, Greek Street Chambers, Greek Street.

LIMEHOUSE.—Aug. 4.—For the erection of bandstand, caretaker's watchbox, gymnasium, apparatus, conveniences and shelter, boundary walls and iron railings at Brickfield Gardens, Spenlow Street. Particulars may be obtained at the General Constructional Section (Architect's Department), 18 Pall Mall East, S.W.

LYMINGE.—July 29.—For the erection of a coach-house for an ambulance at the sanatorium, Eachend Hill, Lyminge, Kent. Mr. H. Ames, surveyor, Elham.

MARYPORT.—July 31.—For the erection of warehouses at Maryport. Mr. C. Eaglesfield, architect, Maryport.

NEW MALDEN.—Aug. 31.—For the erection of new public offices, fire station, stabling, &c., at New Malden, Surrey. Mr. William Hope, architect, Seymour Road, Hampton Wick.

NEW MILL.—July 29.—For alteration and enlargement of Tenterhill, New Mill, near Huddersfield. Mr. F. W. Ridgway, architect, Borough Chambers, Dewsbury.

NEWTON ABBOT.—July 28.—For alterations of the back offices, &c., at the scattered homes, Greenaway Villas, Highweek. Mr. Samuel Segar, architect, Union Street, Newton Abbot.

NOTTINGHAM.—For the erection of a Board school on Sneinton Boulevard. Mr. F. B. Lewis, architect, Guildhall, Nottingham.

PORTSMOUTH.—July 29.—For the erection of a new discharge block and an additional storey to the nurses' block at the infectious diseases hospital, Milton. Mr. Alexander Hellard, town clerk, Town Hall, Portsmouth.

PRESTON.—Aug. 10.—For rebuilding New-in-Pendle bridge. Mr. W. Compton Hall, county bridgemaster, County Offices, Preston.

SALE.—July 27.—For the erection of a cemetery lodge at Brooklands, Sale. Mr. W. Holt, surveyor to the Urban

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SCOTLAND.—July 27.—For the erection of business premises, Jamaica Street, Peterhead. Messrs. Jenkins & Marr, architects, 16 Bridge Street, Aberdeen.

SCOTLAND.—July 27.—For the erection of a farm standing at Blair of Bourtee, Aberdeen. Mr. R. Durward, Estates Office, Blalack, Dinet.

SCOTLAND.—July 30.—For the erection of headmaster's house at Gordon, Berwickshire. Mr. T. R. Atkinson, architect, Earlston.

SHREWSBURY.—Aug. 3.—For the erection of a covered cattle sale ring (walls of brickwork and slated roof). Mr. W. Chapple Eddowes, borough surveyor, The Square, Shrewsbury.

SHREWSBURY.—Aug. 4.—For the erection of station buildings and other works at Shrewsbury station, for the joint committee of the London and North-Western and Great Western Railway Companies. Mr. A. E. Bolter, secretary to joint committee, Paddington Station.

STANLEY.—July 31.—For the erection of four-roomed house at Mount Pleasant, Stanley, Peases West. Mr. Peter Frater, Howden-le-Wear.

SUNDERLAND.—Aug. 10.—For the erection of St. Mary's new vicarage, Tyne Dock. Messrs. Joseph Potts & Son, architects, 57 John Street, Sunderland.

ULVERSTON.—Aug. 8.—For alterations and additions to the Ulverston and District cottage hospital, comprising new wards and operating theatre, &c. Messrs. J. W. Grundy & Son, architects, Central Buildings, Brogden Street.

WALES.—July 27.—For the erection of twenty-eight houses at Tirphil. Mr. T. Roderick, architect, Glebeland, Merthyr Tydfil.

WALES.—July 27.—For the erection of ninety-one houses at Rhymney. Mr. T. Roderick, architect, Glebeland, Merthyr Tydfil.

WALES.—July 29.—For the erection of a cottage and an extensive lodging-house, bath-rooms, &c., at Riverside, Merthyr. Mr. C. M. Davies, 112 High Street, Merthyr.

WALES.—July 30.—For the rebuilding of Nebo Congregational chapel, Glyncorrwg, Port Talbot. Mr. W. Beddoe Rees, architect, 37 St. Mary Street, Cardiff.

WALES.—July 30.—For alterations and additions to a shop and dwelling-house at Abercanaid. Mr. R. C. Jenkins, architect, Cefn Coed.

WALES.—July 30.—For the erection of seventy-two houses at Aberaman. Mr. T. Roderick, architect, Clifton Street, Aberdare.

WALES.—Aug. 1.—For the erection of steam laundry, stack, stables and other buildings, for the Aberillery Steam Laundry Co., Ltd. Mr. George C. Hillard, architect, Market Chambers, Aberillery.

WALES.—Aug. 1.—For the erection of forty-one houses at Ferndale. Mr. W. A. Lloyd, 20 Elm Street, Ferndale.

WALES.—Aug. 4.—For alterations and additions to the Corn Exchange inn, Gilwern. Mr. B. J. Francis, architect, Abergavenny.

WALES.—Aug. 4.—For the erection of a nine-stall stable, refreshment-room and outbuildings at the Navigation inn, Gilwern, near Abergavenny. Mr. B. J. Francis, architect, Abergavenny.

WALES.—Aug. 6.—For the erection of a chapel at Ynysybwll. Mr. Arthur O. Evans, Pontypriid.

WALES.—Aug. 7.—For the erection of new coastguard buildings at Cemaes, Anglesea, consisting of houses for three men and a watch-room, &c. Drawings and specification can be seen at the office of the Director of Works Department, 21 Northumberland Avenue, London, W.C.

WALES.—Aug. 10.—For the erection of forty houses at Pontnewynydd. Messrs. Fisher & Sons, architects, Club Chambers, Pontypool.

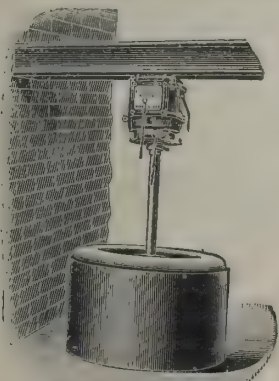
WALES.—Aug. 15.—For alterations and additions to the chapel for the trustees of Kidwelly Calvinistic Methodist chapel, Kidwelly. Messrs. John Anthony & Sons, Anchor House, Kidwelly.

WALES.—Aug. 26.—For the erection of a school at Troedyrhiw for 400 boys. Mr. J. Llewellyn Smith, architect, Aberdare.

WALTON-ON-THAMES.—July 31.—For the erection of a cottage hospital at Walton-on-Thames. Mr. John Gough, architect, 28 Craven Street, Charing Cross.

WARRINGTON.—Aug. 17.—For rebuilding church, Newchurch, near Warrington. Messrs. Travers & Ramsden, architects, 44 Church Street, Leigh, Lancashire.

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A LIST of Art Plates published in "The
Architect" will be forwarded on application to Gilbert
Wood & Co., Ltd., Imperial Buildings, Ludgate Circus.

WEST HARTLEPOOL.—July 27.—For the erection of a block of school buildings (new upper grade school) to accommodate 1,200 scholars, with outbuildings, caretaker's house, &c., in Elswick Road, Eamont and Belmont Gardens, West Hartlepool. Mr. Richard Holt, architect, Liverpool.

WHITEHAVEN.—July 30.—For pulling-down and rebuilding 12 Duke Street, Whitehaven. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

WHITEHEAD.—July 31.—For the erection of two good houses and shops at Whitehead. Mr. F. W. Lockwood, architect, 91 Victoria Street.

WORTHING.—July 28.—For the erection of fire-brigade station and firemen's cottages in High Street. Mr. Wm. Verrall, town clerk, Municipal Offices, Worthing.

TENDERS.

ASHTON-UPON-MERSEY.

For street works in Carlton Road (part of). Mr. F. HUTTON, surveyor.

BETHELL & SONS, Oldfield Road, Sale (accepted).

BARKING.

For street works and draining of Victoria Road and Loxford Road in their district, for the Barking Town Urban District Council. Mr. C. F. DAWSON, surveyor.

Parsons & Parsons	£1,917	18	7
D. T. Jackson	1,896	0	8
G. T. Anderson	1,836	18	0
B. W. GLENNY, Romford (accepted)	1,814	15	6

BLACKWELL.

For road improvements at Newton, in the parish of Blackwell, Mansfield. Mr. H. SILCOCK, surveyor.

I. Parton	£525	0	0
Lane Bros	517	0	0
T. Goodall	438	0	0
H. Ashley	372	0	0
J. Barnes	372	0	0
J. TOMLINSON, South Normanton, Alfreton (accepted)	329	10	0

BLACKHILL.

For street works in Queen Street, Blackhill, Durham. Mr. THOMAS KNOX, surveyor.

T. A. Turnbull	£123	10	0
G. J. CHRISTOPHER, Blackhill (accepted)	114	16	0

BRADFORD.

For the erection of an electricity station at Sunbridge Road destructor works. Mr. F. E. P. EDWARDS, city architect.

Accepted tenders.

J. Moulson & Son, Ltd., 86 Bower Street, excavator, mason, bricklayer, carpenter and joiner.

Roberts & Co., Union Foundry, Cutler Heights, ironfounder and smith.

G. Jackson, 48A Gaythorne Road, plumber and glazier.

T. Nelson & Son, Midland Yard, slater.

J. Lynn, 56 Manningham Lane, painter.

For the erection of new lodge at Harold Park, Low Moor. Mr. F. E. P. EDWARDS, city architect.

Accepted tenders.

Bradford Builders, Ltd., excavator, mason and bricklayer.

S. Andrews, Horton, carpenter and joiner.

J. H. Clapham, Bradford, plumber and glazier.

Bradford Plasterers Works' Department, plasterer.

Hill & Nelson, Bradford, slater.

J. W. Walton, Bradford, painter.

BRIGHTON.

For the supply and erection of 5,400 kw. of generating plant at the Southwick power-station and 5,000 kw. of motor-generator converting plant, with switchboards, instruments, &c., at the North Road power-station. Mr. ARTHUR WRIGHT, consulting engineer, Star Chambers, 30 Moorgate Street, E.C.

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L. & R. Barton £540 | 0 | 0 |

J. Cresswell 505 | 0 | 0 |

H. TWIST & SON, Brownhills (accepted) 498 | 0 | 0 |

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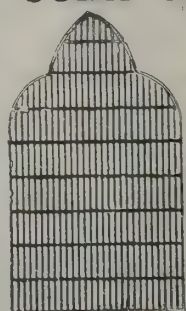
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Kerridge & Shaw 1,560 0 0
T. H. PRIME & SONS, Cambridge (accepted) . . . 1,401 0 0

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For the hot-water heating of the workhouse.
G. H. ROBINSON, Derby (accepted) . . . £1,730 0 0

CATTERICK.

For the construction of a burial-ground for the civil parish of Catterick, Yorks.
A. MCKENZIE, Catterick (accepted) . . . £225 2 6

CHEADLE.

For the erection of an isolation hospital, containing two pavilions, one for twelve beds and one for four beds, administrative block and laundry, &c. Mr. F. T. INSKIP, surveyor.
J. Bagnall £2,286 0 0
J. Pattison 2,270 0 0
W. Alcock 2,167 0 0
BRIDGETT & HAND, Stoke-on-Trent (accepted) . . 1,981 0 0

CHERITON.

For repairing and making-good a part of Church Road, Cheriton, Kent.
J. REEVES, Cheriton, Kent (accepted).
For street works in Alma Road, Broomefield Road, Ashley Avenue, Cheriton, Kent.

Accepted tenders.

Alma Road.
J. Reeves, Cheriton, Kent.
Broomefield Road and Ashley Avenue.
H. McCarthy, Cheriton.

COLDSTREAM.

For additions to the cottage hospital, Coldstream.

Accepted tenders.

W. Smith & Son, Coldstream, mason.
White & Elliott, Coldstream, joiner.
R. Rule, Coldstream, slater and plasterer.
T. B. Ford, Coldstream, plumber.

CROYDON.

For the erection of a clerk of works' office on the Norbury Estate.
ROBERTS & Co (accepted) £143 10 0

DARLINGTON.

For the repair, strengthening and carrying to its original height the spire of the church in Northgate.
Alexander, Nevins & Co. £300 0 0
W. Hogg & Sons. 260 0 0
TATTERSALL & SMITH, 87 Albert Road, Middlesbrough (accepted) 235 0 0

DORKING.

For street works in Hart Road and road connecting Rothes Road with Hart Road. Mr. G. SOMERS MATTHEWS, surveyor.
J. May £498 0 0
E. Iles, jun. 480 0 0
A. C. Soan 464 0 0
W. M. Woodland 462 8 0
A. Wilcox 460 10 0
FREE & SONS, Maidenhead (accepted) . . . 439 10 0

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T. Hopper 14 2 10
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E. DODD, Market Place (accepted) 10 10 0

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Accepted tenders.

R. Wallace, 29 Hope Crescent, Edinburgh,
Grange Loan and Kilgraston Road sewer . £513 8 3
R. Wallace, South Gray Street sewer . . . 209 15 6

GOLCAR.

For alteration and reseating to gallery at St. John's Church, Golcar, Yorks. Mr. ARTHUR SHAW, architect, Golcar.
J. VARLEY & SONS, Slaithwaite, near Huddersfield (accepted).

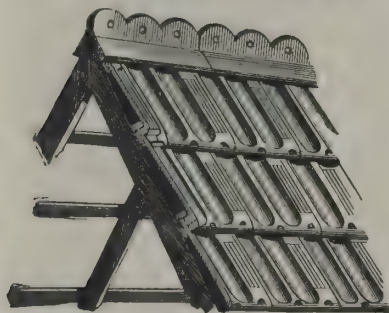
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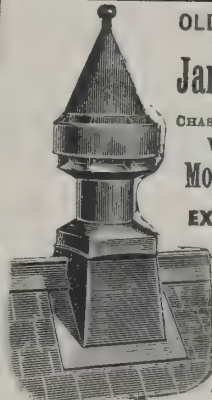
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Great Grimsby Coal, Salt & Tanning Co.	22	11	0
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Hewins & Goodhand	13	12	6
COOK, Grimsby (accepted)	13	0	0

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For street works in South Road. Mr. H. RICHARDSON, surveyor.

Currall, Lewis & Martin, Ltd.	£1,127	0	0
G. Law	1,095	0	0
J. Mackay	1,036	6	5
J. White, jun.	1,030	0	0
Fitzmaurice & Co., Ltd.	988	9	10
A. COOPER, Birmingham (accepted)	907	0	0

HERTFORD.

For sewerage and street works in Duncombe Road (part of) and Church Road (part of). Mr. JOHN HY. JEVONS, borough engineer.

Wallace & Inns	£2,345	0	0
A. C. Soan	2,171	0	0
W. H. Hinkins	2,117	0	0
Ekins & Co.	1,675	0	0
J. Jackson	1,663	0	0
A. T. Catley	1,643	0	0
E. Iles	1,548	0	0
M. S. Ketteringham	1,479	0	0
G. F. Tomlinson	1,436	0	0
G. BELL, Tottenham (accepted)	1,354	0	0
H. G. Miller	1,346	0	0
D. H. Porter	1,317	0	0

HORDEN COLLIERY.

For the erection of 150 cottages at Horden Colliery. Mr. E. W. LYALL, architect, 39 North Gate, Darlington.

A R Burton	£30,430	0	0
J. & J. Airey	27,550	0	0
J. G. Brown	25,630	0	0
H. Bell	23,475	0	0
S. WILSON, Old Shotton, Castle Eden, R.S.O. (accepted)	22,875	0	0
Pearson & Lathom (portion only)	17,800	0	0

HORSHAM.

For reheating Broadbridge House. Mr. R. RENWICK, surveyor.

Hillman & Murrell	£172	19	0
G. Potter	140	0	0
LINDFIELD & CO. (accepted)	118	10	0

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For erecting a verandah at the hospital. Mr. S. INSKIP LADDS, architect, Market Place, Huntingdon.

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G. Wrycroft & Sons, St. Neots, Hunts (conditionally accepted)	241	0	0

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W. Owen	1,360	0	0
T. Knight	1,329	0	0
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STEBBINGS & PANNETT (accepted)	£1,140	0	0
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For the erection of a private house, Chelsfield. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

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For alterations to the Wheatsheaf. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

G. SAXBY (accepted) £195 18 6

For alterations to the Maxwell Arms. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

H. Somerford & Son £113 0 0

W. OWEN (accepted) 87 0 0

For alterations to the Bull, St. Paul's Cray. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

H. M. Glassup £125 0 0

Somerford & Son 84 0 0

T. Knight 83 17 0

STEBBINGS & PANNETT (accepted) 73 0 0

For the erection of a detached cottage at Green Street Green, Chelsfield. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

B. J. White £475 0 0

W. Borer 369 0 0

J. Smith 365 0 0

W. OWEN (accepted) 360 0 0

For addition of a new choir vestry to parish church, Downe. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

W. Borer £245 0 0

J. Smith 240 0 0

W. Owen 238 0 0

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For additions and alterations to Ormesby, 120 Upper Tulse Hill, S.W. Mr. E. HARDING PAYNE, architect, 11 John Street, Bedford Row, W.C.

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Wm. Sayer & Son 680 0 0

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J. Marsland & Son 625 0 0

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J. STEWART (accepted) 136 0 0

For the erection of additional buildings and structural alterations and repairs to shop and premises, No. 835 Old Kent Road, S.E., for Mr. Wm. C. Freeston. Mr. J. HALSTED WATERWORTH, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E., and Welling, Kent.

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H. M. Dobson 327 0 0

S. R. Best 304 14 0

B. Gale 264 9 0

W. Coates 252 10 0

F. Dawes 246 0 0

HOOPER & WRIGHT, New Cross (accepted) 209 15 0

For the erection of additional buildings and structural alterations and repairs to shop and premises, No. 729 Old Kent Road, S.E., for Mr. Wm. C. Freeston. Mr. J. HALSTED WATERWORTH, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E., and Welling, Kent.

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W. Coates 249 0 0

S. R. Best 219 15 0

B. & A. GALE, Old Kent Road (accepted) 199 0 0

For the conversion into business premises of No. 262 Brockley Road, S.E., for Mrs. M. A. C. Beacock. Mr. J. HALSTED WATERWORTH, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E., and Welling, Kent.

S. R. Best £210 0 0

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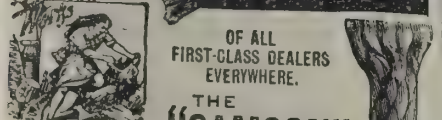
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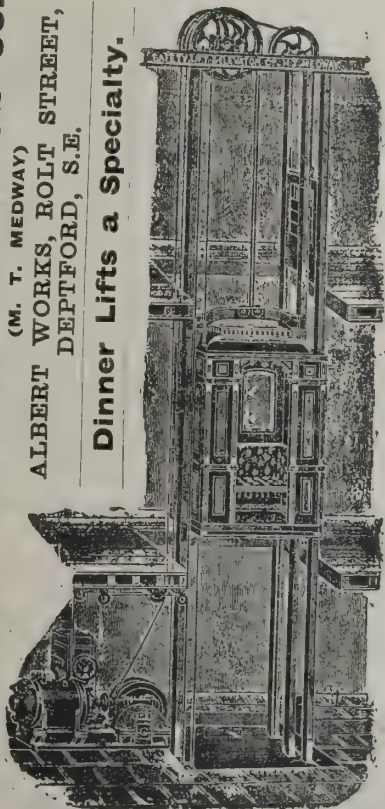
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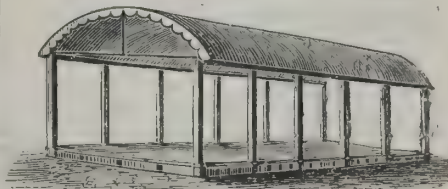
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LONDON—continued.

For rebuilding back addition to No. 6 Clifton Road, Peckham, S.E., for Miss Haines. Mr. J. HALSTED WATERWORTH, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E., and Welling, Kent.

H. M. Dobson	£172 18 0
S. R. Best	169 10 0
W. Falkner	155 0 0
J. Green	141 0 0

For the erection of four shops and stabling in rear, High Street, Welling, Kent. Mr. J. HALSTED WATERWORTH, architect and surveyor, 281A Queen's Road, New Cross Gate, S.E., and Welling, Kent.

E. J. Garlick & Co, Welling.

MARKET HARBOROUGH.

For building works at Boddington Glebe.

Mr. Band's Farm.

Wm. Boot	£205 15 0
Adams & Son	205 10 0
T. Cherry & Son	186 0 0
T. G. WATSON (accepted)	180 0 0

Mr. Brook's Farm.

Wm. Boot	£198 10 0
T. Cherry & Son	195 0 0
Adams & Son	173 0 0
T. G. WATSON (accepted)	162 0 0

PATTISHALL.

For the erection of five cottages at Pattishall, for Mrs. L. E. Glover.

Estimate No. 1, two Cottages.

Sturgess & Sons	£452 0 0
H. Branson	430 0 0
E. Green	398 0 0
J. Asplin & Son	395 0 0
T. Adams & Son	394 0 0
W. Beardsmore	378 0 0
G. J. Fisher*	370 0 0

PATTISHALL—continued.

Estimate No. 2, three Cottages.

Sturgess & Sons	597 12 0
H. Branson	590 0 0
T. Adams & Son	504 17 0
E. Green	498 0 0
W. Beardsmore	483 0 0
J. Asplin & Son	470 0 0
G. J. Fisher*	440 0 0

* Accepted subject to modifications.

SCOTLAND.

For laying about 330 lineal yards of 9-inch fireclay pipes, with manholes, &c., in North Street. Mr. ANDREW C. CROCKETT, burgh surveyor.

W. Duncan	£79 12 0
J. LAING & SONS, Inverurie (accepted)	79 10 0
J. Goodall	75 10 0

For drainage works for the Auchterarder Town Council.

W. MITCHELL & SON, Dock Street, Dundee (accepted)	£5,069 17 9
---	-------------

For macadamising, &c., Watson Street, Banchory. Mr. JOHN FERRIES, burgh surveyor.

J. McPetrie	£94 0 0
J. & H. DAVIDSON, Banchory, Kincardineshire (accepted)	78 4 0

SOUTHALL.

For the erection and completion of Holy Trinity parish hall, Lady Margaret Road, for the building committee. Messrs. SCOTT & HANSON, architects, 10 Basinghall Street, E.C. Quantities by architects.

Fassnidge & Son	£1,650 0 0
Dorey & Co.	1,593 0 0
Larke & Sons	1,590 0 0
Kearley	1,579 0 0
Plaistow	1,540 0 0
Lough	1,447 0 0
A. & B. Hanson	1,414 0 0
BROWN, Southall (accepted)	1,387 0 0
Architects' estimate	1,525 0 0

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C. Bradshaw & Son,
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STEYNING.

For laying a drain from the new workhouse to the intercepting sewers.

PARSON & SON, Hove (accepted) . . . £1,840 0 0

STRATFORD.

For repairs and decorations to Conference hall, Stratford.

W. O. Collingwood & Co. . . . £731 3 0

G. J. Hosking 581 15 0

James Baxter 513 0 0

FOWLER BROS, High Street, Stratford, E. (accepted) 499 0 0

SURREY.

For additions to a private house, Sutton. Mr. G. ST. PIERRE HARRIS, architect and surveyor, 8 Ironmonger Lane, E.C., and Orpington.

J. B. POTTER (accepted) £336 10 0

W. M. Dabbs & Sons 263 0 0

J. J. Shopland 250 0 0

E. J. Burnand 236 15 0

SWINDON.

For the wiring of the technical school. Mr. J. C. GRIFFIN, electrical engineer.

ALLBRIGHT & CO, Regent Circus (accepted) . £325 10 0

SWINTON.

For sewerage works and the erection and construction of engine-house and storage reservoir. Mr. HENRY ENTWISTLE, surveyor.

H. DAVIES & SONS, Pendlebury (accepted) . £5,269 17 0

TAMWORTH.

For the erection of stabling, &c., The Leys and 5 Colehill. Mr. J. W. GODDERIDGE, architect, 4 Bolebridge Street, Tamworth.

Stabling, &c.

Clarson & Son £2,103 0 0

B. Musson 2,066 0 0

WATTON & SONS, Tamworth (accepted) . . . 1,999 15 0

E. Williams 1,870 0 0

Offices, Colehill.

E. Williams 963 0 0

CLARSON & SON, Tamworth (accepted) . . . 954 0 0

TORQUAY.

For remodelling the Prince of Wales's inn. Messrs. E. APPLETON & SON, architects, Torquay.

ROWLAND BROS., Torquay (accepted).

TRURO.

For alterations to the workhouse hospital.

C. & J. HARRIS, Truro (accepted).

WALES.

For the erection of from 80 to 100 houses on the Park Estate, Treforest. Mr. A. O. EVANS, architect, Pontypridd.

Williams & James £190 0 0

Jones Bros. 188 7 6

Williams & James 180 0 0

C. Sara 180 0 0

Knox & Wells 175 0 0

E. B. Smith-Jones 171 10 0

WALTHAM ABBEY.

For the construction of foundations for the new public offices, fire station, &c., at Waltham Abbey. Mr. W. TURNER STREATHER, surveyor.

Ferguson & Co. £483 3 2

Jennings & Grenfell 468 16 0

M. Ketteringham 417 4 6

JOHNSON & Co, Waltham Abbey (accepted) . 390 0 0

WOOLWICH.

For pulling-down and rebuilding the club premises, 87 and 88 Beresford Street, Woolwich. Mr. J. O. COOK, architect, 1A Eleanor Road, Woolwich.

Foster Bros. £2,746 0 0

B. E. Nightingale 2,730 0 0

J. Lonsdale 2,700 0 0

Thomas & Edge 2,515 0 0

Davis & Leane 2,483 0 0

C. North 2,447 0 0

A. J. Ware 2,373 0 0

Sanford & Co. 2,324 0 0

Sims & Woods 2,317 0 0

W. HARRIS, Steam Joinery Works, Elizabeth Street, North Woolwich (accepted) . . . 2,103 0 0

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ILLUSTRATIONS.

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BUILDING AND BUILDERS.

A NEW Primitive Methodist church is being built at Heacham, near Hunstanton, and a member of the Anglican Church is giving the whole of the bricks, of the estimated value of 500*l*.

EAGLE parish church, Notts, which, it appears, has got into a terrible state of dilapidation, is to be restored at a cost of 2,000*l*, under the supervision of Mr. J. T. Lee, F.R.I.B.A.

THE memorial-stone of a new chancel, which is being erected in St Martin's Church, Brighouse, has been laid by Mrs. K. Aspinall. The alterations will cost about 4,000*l*, and towards the amount an anonymous donation of 1,000*l*. has been received.

THE Auchterarder Town Council has accepted the offer of Messrs Mitchell & Sons, contractors, Dundee, to carry out the drainage and sewage purification works for the burgh from plans and specifications prepared by Mr. William Allan Carter, C.E., Edinburgh, at an estimated cost of 5,065*l*. 17*s*. 9*d*.

THE memorial-stone of a new infants' day-school in connection with St. Edward's Catholic schools, Runcorn, was laid on Sunday afternoon. The new school which is in course of erection from the designs of Mr. Kirby, of Liverpool, will provide accommodation for 130 children, and will be in accordance with the latest requirements of the Board of Education. The building adjoins the old school, and a new playground is being enclosed round the two schools. The total cost will be about 2,000*l*.

At a special meeting of the Northern District committee of the County Council of Ayrshire at Kilwinning the question of extending and combining the waterworks of Kilbirnie and Glengarnock was under consideration. A sub-committee recommended that the scheme be proceeded with at a cost of from 21,500*l*. to 25,000*l*. A petition was presented against the proposal, signed by 374 persons in Glengarnock, while parties appeared and stated their objections on behalf of two large works there. By fourteen votes to three it was agreed to proceed with the extension.

At a meeting of the Workmen's National Housing Council, held on Monday evening at No. 7 St. Bride Street, E.C., with Mr. W. C. Steadman, L.C.C., in the chair, Mr. Gilbert moved a resolution cordially welcoming the candidature of Alderman Fred Knee, their secretary, as a Labour candidate for the Parliamentary Division of Clapham, and instructing the executive council to arrange a national appeal for funds to fight the election. Mr. Newland seconded the resolution, which was carried. Mr. Steadman expressed the hope that at the next general election of the London County Council Mr. Knee might be elected a member. Another resolution was moved by Alderman Dew to the effect that the Council should press on the London County Council and other local bodies that they should demand greater facilities and support from Parliament, rather than attempt to warehouse the people, and that municipal efforts should be directed to supplying better accommodation for less rent rather than less accommodation for higher rent.

THE new school which is to be erected by the Edinburgh School Board at Albion Road (off Easter Road) will be situated upon ground belonging to the Trinity hospital, extending to about an acre and a quarter. A three storey building, the school will give accommodation for about 1,400 children in two departments. The ground floor will be devoted to infants, and the upper floors to juveniles. A central hall, 58 feet by 30, will be provided for each department, and the classrooms, which will be placed on either side of it, will vary in size from that accommodating forty-five children to that accommodating seventy-three. A workshop will be erected in the boys' playground. The style of the new school, which has been designed by Mr. Carfrae, architect, will be the very simplest treatment of Renaissance, there being an absence of any elaborate architectural detail. Building operations cannot be commenced until the autumn, and it is hoped that occupation will be obtained on January 1, 1905.

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THE foundation of the new church, or chapel of ease, that is to be erected just below the vicarage at Churchdown, Gloucestershire, was laid on the 15th inst. The architect's drawings and model, which were exhibited in the Vicarage grounds, show that the church when completed will consist of a nave and choir 84 feet by 28 feet, sacarium 18 feet by 13 feet, north and south aisles 29 feet by 19 feet each, morning chapel 20 feet by 14 feet, vestries for choir and clergy, with organ-chamber over the former. The church, when completed, will accommodate about 460 sittings, and in the portion at present being built, viz. nave, choir and sacarium, about 316 sittings. The building is being erected with stone from the Painswick quarries, and the roofs will be boarded internally and covered with Broseley tiles, and the elevations are a simple treatment of Early English character. The amount of the builder's tender for the portion now being erected is 2,553*l.*, to which will have to be added the cost of lighting, heating, temporary vestries, boundary fences, architect's commission, &c., which will probably bring the total expenditure up to 3,000*l.* or thereabouts before all is completed.

DRAWINGS were prepared by Mr. Fred T. Beck, architect and diocesan surveyor, of Wolverhampton, for the rebuilding of the parish church of St. Thomas, Wednesfield, which was destroyed by fire some eighteen months ago, and the contract was placed in the hands of Messrs. H. Willcock, of Wolverhampton. The whole of the sacred edifice has been rebuilt, except the main walls of the nave and the tower at the west end, which have been repaired and pointed, and new balustraded parapets have been erected. The opportunity has also been taken for the enlargement of the church by the addition of a chancel sufficiently spacious to accommodate the choir and clergy, seats for whom were formerly in the nave. The organ-chamber has also been enlarged, vestries for the choir and clergy have been provided, and a semicircular apse, forming the sanctuary, has also been added at the east end. The building is constructed of brick with stone dressings, and the roofs covered with slates, the windows being glazed with ambetti glass throughout except those in the sanctuary, where the old stained glass which was saved from the fire has been utilised. The clock, which was entirely destroyed, has been replaced by a new one, and the bell has been recast. Internally the church has been remodelled in many respects, although the gallery system has been retained. The ceiling, which was formerly flat, is now arched in three spans. The galleries and roof are supported on rolled-steel stanchions. An

oak balustrading forms the gallery front, which terminates at the eastern end of the nave with curved returns, thus forming a good clear open space before the pulpit and organ-chamber. The choir and clergy stalls and pulpit are executed in fumed oak, and the seating throughout the remainder of the church in pitch-pine. A font, executed in Hollington stone, has been placed near the west end. The total cost of the whole of the works is about 5,000*l.* The church will shortly be reopened.

ELECTRIC NOTES.

THE Felixstowe District Council have resolved to purchase the existing works of the Electricity Supply Company, and to apply to the Local Government Board for a loan of 17,160*l.* for that purpose.

ALL the plans have now been prepared, and are under the consideration of the Admiralty authorities, for the electric installations at the dockyards provided for in this year's Navy estimates. The installations will be not only for lighting purposes, but will entirely displace steam as the motive power for all machinery and plant in the Royal dockyards. The necessary tenders are expected to be invited in a month or so, but meanwhile some progress with the work has already been made at Chatham.

TRADE NOTES.

MESSRS WM. POTTS & SONS, clock manufacturers, Leeds, have just completed a new illuminated turret clock at the Victoria Mansions, Hull, for Sir W. H. Gelder and Mr. Kitchen, architects, Lowgate, Hull, and another at Messrs. Powolmy's new restaurant, King Edward Street, Hull, for Messrs. A. Neill & Son, architects, Leeds.

WE are glad to observe that Mr. G. W. Riley, F.R.H.S., of Villa Rustica, Norwood Road, Herne Hill, S.E., has been awarded the Banksian medal for his effective display of summer-houses, &c., at the recent Royal Horticultural Society's Exhibition, Holland House, Kensington.

BECKINGHAM church tower, near Gainsborough, is about to be enriched by having a large chiming clock erected upon it. It will have two 6-foot dials, facing south and east. It will

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chime the quarters upon two bells and strike the hours upon the largest bell. The work is being carried out to the designs of Lord Grimthorpe by Messrs. John Smith & Sons, Midland Clock Works, Derby.

MR. ROBERT BOYLE, who was the proprietor of over four-fifths of the shares in Robert Boyle & Son, Ltd, ventilating engineers, 64 Holborn Viaduct, London, E.C., and 110 Bothwell Street, Glasgow, asks us to announce that in consequence of his having acquired the remaining shares, the business will in future be carried on by Mr. Boyle under its original title of Robert Boyle & Son.

VARIETIES.

MR. ROBERT J. FITTALL, deputy town clerk of Derby, has been appointed town clerk of Devonport.

SPECIAL arrangements have been made by the Chancery Lane Safe Deposit Company for the temporary safe-keeping of securities during the summer holidays and long vacation.

The new "Leicester Nurses' Home" which, by means of the generosity of the Earl of Leicester, has been added to the Norfolk and Norwich Hospital, was opened on the 16th inst. It has been erected in the English Renaissance style from designs by Messrs. Boardman & Sons, contains eighty bedrooms averaging 12 feet by 10 feet, and provides every comfort for an extensive nursing staff.

THE opening services in connection with the new Congregational chapel at Spencer's Wood, near Reading, were held on the 15th and 16th inst. The building, which with site has cost about 1,900*l.*, consists of a nave with narrow aisles, chancel, vestry, tower porch, store-room and heating chamber. The interior is finished in red brick with cement dado, and the open-timbered roof is supported on large oak posts on hard stone bases. The tower forms a picturesque structure and provision is made in it for access to a small gallery to be made at the end of the church when further accommodation is required. Absence of "style" has rather been sought than anything definitely marked, the effort being to produce something very quiet and in harmony with the country. The seating consists of open benches and accommodation is provided for 280 adults, exclusive of a future gallery which will hold 50 persons. The chapel is 63 feet in length and 31 feet in breadth.

The work has been carried out by Mr. Edwin Wheeler, of Spencer's Wood, from the designs and under the supervision of Messrs. Ravenscroft, Son & Morris, architects, Reading.

SANITARY INSTITUTE EXHIBITION.

CONTINUING our remarks on the exhibits at the above, which appeared in our last issue, we now purpose briefly referring to those only which more directly appeal to our readers.

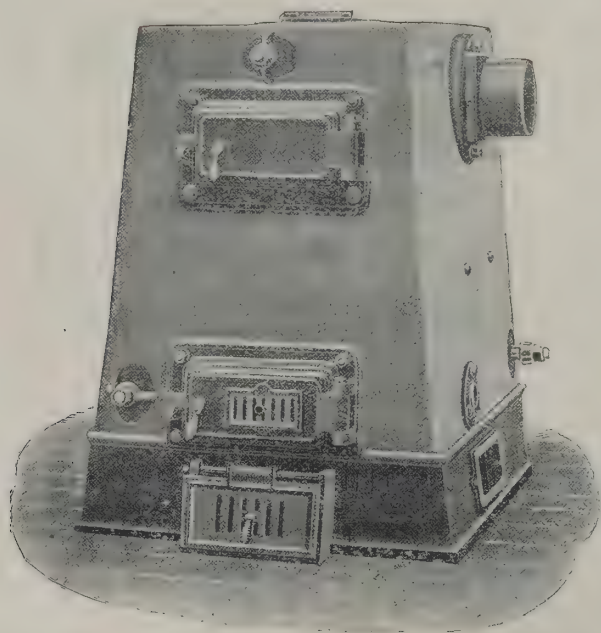
The advantages to be derived from dealing with town refuse by means of refuse destructors are now fully recognised, and may be summed up as the most sanitary and economical method of dealing with it, at the same time generating steam power that may profitably be utilised for many municipal undertakings, such as electric-lighting stations, &c.

Three methods are represented by models showing the different systems. That carried out by the *Horsfall Destructor Co., Ltd.*, we have previously fully described, and the plans and photographs of plants erected by the company testify to the wide area in which they have been installed.

Messrs. Heenan & Froude exhibit a battery of twin-cell destructors, in which all noxious gases travel between highly heated fire-brick reverberatory arches, and are cremated and consumed before they can reach the boilers or chimney obviating any nuisance from smell. The forced draught is supplied by "Heenan" fans, so arranged that the air is extracted from the clinking and tipping floors, thus keeping the building ventilated and drawing any smell to the fire. By the use of hot, dry air only, which absorbs any moisture in the refuse, the necessity of drying hearths is done away with.

Messrs. Meldrum Bros., Ltd., show a model of the top-feed "Simplex" destructor furnace with a water-tube boiler, the furnace forming one continuous cell with the grate in three divisions, charged alternately, so that a part of the grate is always at a very high temperature, insuring the complete combustion of obnoxious fumes.

The collection of house refuse in a speedy and cleanly manner is important, and two methods shown go very far towards solving this. The *Sanitary Bin Co.* supply a D-shaped bin with hinged cover, which is fixed in the passage wall, and so made that the bin cannot be taken out of its place by the tenant, but only drawn into the alley, where it is protected by a



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hingeless self-locking door, opened by two lifters, that at the same time release the bin, which is carried to and emptied direct into the cart. This bin was awarded a bronze medal.

Sanitaries, Ltd., show Dr. Quines's bin, the contents of which are tipped into a barrow and taken to the cart, otherwise much resembling the above. With the ashbin-stand is combined a cinder sifter, which gained the Society's bronze medal.

Messrs. Cloughton Bros. exhibit of leadwork, including ornamental head for rain-water pipe, ornamental sockets, junctions, &c., is most excellent. In addition are shown the "Niagara" lead-lined syphon cistern and several closet sets.

The Neville Engineering Co., Ltd., make a special feature of iron direction-posts, also Caink's jets and spreader for street watering carts and Caink's sewer ventilators.

The Ames Crosta Sanitary Engineering Co., Ltd., were awarded three bronze medals for Crosta's surface-water gullies, trapped under all conditions, and intercepting all road detritus; for Ames's stoneware conduits for electric cables with ducts for carrying away moisture; and for Ames's trapped drain box for tramway rails, giving free escape of surface water from the rail to the sewer.

Messrs. Slack & Brownlow gained a bronze medal for their germ filter having a preliminary strainer, and had a good display of domestic and pressure filters, including the "Cataract" filter for dealing with large supplies, specially adapted for factories, breweries, hotels, &c.

The Septic Tank Co., Ltd., by their exhibit explain their automatic system of dealing with sewage, which consists of a septic tank for liquifying all solid matter, and their automatic aerating filters.

Messrs. James Stott & Co., who were awarded a bronze medal, exhibit water-heaters for baths at workhouses and public institutions, also heaters for swimming baths, their well-known gas-regulators, ventilators of various forms, air-propellers and a water-driven fan specially designed to ventilate underground conveniences.

Messrs. J. Oakes & Co. had a varied exhibit of glazed stoneware pipes and fittings of excellent quality, and gained a bronze medal.

Messrs. John Hirst & Son's patent sloop shutters, channels and gratings were awarded two bronze medals, and are intended to supersede shallow sloop dishes and other devices for carrying off slops and rain-water. A hopper is partly recessed into the wall, with an inlet for sink waste pipe at the back, and opening to receive water from the exterior of building,

which flows through an open channel fitted with movable grate into the trap. Grates with adjustable openings to receive rain-water and other waste pipes can be supplied or the hopper can by a swan-neck bend discharge direct to trap with channel. The absence of leakage into foundations and the ease with which all parts can be cleansed are certainly advantageous.

Mr. Henry Jackson shows his patent water boiler, and also an improvement—the "Clarus"—designed to overcome furring. This boiler differs from a geyser in that no coils enter into its construction. It gave one gallon of boiling water per minute continuously three minutes after lighting.

Messrs. John R. Fyfe & Co. have a good display of drain-pipes and accessories, chimney-pots, &c.

Messrs. Mathews & Yates exhibited their well-known fans (which obtained the bronze medal) in various forms and for diverse purposes, including electric, steam and belt-driven; also the "Cyclone" air propeller, and their ventilating and electrical specialties.

Mr. A. G. Thornton had a fine display of surveying and drawing instruments.

The Richmond Gas Stove Co. and *Messrs. Wilsons & Mathiesons* and the *Davis Gas Stove Co., Ltd.*, show examples of the respective manufactures in gas stoves, &c.

The Shannon, Ltd., were represented by some of the office labour-saving devices, roll-top desks, letter-filing cabinets, the rapid letter copier, &c.

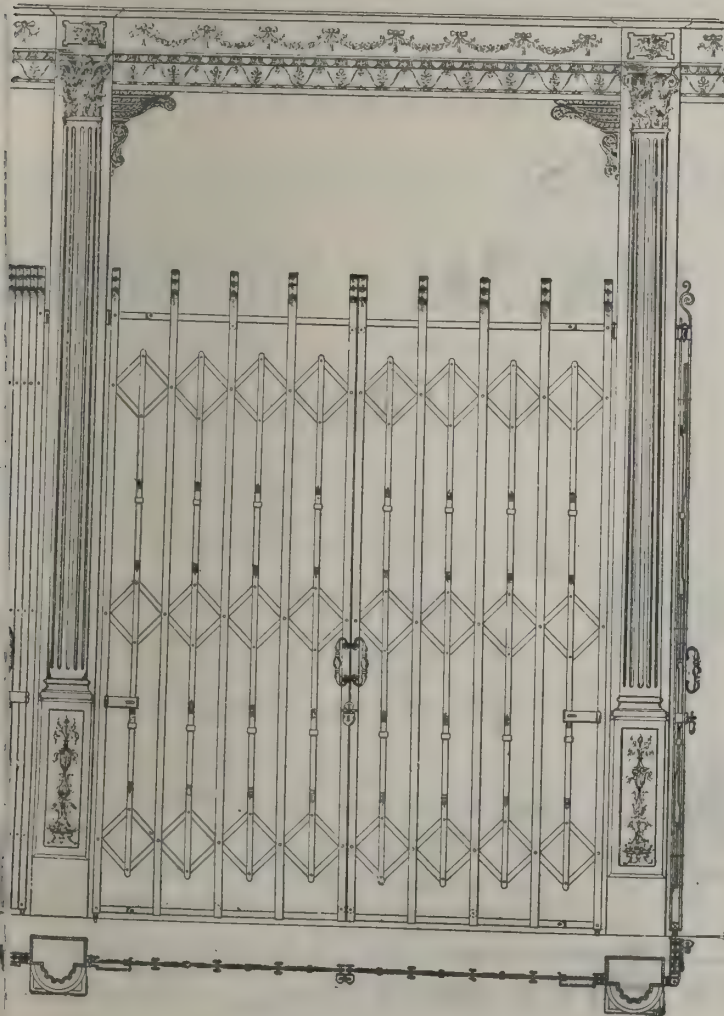
The Fireproof Plate Wall Co. were the only firm showing constructional work—Bruckner's patented system of fireproof partitions and wall, floor and ceiling plates for lining interiors of buildings for fireproofing and sound-deadening.

Messrs. W. Summerscales & Sons, Ltd., had a prominent space reserved, but it was occupied by a notice only that they were too busy to send an exhibit, and inviting the delegates to call at their works and see their laundry machinery in course of manufacture. An enviable position for any firm, and one that speaks well for the reputation of their machinery.

Thomas Harrison, Ltd., showed how by the use of the "Cyclo" large areas of wall space may be expeditiously and thoroughly whitewashed by a hand machine.

The British Sanitary Co. were again awarded the Society's silver medal for self-acting earth closets, of which numerous styles were shown, from those in highly-finished polished oak to the plainer, made specially strong for public works, &c.

The remaining exhibits must remain over, but we may probably refer to some of them later.



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DEATH OF MR. B. E. NIGHTINGALE.

It is with sincere regret that we have to announce the decease of one of London's well-known builders and contractors in the person of Benjamin Ebenezer Nightingale, of Albert Works, Albert Embankment, Lambeth, S E., who passed away on the 17th inst. at Richmond, at the somewhat early age of sixty-six, and whose interment took place at Norwood cemetery at noon



on the 22nd inst. The business of the late Mr. Nightingale is being carried on without any interruption by his sons, who have for years taken the active share in the management. The deceased had a long, uninterrupted, active and important building and contracting business throughout the past forty-eight

years, during which time he has carried it on in the parish of Lambeth, and for the last forty-one years at Albert Works, Albert Embankment. Mr. Nightingale was President of the Master Builders' Benevolent Institution, member of the London Master Builders' Association, freeman of the City of London, member of the Bricklayers and Tilers' Guild and the National Liberal Club.

Amongst the many and important buildings which have been erected by the deceased for eminent architects of his day may be mentioned the Council Chambers, Guildhall, and Leadenhall Market, from the designs of the late Sir Horace Jones; churches and St Olave's rectory, from the designs of the late Ewan Christian; monasteries and church from designs by the late John Bentley; the Stationers' Hall chapel at the Consumptive Hospital, centenary hall at the Royal Masonic Institute for Girls, from the designs by the late Ebenezer Greig and the late Mr. P'Anson. Also buildings from the designs of Sir John Taylor, Mr. Aston Webb, R.A., and Mr. R. Fabian Russell, and of many other eminent and distinguished architects.

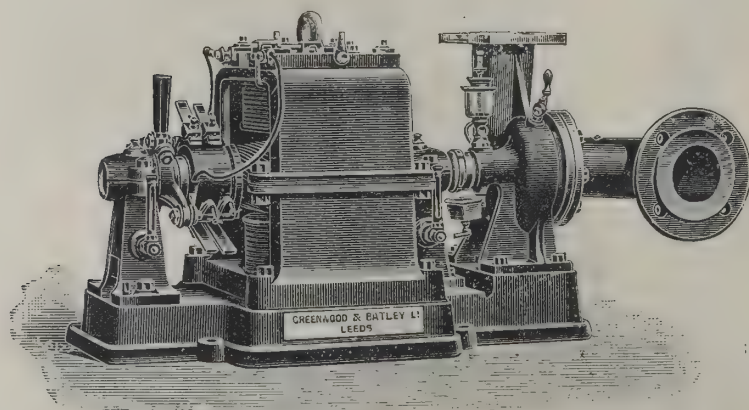
FOR the convenience of holiday makers on the Continent cheap tickets will be issued to Brussels, available for eight days, *via* Harwich and Antwerp. Passengers leaving London in the evening reach Brussels next morning. For visiting The Hague, Amsterdam and other parts of Holland, the Rhine North and South Germany, and Bale, for Switzerland, special facilities are offered *via* the Great Eastern Railway Company's Royal British Mail Harwich-Hook of Holland route, through carriages and restaurant cars being run to Berlin, Cologne and Bale. The General Steam Navigation Company's fast passenger steamers will leave Harwich for Hamburg on July 29 and August 1, returning August 2 and 5. The United Steamship Company of Copenhagen steamers will leave Harwich for Esbjerg (on the west coast of Denmark) as usual.

A SYNDICATE has been formed to supply Kirkcaldy with swimming and other baths. Plans have been prepared for the building by Mr. J. D. Swanston, architect. The estimated cost is from 10,000*l.* to 12,000*l.*, and the site proposed is at the corner of Tolbooth Street and Sands Road. Recreation rooms, billiard and reading-rooms and a well-equipped gymnasium will be included in the building. The want of public baths has been long felt in Kirkcaldy.

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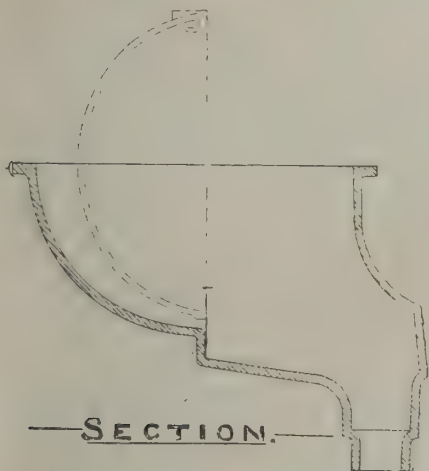
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THE "TIP-UP" WASH BASIN.

THE "Tip-up" basin so universally adopted in buildings of all classes, from royal palaces and mansions of the nobility to the working-man's club and institute, is due to the inventive genius of that pioneer of sanitary improvement, the late Mr. Geo. Jennings.

Various improvements have from time to time been effected in construction, and amongst them may be mentioned the facility offered for the removal of the basin in order to cleanse the receiver underneath, but this has not altogether satisfied the whims and caprices of certain extreme faddists, who maintain that there are people who will not take the trouble to remove the basin to cleanse this receptacle. To meet their views, his successors (who follow so worthily in his footsteps) have introduced an important improvement in the design of the receiver, which prevents the pollution of the whole surface, renders the removal of the basin unnecessary and the portion



affected is readily cleaned without trouble. This improvement is a notable one, as the contents of the basin are discharged instantaneously, leaving no sediment round the sides, and leaving no valve liable to derangement it is practically everlasting.

ing as regards durability, and is simple and efficient in action. Its adoption by H.M. the King for his private use in the royal palace augurs well for its continued success, and sanitary scientists should take an early opportunity of inspecting the arrangement at Messrs. Jennings's well-appointed showrooms in the Lambeth Palace Road, where this and many other novelties of a sanitary nature are to be seen.

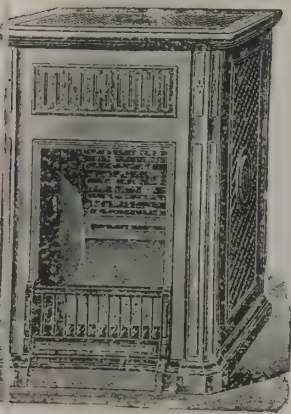
BUILDING MATERIALS IN SOUTH AFRICA.

In response to an inquiry as to the nature of the demand for building material in South Africa, the Board of Trade have received from Mr. Henry Birchenough, who recently visited that country as British Trade Commissioner, a short report on the subject, from which the following has been taken:—The demand for building material of all kinds is very active, not only in Cape Colony, but in all the South African colonies at the present time. A great impulse has lately been given to the sanitation of towns, so that a large and sustained demand for sanitary pipes may be expected, especially as the substitution of water-closets for earth-closets is gradually effected. The city of Johannesburg is just embarking upon an expenditure of 500,000*l.* for drainage purposes, of which it is expected that 100,000*l.* will be spent in pipes. When it is carried out there will be all the service connection with the houses to be made, which will involve a further large demand. Speaking generally, adds Mr. Birchenough, the present time is very favourable for any attempt to get into the trade in building materials in South Africa, as the demand is large and stocks are not yet replenished. Details as to prices could only be obtained on the spot, but it is believed they are remunerative to all those engaged in the trade. All high-priced goods—that is, high priced on this side—should be avoided.

THE MAUGHAN AUTO-GEYSER.

A NEW and very convenient apparatus for the supply of hot water for bath and domestic purposes is being introduced by Maughan's Patent Geyser Company, Ltd., the strong point of which is that it is entirely automatic in its action, so that when hot water is required it is only necessary to turn on the tap, whether over bath, lavatory or sink, when the auto-geyser at

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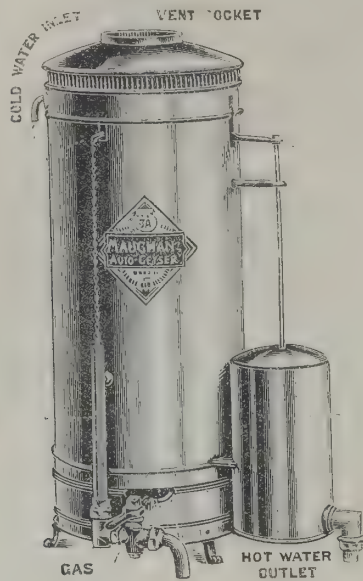
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once supplies hot water until the tap is closed, when the cold water and gas supplied are automatically shut off.



The auto-geyser can be fitted in any part of the house above the taps to be supplied; the drawing of hot water allows cold water to enter by means of a ball valve, the movement of this opens the gas supply, and the gas is lit by the pilot jet. The "Maughan" being an instantaneous heater, by the time the incoming water has passed through it is heated. When the hot-water tap is shut the lower chamber of the auto-geyser fills and the ball valve shuts off the cold water, while the gas valve is released and falls by its own weight.

A notable feature of the "Maughan" auto-geyser is the absence of rubber or leather diaphragms or tubes in the mechanism. With the exception of the rubber seating of the ball valve (which is easily renewed if worn), the whole of the automatic arrangements are of copper or brass.

BROAD FLANGES IN STANCHIONS.

THE determination of the best form of steel columns stanchions is generally a difficult operation for the architect engineer. Generally it is supposed that it is prudent to dispose the material as far from the neutral axis as is possible. But the breadth of the sides or faces should also be taken in account, and thus we find cases of a web plate and angles strengthened by wide channels or thick plates. The load does not always act in a perpendicular direction that is mathematically true, and for oblique thrusts wide sides have advantage. The subject merits investigation. The following table showing the economic value of Differdange beams in comparison with ordinary sections will interest our readers:

Section. Inches.	Weight per Foot. Lbs.	Lesser Moment of Inertia.	Economic Value. Moment of Inertia ÷ weight per ft.	Ratio of Economic Values.		Comparative Load 7½ tons on 14-ft. Str. Tons.
				9-inch by 7-inch Joist.	Differ- dange Beams.	
9 by 7	58	46'300	7985	—	—	41'7
8½ by 8½	44	53'228	1'210	100	151'5	48'0
9½ by 9½	51	73'032	1'465	100	183'5	65'4

The above figures show that both sections of Differdange beams are lighter and stronger than 9-inch by 7-inch British standard joist, the 8½-inch by 8½-inch being over 52 per cent more economical, and the 9½-inch by 9½-inch 183 per cent more economical. Differdange beam 10-inch by 10-inch 55 4 lbs. shows a similar superiority over British standard joist 10-inch by 8-inch by 70 lbs.

UNDERGROUND BAKEHOUSES.

A PAPER on "Requirements in regard to Underground Bakehouses" was read by Dr. T. L. N. Barlow, medical officer of health, Bootle, at the Liverpool Health Congress. He pointed out that quite lately the Home Secretary had declared that it was the deliberate intention of the Government to close underground bakehouses, and he had moreover refused to consider the question of compensation. In Bootle two-thirds of all the bakehouses were underground—twenty-two out of thirty-three about half of those were distinctly bad as regards light, ventilation and sanitation generally, and most of them could not with any reasonable amount of alterations be made suitable and they would, therefore, he presumed, be closed. As to the remainder, when the advantages and disadvantages of ea-

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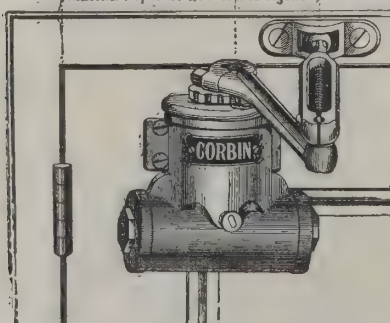
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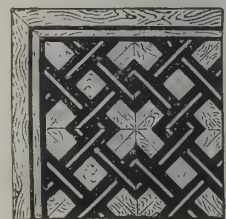
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were weighed up, there was not much to choose between any of them. To close all these would entail much hardship upon the bakers, and would also cause much inconvenience to a large number of people. The standard requirements were in every way admirable, but each bakehouse would have to be considered on its own merits when application was made for the necessary certificate. He did not think it would be possible to draw a hard and fast line with regard to the minimum height of underground bakehouses, and he personally should be inclined to allow a less height than that if the ceiling of the bakehouse were some little distance above the level of the ground adjoining, and to adopt a more stringent view in respect to the height of the bakehouse where entirely underground. There could be no doubt that many underground bakehouses, although not in themselves unsuitable, were made so by reason of the utter carelessness and neglect of the occupiers, some of whom had no idea of cleanliness, and looked upon the bakehouse as a fit place for the storage of any filth. In his opinion it would have been of great advantage if power had been given by the Act to the sanitary authorities to revoke the certificate of suitability if the occupier of any underground bakehouse persistently neglected to keep the premises in a cleanly condition, or allowed them to fall below the standard requirements in other respects. The paper also alluded to the great difficulties that would be experienced in dealing with underground bakehouses in view of the long notice—2½ years—given in the Act before the closing of these places should be enforced.

Dr. Marsden said that probably in a few years they would see an Act of Parliament for the total abolition of underground bakehouses, and it would be very hard to cause owners to spend large sums of money at the present time.

ELECTRIC POWER FOR MINES.

WE understand that the Park and Croesor Slate Quarries, of Penrhyn-y-deudraeth, North Wales, are now putting down electrical plant for supplying power throughout their quarries. The generating plant consists of a 250-kilovolt ampere three-phase generator, direct coupled to a hydraulic turbine, capable of giving 2,750 volts at 40 cycles when running at a speed of 600 revolutions per minute. A somewhat novel feature for this country is the special form of flexible coupling which is used to connect the three-phase generator shaft to the shaft of the

hydraulic turbine. In order to render the plant as automatic in action as possible special attention has been paid to the turbine governing apparatus, which is of the spear type. A Thury regulator is being installed in order to maintain a practically constant voltage with varying load. The two exciters are driven by a separate turbine, and are so arranged that either one or other machine can be used for excitation purposes as required. The transmission line consists of bare copper over-head conductors, carried on wooden poles, a high-tension cable connection being used for supplying the current required in the quarries tunnel. The line voltage is 2,750, this voltage being reduced down by means of transformers of 220 volts for the motor circuits.

There are six motors to be installed in the mill, each of these motors being capable of giving 10 brake horse-power at a speed of 570 revolutions. A centrifugal pump direct-coupled to a three-phase motor is being installed for draining purposes, and the winding gear, which was formerly driven by means of a steam-engine, is now being arranged to be driven electrically. For this latter purpose, a three-phase motor with starting and reversing gear is being installed, the gear being so arranged that, in the event of current being cut off from the winding motor, the electric brakes are immediately applied, thus preventing any accident due to failure of the electrical supply. An electric locomotive will be provided, the continuous current for this purpose being supplied at a pressure of 500 volts by a motor generator situated in the mine itself.

The whole of the contract for the electrical work has been placed with Messrs. Witting, Eborall & Co., of Temple Bar House, while the turbines are being supplied by Messrs. Gilbert Gilkes.

THE HOLYROOD DRAINS.

THE following correspondence relating to the sanitary arrangements of Holyrood Palace, which caused Lord Leven and Melville to take up his quarters at the North British Hotel during this year's sittings of the General Assembly of the Church of Scotland, has been published. The first is a letter from Mr. W. W. Robertson, of H.M. Board of Works, Edinburgh, dated October 22, 1902, to Sir Schomberg M'Donnell, stating that in accordance with his instructions he had made a thorough examination of the various sanitary arrangements at Holyrood Palace, and enclosed a detailed report with rela-

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tive plans. In this report Mr. Robertson enters into minute details, and in order to make his report as clear as possible, shows in parallel columns the "present arrangements" and the "proposed arrangements." What followed upon this report is thus told in the papers, the papers marked * not having been seen by the Earl of Leven and Melville until after the correspondence had been closed:—

**Memorandum by Professor Corfield, M.D., Consulting Sanitary Adviser to H.M. Office of Works*

I have read the report referred to in the foregoing memorandum, and am of opinion that the condition of things described in that report is such that Holyrood Palace ought not to be occupied by His Majesty, even for the shortest period, until the sanitary arrangements have been thoroughly reorganised. This will take a considerable time, and in view of the fact that, as I am informed, the High Commissioner must occupy the palace in April and May next, could not well be commenced until the month of June, and would certainly not be finished before the end of the year, if even then.—W. H. CORFIELD.

19 Savile Row: November 12, 1902.

**Secretary, H.M. Office of Works to Principal Architect in Scotland.*

Mr. Robertson,—Probably the best plan would be to commence work immediately after the visit of the High Commissioner is over; but there is an objection, viz. that it would not be possible to finish the work before the visit of the King, which will probably take place in August. If you began the work directly after the visit of the King in August, I imagine that it could be completed before March 31, 1904.—S. M'DONNELL.

October 23, 1902.

**Principal Architect in Scotland to Sir Schomberg M'Donnell.*

Secretary,—If the work is begun after the visit of the King in August, it might be finished before March 31, 1904.

October 26, 1902.

W. W. ROBERTSON.

Sir Schomberg M'Donnell to the Earl of Leven and Melville.

My dear Leven,—Windsor tells me that you are anxious to know the precise position as regards the sanitary works at

Holyrood before you go abroad to-morrow. Let me say once that you need not be in any way concerned. The works will not be begun until after the King has paid his visit to Edinburgh, and at present we do not propose to touch them until the third week in next August or thereabouts. As regards the present condition of the drains, I think that though they are far from being perfect or up-to-date, there is no danger to be apprehended to yourself or your household. It would, however, be a very different matter to have the King and Queen staying there with a huge Court. Under such conditions existing system of drainage would be quite inadequate. I hope this will set your mind at rest. In any case, we should do nothing whatever which would inconvenience you as High Commissioner.—Yours very truly,

March 18, 1903.

SCHOMBERG K. M'DONNELL

The Earl of Leven and Melville to Sir S. M'Donnell.

Windsor promised that I should see the report on the drains, &c., at Holyrood. Please send it to me at Hôtel des Îles d'Or, Hyères, as soon as possible. Please, too, tell me what was done in examination of drains. I am very anxious about them. We are a huge number of people. I believe a palace, except the Queen's rooms, is full during our stay. The drains have been in any way touched please let me know. The King, I believe, will not go to Holyrood, though he may go to Edinburgh. Please let me hear at once; I am disappointed not to have the report to-night. I can make no arrangements in contracts until I have it. We start early to-morrow.—Yours truly,

LEVEN AND MELVILLE.

Roehampton: March 18, 1903.

The Earl of Leven and Melville to Sir Schomberg M'Donnell.

One line before I leave England to beg again that you do not fail to send me at once the full report on Holyrood drains, which made you decline to be responsible for the King's going there; and please tell me precisely what has been done in examination of the drains—and since. Were they tested by water test, or smoke, or in what way? and were they, or any part of them, opened out, tapped, or moved? Is there any connection with large sewers, or do they drain into a cesspool? In short, please tell me all about it. My responsibility is one way as heavy as yours, and the number of people I take there is very large. Windsor promised me full information—it is only right I should have it. If the drains are safe nobility will be more pleased than me, but unless I am allowed to know

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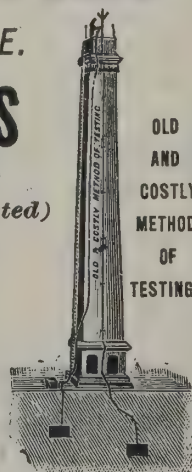
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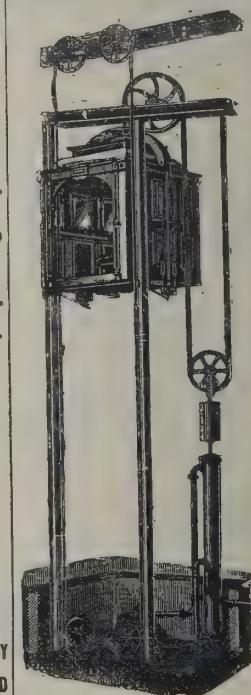
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For Index of Advertisers, see page x.

about them, I must go to an hotel for the General assembly. Just off to Hôtel des Iles d'Or.—Ever yours,
LEVEN AND MELVILLE.
Please send it at once, I have many important arrangements, contracts, &c., dependent upon it.
Rochampton: March 19, 1903.
(Copy)

The Earl of Leven and Melville to Lord Windsor.
Dear Windsor,—Please see that the report on Holyrood drains and full information as to what has been done to them is sent to me here at once. I had a note from M'Donnell, who, instead of sending me particulars and the report which forbids the King's going there, merely gives me his opinion that I have nothing to fear. No doubt he is sincere, but he may be mistaken. I cannot risk it, especially as he himself told me in October that they were very bad indeed. I take a large number of people to Holyrood—seventy or eighty at least. The water-closet is practically in our bedroom. I want (1) the report which made M'Donnell speak of the drains as being very bad; (2) to know if they have been tested; if so, how? whether by smoke or water, or in what other way? (3) whether any of the drains or pipes have been in any way disturbed since I was at Holyrood last May? (4) whether there is any communication with any large sewer? (5) or whether it is all gained into a cesspool? and, if so, where that cesspool is, and whether it has been disturbed in any way? I wrote from Rochampton to M'Donnell on the 18th and again on the 19th to emphasise the importance of sending me these particulars at once. This is the 22nd and I have nothing on the subject. I have to make large contracts and important arrangements for putting up some 70 or 80 people (I think) in the palace, as well as for dinners of 100 or 150 almost every night. This cannot be done in a short time. It is already very late. I am sure you will see the necessity of sending me all possible information without delay. I have written to Kenneth Mackenzie, who is purse-bearer and manages all the contracts, to do nothing till he hears from me. It is too important a matter to leave to M'Donnell's private opinion. The drains were, I think, all right last year. Have they been in any way disturbed? If so, how? I do beg you to send me full particulars without delay.—Sincerely yours,
LEVEN AND MELVILLE.
Will any reliable sanitary authority guarantee the drains as safe for me and my guests and household?
Grand Hotel, Hyères: March 22, 1903.

Sir Schomberg M'Donnell to the Earl of Leven and Melville.
March 27, 1903.
My dear Leven,—Here is the report on the Holyrood drains. I cannot send you the plans, as we want them here, but no doubt the report will be sufficient for your purpose. If you want an independent opinion upon the sanitary condition of the house and its safety I think you would find that Mr. Alexander Welch, of the Sanitary Protection Association, Edinburgh, is the best man. He drained three large houses for the Duke of Buccleuch.
Had you let me know four weeks ago that you wanted to see this report I would have gone all through it with you with the plans before you went abroad.—Yours very truly,
SCHOMBERG K. M'DONNELL.

** Sir Schomberg M'Donnell to Principal Architect in Scotland.*
Mr. Robertson,—Sir Kenneth Mackenzie called here today. I have arranged with him that an inspection shall be made by an independent sanitary surveyor (probably Mr. Welch) on behalf of the Lord High Commissioner, in order to determine whether it is safe for him to occupy the palace. Please assist him in every way.
S. M'DONNELL.
March 27, 1903.

** Principal Architect in Scotland to Sir Schomberg M'Donnell.*
Secretary,—Sir Kenneth Mackenzie called in Sir Henry Littlejohn. I showed him the drainage plan and went with him in detail over the report of the survey which I submitted to the Board last October. I afterwards visited the palace with him and accompanied him in his inspection. I was careful to point out all known defects to him. He has furnished a report to Sir Kenneth Mackenzie, and as I have been allowed to see it I append a copy for the Board's information.
April 1, 1903. W. W. ROBERTSON.

Sir Henry Littlejohn's Report.
I beg to report that I this day, Tuesday, March 31, accompanied by Mr. Robertson, of His Majesty's Office of Works, examined the sanitary condition of the Royal Palace of Holyrood. I previously went carefully over the plans of the existing drainage, and while these in some respects do not represent the advanced views of the present day as to domestic drain-

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age, the drains themselves are in good working order and perfectly sweet. The sanitary conveniences I found in an excellent state of repair and cleanliness. I tested them—especially those in the apartments to be occupied by His Grace the Lord High Commissioner—and I have no hesitation in declaring them in good working order and free from the slightest taint. Applying my long experience as a sanitary official to this royal residence, I beg to certify that I have never examined any mansion in a sounder sanitary condition or one more fit for the healthy residence of a large establishment.

(Signed) HENRY D. LITTLEJOHN, Knt, M D,
medical officer of health for Edinburgh, professor in the University,
and medical adviser to the Local Government Board.

The Earl of Leven and Melville to Lord Windsor.

My dear Windsor,—I received three days ago your telegram saying "Extracts of Holyrood Report shall be sent at once." Thanks for the intention, but no word on the subject has reached me.—Yours sincerely,

LEVEN AND MELVILLE.

My great desire is to know whether the drains have been tested or meddled with since last year. If they have I should not like to risk living there with my wife and a large number of people, unless some well-known and reliable sanitary expert will guarantee them safe.

March 28, 1903.

The Earl of Leven and Melville to Sir Schomberg M'Donnell.

I have received the report on Holyrood drains; there is no time now for inspection, and I am writing to Kenneth Mackenzie that with rubble drains imperfectly jointed, with a flat bottom liable to be very quickly choked, and w.c.'s in bedrooms, there must be danger. You do not answer my question as to whether the drains have been disturbed; but it appears to me from the report that they must have been in order to see that they were imperfectly jointed, &c.—Truly yours,

LEVEN AND MELVILLE.

I could not have come sooner than I did, being forbidden by the doctor to travel. I saw Windsor the morning I arrived in London. I do not think any inspection or smoke test would make the palace safe.

Grand Hotel, Hyères: March 30, 1903.

(Enclosure in note of April 6, 1903, from Sir Kenneth Mackenzie to Lord Windsor.)

The Earl of Leven and Melville to Lord Windsor.

My dear Windsor,—I have now received a copy of the report of the drains of Holyrood. In view of the fact that the drains are as reported, defective, easily and quickly choked, with a public sewer at one end and w.c.'s practically in the bedrooms of the palace, I cannot live there. My best thanks to you for the information. I cannot say how much I regret the necessity of going elsewhere.—Sincerely yours,

LEVEN AND MELVILLE.

Grand Hotel, Hyères: March 30, 1903.

Sir Schomberg M'Donnell to the Earl of Leven and Melville.

My dear Leven,—By now you will have received Sir Henry Littlejohn's report on the drains at Holyrood. You will see that he considers it quite safe for you to go there. Now that you have the advice of this independent expert, the decision, of course, rests entirely upon yourself. We should naturally prefer that you should be guided by him rather than by common people.—Yours ever,

SCHOMBERG K. M'DONNELL.

Sir Kenneth Mackenzie to Lord Windsor.

10 Moray Place, Edinburgh: April 6, 1903.

Sir Kenneth Mackenzie presents his compliments to Lord Windsor and begs to explain that the accompanying letter from Lord Leven was held up till he should hear again after sending a report on Holyrood Palace from the medical officer of health. That report appeared to him to be sufficiently satisfactory, but he hears to-day that Lord Leven is not disposed to incur a risk.

The Earl of Leven and Melville to Sir Schomberg M'Donnell.

Yours of the 3rd has reached me here, and you will probably have heard from Kenneth Mackenzie that I could not, after reading the report of the drains, take my wife and a crowd of people to Holyrood. It is a great loss to us, to say nothing of the inconvenience.—Truly yours,

LEVEN AND MELVILLE.

Algéciras: April 12, 1903.



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The Architect.

THE WEEK.

WE referred lately to the action taken against the Borough Council of Paddington for setting up a hoarding which would prevent the plaintiff, Mr. BOYD, from having a view of an open space in charge of the defendants. There was some friction between the parties. It was alleged that the plaintiff who was erecting flats on one side of the open space had agreed to open a passage 30 feet wide, which would enable the public to have access to the gardens that were transformed from the disused burial-ground of St. Mary, Paddington. As an effectual means to secure that end the Borough Council erected the hoarding, and the plaintiff's tenants in consequence were deprived of the view from the windows on which they had calculated. Mr. Justice BUCKLEY gave judgment for the defendants. But the Court of Appeal came to the conclusion that the plaintiff was entitled to an injunction which would restrain the Council from dealing with the garden in any other way than was prescribed by the Metropolis Local Spaces Act of 1881, and especially that nothing should be done to interfere with the access of light to the plaintiff's windows. This judgment is of importance, for it defines the power of local bodies in respect to properties. If the ownership of the ground was with an ordinary individual it would be presumably allowable to erect a hoarding or other structure on the land regardless of the inconvenience which the plaintiff and his tenants might suffer. The lights were not ancient, and seemingly there were no easements of any kind over the ground. But when land is acquired by a public body for a definite purpose there must be no departure from what was contemplated. At the same time there should be hesitation in giving an opinion on the subject which would appear to be contrary to the judgment of so eminent a lawyer as Mr. Justice BUCKLEY.

THE subject assigned this year by the Academy of Fine Arts for the Prix de Rome in architecture offered greater variety than usual. It was a public place in a great city. According to the regulations there was to be on one side a long and wide avenue, and among the buildings to be introduced were a bourse, a military club-house and a palace for art exhibitions. The competitors took advantage of so exceptional an opportunity, and a vast number of architectural forms were seen. The first prize has been awarded to M. LÉON JAUSSELY, a native of Toulouse, born in 1875, pupil of MM. DAUMET and ESQUIÉ; the second prize was won by M. JEAN WIELHORSKI, of Nancy, born in 1874; and the third prize by M. HENRI JOULIE, of Valence, born in 1877 at Valence. The grand prize for sculpture was awarded to M. EUGÈNE PERON, pupil of M. ARRIAS, the second prize to M. JULES BOUDIER, pupil of L. THOMAS, and the third to M. MARCEL GAUMONT, pupil of M. BARRIAS.

THE payment for making up new roads in front of building estates leads to a large amount of litigation. A curious case of the kind was heard last week in the Court of Appeal. The Rev. JOHN WOOD TODD widened a roadway in Bromley in order that his property on one side might be used as building sites. Mr. MOORE, who owned property on the other side of the road, agreed to contribute 20% towards the expenses. But it was stipulated in the deed that "his heirs, or assigns, or his or their tenants, shall not be under any liability to contribute to the maintenance or repair of the said roadway and sewer and main drain, or any works connected therewith, but on the contrary the same and every part thereof shall be wholly and solely maintained by the said J. W. TODD, his heirs, executors, administrators, or assigns, unless and until the same shall be taken to by the parish or some other local or public authority." That was in 1888. Thirteen years afterwards the local authority demanded the frontagers make up the road, and on failing, the work was executed and the cost apportioned. Mr. MOORE paid 10%, and sought to recover that sum from

the defendant. Mr. Justice BIGHAM gave judgment for the plaintiff. The defendant appealed, and the judgment in the Court below was reversed. Their lordships thought there was a liability on the part of the defendant, but that the word "contribute" was intended to be limited to contributions for maintenance and repairs which from time to time became necessary for the roadway which had been made by the defendant, and to the expense of which the plaintiff had contributed. The conclusion will surprise many. Their lordships, however, took into consideration the whole deed, and not the particular part abstracted above. It should serve as a warning that when a road is mainly intended to benefit property on one side, extraordinary care should be taken to limit liability in equitable proportions.

OLD London Bridge at the beginning of the eighteenth century consisted of nineteen openings, besides the unused drawbridge. It was 74 feet in breadth, but as the buildings on each side occupied a depth of 27 feet, there was only a roadway of 20 feet clear in the centre for traffic. The houses were not continuous, for about the centre of the bridge a space sufficient for three was left unoccupied, except for a low stone wall with an iron palisade through which views of the shipping and river could be seen. The vacancy was left for the drawbridge, but at the time there was no opening used for ships; any that passed had to strike their masts. The rents of the houses sometimes brought in as much as 3,000*l.* a year. The bridge was always thronged, and was, moreover, dangerous, for there was no division between the carriageway and the footpaths. In 1756 it was necessary to obtain an Act of Parliament in order to facilitate traffic by the removal of the houses. The old bridge lasted until 1823, when arrangements were made for erecting the structure designed by JOHN RENNIE, which is now being widened for the first time. The occupiers of the picturesque houses, like those in an ordinary street, were liable to the payment of tithes. The Act provided that the payments in lieu thereof to the rectors of St. Magnus and St. Olave, Southwark, should be paid henceforth from the Bridge House Estate funds. In addition there were yearly emoluments from surplice fees, Easter offerings, while there were large amounts paid for the maintenance of the poor of the Bridge, who afterwards became chargeable to the two parishes. An inquiry, which has been undertaken by the Bridge House Estates Committee of the Corporation, shows that at least two of these charges, amounting to 418*l.* a year, have been regularly paid since the Act came into operation, and that the sum of 61,272*l.* has been in that way expended. The case is interesting as showing fidelity to an agreement, although the property on which the charges were levied have vanished. This is not, we believe, the only instance in London in which sums continue to be paid as dues, although it is impossible to discover the whereabouts of the properties.

THE Government Bill for amending the law relating to the housing of the working classes, if passed, will remove many of the obstacles which retard improvements. Loans for the purchase of sites need not be repaid in less than eighty years, and loans for buildings in from sixty to eighty years, at the discretion of the Local Government Board. That was the recommendation of the committee on the Repayment of Loans. Corporations and other authorities have advocated that a century should be allowed in the case of land and sixty years for buildings. At present, the term is forty years. Henceforth the whole of the duties under the Acts will be undertaken by the Local Government Board. The procedure for obtaining land will be simplified, and schemes presented by local authorities can be modified by the Local Government Board. Property which is condemned can be dealt with in a very summary manner. The local authority can recover from the owner any excess of cost remaining after the sale of the materials. The local authority, when it takes over property, will have all the powers of a landlord, and can evict tenants who decline to leave. It will also be allowable to arrange parts of buildings as shops, and in that way much convenience to tenants will arise.

EARLY LANDSCAPE ART IN ITALY.

A VISIT to an exhibition of the Royal Academy or of one of the societies in London is enough to reveal to a stranger the affection which Englishmen retain for the representation of their country. In none of the foreign exhibitions is that branch of art so abundantly exemplified. There are some zealots who maintain that Englishmen are better adapted to succeed in it than in figure-painting, and an artist can hardly do justice to genre subjects without some skill in the portrayal of natural scenes.

The pleasure afforded by landscape to the painter as well as to the spectator is so peculiar it is difficult to realise that at any time a similar practice was not in favour. But as far as can be ascertained the ancient Greeks, who for many reasons should be considered the most artistic of all races, did not appreciate their own land as regards its beauty, and were indifferent to representations of it. The Romans, in that respect at least, imitated them, although they had before their eyes landscapes of a more diversified character. In early Christian art we see vine branches bearing grapes, together with birds and other objects derived from the country occasionally executed, but the whole of the paintings are suggestive of life that was found within buildings. If a palm tree was shown it had a symbolic meaning. Clouds were sometimes necessary to give character to scriptural incidents, but they are rigorously conventional. As late as the ninth century the river Jordan was suggested by means of a figure with an urn, which was a common practice with Roman sculptors when it was required to introduce a river. Mr. RUSKIN mentions the case of a monk who would not allow himself the pleasure of gazing from his window on a splendid Alpine scene, and we may be sure the early ascetics were more self-denying. It is not therefore difficult to understand why for so long a period the illuminated manuscripts, although presenting the forms of fruits and flowers, give only unreal and fantastic representations of landscape. It seems as if it were believed that the figure alone deserved attention, and that the earth was unworthy of notice. An engraving of the mosaic in the tribune of St. John Lateran, in Rome, which was the work of JACOBUS TORITI at the close of the thirteenth century, will suggest how far landscape art had advanced at that time. The spectator is supposed to be in the heavens with the saints, and to look down on the Jordan and its banks. The fishes are as large as the fishermen or their boats. Ducks are even larger. The trees are placed standing apart. The scale appears the more remarkable when compared with the colossal figures of the saints. DA VINCI said it was a proof that GIORIO was a country lad, for he began by drawing on the rocks the goats in his charge. Almost instinctively artists in those days symbolised the earth by means of animals of some kind.

The liberties which could be taken in depicting a country scene are apparent in the fresco of the *Triumph of Death* at Pisa, long ascribed to ORCAGNA. Here we see a number of cliffs, but so small that a few animals are sufficient to cover the top of one of them. Two or three hermits near a roadside chapel can hardly find standing room. And yet in the cliffs are openings to the infernal regions. It might be presumed that whoever painted the picture had never stood in the country and could only imagine it from the descriptions given by most inaccurate observers. The pictures of the *Misfortunes of Job*, by VOLTERRA, also at Pisa, show by the difference in treatment between the buildings and the hills how much more familiar artists were with architecture than with the forms of trees or hills. Yet the work could not have been completed earlier than the last quarter of the fourteenth century. Some authorities state that AMBROGIO LORENZETTI about 1337 produced a picture which was considered exceptional for its truth to nature and which is now in Siena. But it cannot be denied that his paintings are more remarkable as curiosities than as masterpieces of art.

According to KUGLER, GOZZOLI seems to have been the first who was captivated with the external world. As if it were a revelation to him, he made much of the novelty. He could not entirely free himself from the power of conventionalism, but it is beyond doubt that he endeavoured to represent real scenes, although, owing to the erroneous principles then accepted, he modified his

realities in order that they might not depart too widely from precedent. Allowance should be made for painters who acted like him, for as pictures in those days were generally intended or executed for churches, landscapes backgrounds were of inferior value if compared with figures. GOZZOLI lived until 1498, and it is therefore clear that attention to landscape art was not given until a comparatively late period. Earlier in the century brothers VAN EYCK were attracted by natural scenes independently of Italian influence, and set an example which was afterwards followed by Flemish artists.

It is impossible to explain the neglect of scenery. materials lent themselves to composition as easily then as now. There were not only beautiful forms, but great masses in which to exhibit light and shade, and, moreover, the earth was allied to that sky which the painters regarded as contiguous to heaven. It may have been a fear that if justice were done to the earth the figures of men would lose their importance; or, it may be, earth was considered as no more than a place of exile which ought not to be much admired by the Christian. The painters were also rarely possessors of land, and perhaps undervalued what they could not attain. Whatever the reason, it is remarkable that in a period when figure-painting flourished and there were great masters, the scenes in which incidents were supposed to occur were rendered in a childish manner. We ought besides to remember that several of the painters began as metal-workers or as sculptors, and in both classes of work landscape is without much use.

It is noteworthy how many of the Italian backgrounds represent rocky and hilly country, although the majority of the painters were lowlanders. When conventional forms were employed, it did not matter much where the artist was born, for he was indifferent to nature. A dweller in a plain is always sure to be struck by elevation. Mr. RUSKIN might not have become so eloquent about mountain scenery if he were a native of the Scottish Highlands. GOREAU, with his customary honesty, acknowledges how he was impressed by Switzerland, where his stoic placidity was overcome, and even after many visits, when in his old age he was engrossed by the study of mineralogy. The rocks which we see in DA VINCI'S picture in the National Gallery are suggestive of a man who is endeavouring to reconcile conventionalism with realism; and we often perhaps to look upon them simply as efforts to suggest the impression which some disturbed region made upon him. In the observations on landscape, which form part of the treatise ascribed to him, it is evident that he had studied from nature. If he seems to devote more attention to the buildings which were visible than to the trees, that was a prejudice of the time. Thus, when he says that a high tree seen from a distance looks broader at the top than at the base, and that the spaces between battlements appear wider than they are, we have records of phenomena which could only come from an observer. Contrive, he says, that the trees in your landscape be half in shadow and half in the light; they are best represented when the sun is veiled with thin clouds, for then they are darkest in those parts nearest the earth. There are also suggestions about the green colour seen in the country, the difference of the appearance of the sea when looked at from the shore or from a ship; about smoke, rain, seasons, climates, winds, &c., which indicate a knowledge of the theory of landscape. It is not improbable that DA VINCI was acquainted with PIERO DELLA FRANCESCA, who was one of the pioneers of realism in landscape.

Both GENTILE and GIOVANNI BELLINI were excellent in landscape, and indicated a time when it was to be predominant in a picture. They were not alone of their contemporary, ANTONELLO DA MESSINA, showing an adaptation of landscape in which nature was not altogether neglected. But of all the Venetian painters TITIAN was unsurpassed as a landscapist. Indeed he was always far more at home in the country than in the city. He does not appear to have cared much about showing buildings, but the native of Cadore was always delicate in putting trees on canvas. If we may judge from copies like that which appeared in the Royal Academy last year, the trees in the *St. Peter Martyr* were almost as attractive as the figures. REYNOLDS says they "are plainly distinguished from each other by the different manner with which

branches shoot from their trunks; as well as by their different foliage." It might almost be said to have originated the "landscapes with figures" of later years. If VASARI is to be believed, TITIAN kept some German landscapists for months in his house in order that he might study with them. Mountains, woods, plains and the sea were alike within the scope of his power. GIORGIONE'S *Concert* in the Louvre rivals TITIAN'S works in the richness of the landscape; that part of the picture at least everyone can understand.

All the painters we have mentioned employed landscape simply as an accessory. It is hazardous to say who was the first landscape-painter, but it is generally believed that ANNIBALE CARRACCI was at least one of the earliest, if not the first, who made the experiment of treating a natural scene instead of an incident. He is known, however, principally by his figure-pieces. SALVATOR ROSA was a more daring artist. He, too, had gained a reputation for historical, or rather classical, paintings. But as he loved tragic incidents he sought out or created views which expressed similar ideas in nature. His bandits are in keeping with his landscapes and his landscapes with his bandits, and his seas are fit to be ruled by pirates. In the eighteenth century we come to CANALETTO, who was the first foreign artist to find pleasure in English scenes. He was a sign of the end of the old conventionalism, for his English pictures could not be so satisfactory if he had not realised the necessity of observing and recording local characteristics. He was, therefore, a counterpart of CLAUDE, who came from the Vosges, and was glad to find employment as cook and colour-grinder for AGOSTINO TESSI in Rome. Then he began to paint. He returned to France in the expectation of remaining there, but Italy had made too strong an impression on him, and he went back to Rome. He was not without an effect on his contemporaries in Italy, and indeed to many amateurs he is the representative landscapist of Italy.

In Italian figure-pieces progress is less marked than in landscape. The examples of the earlier artists are imaginative. It might be said of CLAUDE'S works that they possess the same quality but in another form. For attaining so much it was necessary for the art to be subjected to many changes. Whether CLAUDE or any native artist represented Italy with the same power as TURNER may be doubted. From the latter's success it is evident that the landscape-painter should have much of the cosmopolite in him, and endeavour to be faithful to nature in all places instead of transferring the characteristics of one country to another.

CO-OPERATION IN TESTING MATERIALS.

IN any country where old churches or castles have survived there is likely to be confidence in the strength and endurance of modern building materials. Great Britain is in that way fortunate. It can be said there still remains belonging to nearly the entire Christian era. When the Commissioners who were appointed to discover one for the Houses of Parliament conducted their inquiries, they took care to refer to ancient structures which exemplified the endurance of each variety of stone, and more attention was given to that class of evidence than to the experiments which were specially carried out or the chemical tests employed. Everyone knows how the stone recommended for use did not uphold its reputation, though there were geologists on the commission, they failed to realise that the strata in quarries might not be of uniform strength, nor was sufficient allowance made for the evil effects of a London atmosphere. In spite, however, of this failure, people still believe that any variety of stone which has been used in an old building continues to be adapted for modern purposes. That assumption has had much to do with the recent opposition to restoration, for it was supposed that an English stone which has resisted the atmosphere for a few centuries must be able to defy all the vicissitudes of time during a still longer period. A more scientific study of lithology would suggest that stone is subjected to the universal law of decay, and care should be taken to provide against danger whenever any symptom of weakness is seen.

In past times builders relied almost entirely on the materials supplied by nature. The Romans no doubt

baked thin but lasting bricks, and employed concrete that was often excellent, especially when in large masses. In those cases clay and gravel were adapted for utilisation in new forms. But in our time there is a manufacture of artificial materials on an unprecedented scale. The employment of artificial stone, for instance, is extending every year, and there are occasions when it is considered preferable to the created material. Steel is analogous to artificial stone, for although the component substances are derived from nature, like every other production of man they are subjected to a treatment by which their character is altered. "Stone and wood," says VIOLLET-LE-DUC, "are always stone and wood, and whether we use these materials in a structure in greater or less quantity, their function is the same among all peoples and in all times." Since his time stone is being superseded, and chemists are now endeavouring to impart qualities to wood which will change its nature. Creosoting and other preservative processes by which timber ceases to be attractive to fungi, white ants, sea-worms, &c., have already accomplished a great deal, but much more is required and will no doubt be attained. One remarkable fact is that it is no longer necessary to make any attempt at deception by presenting an artificial production as if it were a natural substance. Portland cement obtained its name from Portland stone, and ignorant people supposed there was some close connection between the two. In America, France and Germany the name is still preserved. If a stronger and better cement could be invented in our day it would probably be called after the patentee. Roman cement also cannot be said to be identical with the material employed by ancient or modern builders in Rome.

Artificial materials, unlike those of nature, can be improved. There is no doubt, for example, that Portland cement as now manufactured is more efficient than that produced before GRANT undertook the vast series of experiments for the Metropolitan Board of Works. From so constant and minute an investigation it was demonstrated how far improvements were desirable, and manufacturers were only too willing to produce slow-setting or quick-setting, fine or coarse varieties. Unfortunately there is a drawback. If we are not able to add strength to stone we cannot make it weaker, unless by using insufficient quantities or by placing it in such a way as to render it more liable to deterioration by the atmosphere. But inferior artificial stone, inferior steel, inferior bricks, inferior cement can be manufactured, and outwardly at least they will appear to possess the qualities that are desirable. ROBERT STEPHENSON, who was the first to employ wrought-iron on a large scale in railway bridges, once told a Parliamentary committee that he was unable to distinguish the difference between a strong plate and a weak one. Since his time the art of deception has advanced, and examples of its power are to be seen in many structures.

The difficulty which in STEPHENSON'S day was experienced in obtaining satisfactory iron is recorded in the history of the Britannia Bridge. In order to insure the employment of only the strongest quality, it was arranged that the directors of the Chester and Holyhead Railway Company should purchase all the iron required and sell it at a fixed price to the contractors for the construction of the tubes. By the arrangement it was believed that only the finest possible quality of iron would be supplied, as was essential for the success of so daring an experiment. "The best plates" were specified. Very inferior plates were, however, sent in by some ironmasters. An investigation followed, and then it was discovered that the word "best" signified the commonest and cheapest plates, higher-priced plates being "best best," the class of plates STEPHENSON intended to use being known as "best-best-best." It was therefore necessary to pay a far higher price than was mentioned in the tenders. The difference in tensile strength between the "best" and the "best-best-best" in 1846 is not now to be ascertained. In the experiments it was found that 20 tons per square inch was the utmost that could be taken as an average. But so conscientious a man as ROBERT STEPHENSON must have felt that from his ignorance of the phraseology of the market he was running the risk of erecting a structure that would be too weak for its purpose and would jeopardise many lives. To refer to such a case may seem to be going

back to ancient history. In modern specifications there are numerous examples of a similar weakness. "Best" is one of the vaguest of adjectives that can be employed in treating of materials. Where it is possible there should be a standard. As regards strength it is possible to apply a test by having pieces broken in a testing machine. But there are other qualities where the trial is less summary.

As we have said, an excess of confidence about building materials prevails in old countries. In America, where a building a century old is accepted as antique, there are no prepossessions, and all materials, whether natural or artificial, are subjected alike to severe tests. In the United States a society for testing materials has been formed. It does not supersede any efforts which were made by many engineering societies, and, indeed, it is willing to co-operate with them. But the range of engineering is so vast there may not be a single paper on the strength of materials read in the course of a session. It is a subject which concerns individuals as well as communities, and consequently municipalities, railway companies, users of materials on a large scale, and manufacturers, willingly render any services which further the researches needed for the extension of knowledge. Unfortunately no institution of the kind exists in England, and when attempts are made to establish general rules relating to any kind of materials there is widespread indifference, and the results, however carefully ascertained, are not received as authoritative. The Americans, moreover, regard their labours as only part of those of an international society, and consequently a comparison of results is made with those obtained by French and German experimenters. In that way it can be determined how far effects are uniform, and an approach is made to the realisation of general laws.

We have just referred to the difficulty of a standard in iron or steel. If we examine the statements of ironmasters there would seem to be little uniformity in the degree of strength, and it varies according to districts and works. In America there are apparently several general standards for tensile strength. One is from 52,000 lbs. to 62,000 lbs. per inch; another is from 60,000 lbs. to 70,000 lbs.; a third is from 55,000 lbs. to 65,000 lbs. As yet there has been no adoption of any single limit. So long as it is believed that steel is equal to 70,000 lbs., or 31 tons, per inch, it is concluded that manufacturers who would be willing to accept a lower degree of strength would be driven out of the market. The competition in the production of steel is extreme, and the splitting of the difference between 60,000 lbs. and 70,000 lbs., or the adoption of 65,000 lbs. as an official standard, is supposed to be one of those compromises which would be worthy of a class of producers among whom there is continual progress. Whatever may be the result eventually, it is quite evident that a 60,000 lbs. test can be specified without misgiving. It is not enough to have quality specified. Respectable manufacturers employ staffs of experts who feel a pride in their materials, and it is admitted that costly tests will be undertaken in order to satisfy an architect or engineer that the material prepared answers its description.

Another material which excites almost as much interest in America as steel is cement. Concrete and artificial stone are in demand, and their value depends in great measure on the quality of the cement employed in the manufacture. A large amount of preliminary work has been done by the committee of the Testing Society on the subject. But, in order to obtain as wide a scope as possible for the inquiry, samples of five Portland and four natural cements with sand have been sent to no less than thirty laboratories in different parts of the United States. Copies of the rules adopted by the society were enclosed with them to insure that uniformity of tests should be secured. Some of the results have been received, and when all arrive they will be co-ordinated to enable conclusions to be drawn by users of cement. A third subject is the coating of steel and iron by paint or other material. The experiments relate to structures above ground in tunnels, in sea-water, or in places like the roofs of engine sheds which are subjected to steam. This is an inquiry which has great interest for railway companies, for unless bridges and roofs can be protected rust will shorten their duration. In consequence, an immense number of experiments are now in progress on railway works.

Towns spring up so quickly in America a cheap pavement is indispensable. Asphalt has been employed largely, but its use is only temporary. It has been found that gas is a greater enemy than water to asphalt, but worse than all are gas and water. If the lower face of the asphalt remained permanently damp the material was sure to deteriorate, and for that reason the concrete base was recommended to be as impervious as possible. Some surprise was caused by the conclusion that asphalt, however excellent in paving, was not adapted as a waterproofing material. The subject of road construction in general is not considered by the Americans as exhaustive. A road-material laboratory has been set up by the Government in Washington, and the information derived from experiments will be disseminated throughout the State. An establishment of the kind is much needed in this country, for the operations on country roads are mostly dictated by empiricism.

The interest which the American Society for Testing Materials has excited is shown by the increase of membership which takes place every year. In 1902 the number was 175; this year it is 349. In some societies manufacturers are excluded, but in this new society they are allowed to stand on an equal footing with other classes of members. In that way the suspicion about the good faith of produce is removed, and we feel no doubt that all manufacturers will realise that they have a duty to fulfil which is not selfish. On the other hand, the investigations will possess a practical aim, and will not resemble some in which the main object was the enlightenment of novices. Five or six years' experience has shown that only good results can follow from the investigations, and if a similar society were founded in England the results would probably be no less advantageous.

THE MANCHESTER INFIRMARY.

THE building committee of the Manchester Royal Infirmary received applications from fifty-six architects who were desirous to take part in the competition for the new building in Stanley Grove. On the recommendation of the assessors Mr. J. J. Burnet, twelve were selected as follows:—

Mr. H. Percy Adams, London; Messrs. Campbell, Douglas & Paterson, Glasgow; Messrs. Edwin T. Hall & John Brook, London; Mr. W. Cecil Hardisty, Manchester; Messrs. Heathcote & Sons, Manchester; Messrs. Henman & Cooper, Birmingham; Mr. John W. Simpson, London; Messrs. Thomson & Sandilands, Glasgow; Mr. A. Hessel Tiltman, London; Messrs. Waddington, Son & Dunkerley, Manchester; Messrs. Thomas Worthington & Son, Manchester; and Messrs. Young & Hall, London.

The board of management have approved of the arrangement.

THE ROYAL VICTORIA HOSPITAL, BELFAST.

THE erection of the Royal Victoria Hospital, Belfast, which was opened by the King and Queen on Monday last, was rendered possible by means of a Victoria Jubilee Fund inaugurated by Mrs. Pirrie, of Ormiston, during the Lord Mayoralty of her husband, the Right Hon. W. J. Pirrie.

An excellent site of 6 acres at the junction of Grosvenor Street and Falls Road was granted by the City Council; and the committee having inspected several large modern hospitals appointed as architect Mr. William Henman, F.R.I.B.A. (who had then recently completed the General Hospital, Birmingham).

When the arrangement of the building was under discussion reference was made to correspondence in the Press as to the possibility of superseding the pavilion type of plan. The chief objections to pavilion buildings of several storeys are the distances apart of the wards, the necessity for staircases and lifts, the excessive labour to the staff, and the difficulties of supervision and administration. He therefore suggested it might be better to spread out the wards on one storey only, placed side by side, without intervening open spaces, lighted from the ends and by clerestory side windows.

These ideas commended themselves to the majority of the committee, and Mr. Henman was requested to develop the design on the lines he had proposed. Working drawings were prepared in conjunction with his partner, Mr. Thomas Cooper, A.R.I.B.A., and in the autumn of 1900 a contract was entered into with Messrs. McLaughlin & Harvey, builders, Belfast, who have carried out the work in a satisfactory manner. Messrs. Henry Lea & Son were appointed consulting engineers, Mr. G. A. Flower acted as clerk of works, Messrs. W. H. Stephens & Son being the quantity surveyors.

The accommodation provided is for 300 patients, eight

resident medical and surgical officers, a superintendent, a matron, seventy-eight nurses, and thirty-two male and female servants. The novelty in the design is that the whole of the accommodation for patients is on the ground-floor level; the wards (nineteen in number), with their accessory rooms, being placed side by side, lighted by large end windows, having a pleasant outlook to the south over park-like land, and by side clerestory windows. This becomes practicable by the employment of economical means by which the whole atmosphere of the buildings is changed ten times per hour in summer and seven times in winter without the necessity for opening any windows. The air is cleansed and tempered, so that both by night and day the whole hospital is maintained in a fresh and wholesome condition, without draughts or open fireplaces, and the noise, dirt and attention they require.

The administrative buildings of four storeys and basement, in three separate buildings, provide a spacious domed entrance-hall (above the porch to which is a bronze statue of the late Queen Victoria executed by J. Wenlock Rollins, sculptor, of Chelsea, and presented by the Right Hon. W. J. Pirrie); a board-room and general office in the central block, and accommodation for the resident staff; the nurses' home, the attendants' and servants' quarters, the dispensary, kitchen department and store-rooms in the east and west wings. These buildings open on the ground floor into a main corridor, running east and west, 440 feet in length by 9 feet in width, to the south of which open branch corridors leading to seventeen wards and their accessory rooms. The principal wards (each for fourteen beds) are alternately arranged for male and female patients, there being eight wards for medical, eight for surgical and one for gynaecological patients, each honorary physician and each surgeon having control of two wards, one for either sex.

On the north side of the main corridor are two wards for ophthalmic cases, each for six beds.

In connection with each group of four medical wards there are two clinical rooms and a large classroom for students, and to every pair of surgical wards there is an operating-room in addition to special operating-rooms for the gynaecological and for the ophthalmic departments, each completely fitted with sterilising, electrical, lavatory and other necessary appliances, as well as surgical instruments. Near by each of the nineteen large wards is a separation-ward for two beds. A ward-kitchen serves each pair of wards (except for the gynaecological cases, where the department is self-contained). Bath-rooms and conveniences are attached to all the principal wards, as well as linen cupboards, and there are store-rooms for patients' own clothing.

Two detached buildings are provided towards the west end of the site for isolation purposes, one being for six and the other for four beds, with kitchens, conveniences and nurses' bedrooms.

To the west of the administrative buildings is the out-patients' or "extern" department, consisting of a large waiting hall, with medical and surgical consulting-rooms, two operating-rooms, registrar's office, &c., grouped around, all on the ground floor, and connected with the main corridor of the hospital, retiring-rooms for students being provided in the basement.

Further to the west is a detached building containing the pathological department, which comprises a laboratory and microscopic examination-room, a post-mortem-room, mortuary, exhibit and viewing-rooms.

At the east end of the site are two detached buildings—one is the boiler-house, containing two powerful steam boilers, disinfecting apparatus and an incinerator (the chimney from the furnaces holding a prominent position is treated architecturally); the other building is the laundry, fitted with very complete steam appliances. Soiled linen is taken from the wards to the end of the main corridor, sent down a glazed earthenware tube, and conveyed to the receiving-room in the laundry, when, after making the circuit of the washhouse, drying closets and finishing department, it is transferred to the linen store in the basement of the administrative buildings, ready for reuse.

The cost, including engineering requirements, was 300*l.* per bed.

THE STRAND IMPROVEMENT.

THE improvements committee of the London County Council have prepared a report, in which it is stated that they were giving careful consideration to several suggestions which had been made to them for the alteration of the line of the Strand between the church of St. Mary-le-Strand and that of St. Clement Danes. Before deciding upon any definite recommendation to the Council they thought it right to report facts in connection with the several proposals which had been laid before them.

Before the scheme for the Holborn to Strand improvement was approved by the Council they consulted the Royal Institute

of British Architects, with the result that the scheme which was finally adopted by the Council was one which embraced the suggestions made by the Royal Institute after the committee had slightly modified the Institute's plan in order to make the crescent road (Aldwych) connecting the new main street with the Strand more symmetrical. They had recently had before them a letter, dated May 21, from the Royal Institute of British Architects, calling attention to a letter which appeared in the *Times* of May 4, 1903, from Mr. Hamo Thornycroft, suggesting a considerable amendment of the Council's line for the northern frontage of the Strand between the two churches with a view (a) to bringing the church of St. Mary-le-Strand into alignment with the centre of the thoroughfare, (b) to making the direction of the thoroughfare aim at the front of the church of St. Clement Danes, and not at one corner of it, and (c) to securing for the future a good view of the Courts of Justice to all approaching that building from the Strand on the west. The Royal Institute had stated that, although in entire artistic sympathy with Mr. Thornycroft's scheme, it was fully alive to the difficulties, financial and other, in the way of its execution, and the Royal Institute had therefore suggested a modification which it thought could be carried out with a comparatively small sacrifice of pecuniary interest, and would practically secure the advantages of Mr. Thornycroft's scheme. By Mr. Thornycroft's proposal the portion of the Strand between the eastern end of St. Mary-le-Strand Church and Aldwych would be widened to an average width of 150 feet; by the Royal Institute's plan the average width would be about 120 feet. The Royal Institute had contended that by carrying out its plan a better view would be afforded of both churches from either end, and also of the Law Courts, and the apparent narrowing of the Strand at the point in question would be obviated, and that although the eastern end of the crescent site would not be entirely symmetrical with the western end, this would be observable only on paper, and would not be seen when the actual work was carried out. They were impressed with the importance of the suggestions made by the Royal Institute, and they accordingly invited certain of its representatives and also Mr. Thornycroft to meet them on the site, and they had since had before them a plan submitted by the Royal Institute, showing definitely the scheme which it now proposed.

The superintending architect to the Council had also laid before them a plan by which the average width of the Strand would be 115 feet. It was only right to state that Mr. Thornycroft at his interview with the committee had expressed himself as being in general accord with the proposal made by the Royal Institute. If the modification originally suggested by Mr. Thornycroft was carried out, it would necessitate the addition to the public way of the Strand and Aldwych of land which would otherwise be let for building purposes and was valued by the Council's valuer at 350,000*l.*; the loss of recompense if the Council were to adopt the amendment suggested by the Royal Institute of British Architects, now accepted by Mr. Thornycroft, was estimated at 70,000*l.*; while the loss to the Council if the suggestion made by the Council's superintending architect was adopted was estimated at 59,000*l.* In order that members of the Council might have an opportunity of studying the question on the site, they had arranged for the erection of poles and boards upon the vacant land on the northern side of the Strand between the two churches, the boards being painted in different colours to show the several modifications suggested. They proposed to give further consideration to the subject, and to bring up a definite recommendation to the Council after the summer recess.

EMBROIDERIES AT THE VICTORIA AND ALBERT MUSEUM.

SOME fine examples recently added to the collection of ecclesiastical embroidery at South Kensington are now exhibited there in the Tapestry Court. They were obtained from the Hochon collection, which was sold in Paris last month. The museum owes one of the best among them to the generosity of Mr. J. H. Fitzhenry, who placed at the disposal of the authorities a sum sufficient to purchase the beautiful Italian orphrey, dating from the second half of the fourteenth century. (No. 831—1903.) It is remarkable both for beauty and fineness of workmanship, and for the simple and expressive manner in which the artist has told the story of the Virgin Mary. The subject is represented in nine scenes, beginning with the rejection of Joachim's offering in the Temple, and ending with the Assumption of the Virgin. The orphrey probably belonged to a cope, and may be compared with that on the cope No. 580—1884 exhibited in a wall-case in the Italian Court. An English orphrey (No. 827—1903) comes in no degree behind this Italian example in technical qualities, and forms another illustration of the remarkable pre-eminence of English embroideries in the earlier

Gothic period. *Opus Anglicanum* had acquired a celebrity on the Continent of Europe before the middle of the thirteenth century, and beautiful examples dating from that and the following century, and showing unmistakable signs of English origin, are still to be found in Italy, Spain, France and elsewhere. The orphrey in question belongs to the close of the thirteenth century, and may be compared with the famous Syon cope and other less known Early English embroideries, exhibited among the vestments adjoining the Italian Court. Part of another English orphrey in two pieces (Nos. 828 and 829—1903) belongs to a slightly later period. Two complete chasubles were also acquired, one of green brocade (No. 830—1903) with French orphreys of the fifteenth century embroidered with female saints, and the other of green velvet (No. 825—1903), with a fine Flemish orphrey of the early years of the sixteenth century, representing a Tree of Jesse. Two bands of Cologne work (Nos. 823 and 824—1903) illustrating the possibilities of combining the weaver's and embroiderer's art, date from the latter part of the fifteenth century. One other piece may be mentioned—an orphrey from a chasuble (No. 826—1903), bearing the date 1526 on a cartouche beneath the central figure of David, and most probably of French workmanship. It forms a simple and useful example of continental work at a period when the art of the embroiderer in this country, after a decline during the Wars of the Roses, shone again for a brief period before its practical extinction, so far as ecclesiastical work is concerned, at the dissolution of the monasteries.

PUBLIC BATHS.*

THE cost of an unremunerative undertaking is practically to be reckoned by the annual income it absorbs, and in the case of a building, this may be made up as follows:—(a) Interest on first cost of building and sinking fund; (b) maintenance and repairs of building; (c) working expenses.

How, and in what direction, is it possible to economise wisely in respect of the first cost of a building?

The maintenance and repairs will depend upon soundness of construction and permanence of the surfaces.

The working expenses are dependent generally upon good arrangement, but also largely upon the planning of the building.

The first consideration is the kind of site for the building, and although I know I am at variance with some authorities upon bath planning, I venture to say that the idea that any sort of site is good enough for baths is radically wrong, although on superficial grounds it is hard to controvert. It appeals to that instinct for short-sighted economy which does so much to hamper real progress and thwart the best efforts. It has, I am sure, been responsible in London especially for the selection of some of the most extraordinary sites which have taxed the ingenuity of architects to use to advantage. Such sites almost invariably entail straggling, and therefore uneconomical plans. The various sections are necessarily so placed that many of them cannot be reached from the entrance except by means of long corridors which are wasteful, and quite useless for any other purpose.

To illustrate this point, I show below in a tabulated form the proportion of area of means of communication, including halls, staircases and corridors, to the accommodation of a number of public baths. It would be invidious to give the names of these buildings for obvious reasons, but I may say that all of them are well-known and modern establishments, some in London, and the remainder in certain provincial towns and cities.

Each establishment comprises two or more of the following separate sections, viz.:—Swimming baths (one or more), warm baths (two or more sets), Turkish baths (one or more sets), public wash-house, boiler-house and towel laundry, administrative offices and superintendent's quarters.

In nearly every case the nature of the site has been mainly responsible for the excess of waste room.

Ex-ample.	Warm Swims.	Turkish Baths (Sets).	Ad- ministrative Offices.	Boiler-house, &c.	Wash-house.	Total Number of Sections.	Area of Corridors.	Area per Section.
1	3	4	—	1	1	10	6,600	660
2	4	4	—	1	1	11	6,280	571
3	2	4	—	1	1	9	5,130	570
4	4	4	—	1	1	11	6,000	555
5	3	4	—	1	1	10	5,000	500
6	3	4	1	1	—	10	4,230	423
7	3	4	—	1	1	10	3,050	305
8	4	4	—	1	1	11	3,000	272
9	3	4	—	1	—	9	2,350	260
10	2	4	—	1	—	8	1,145	143
11	2	4	1	1	—	9	1,013	112

I commend these figures to your careful consideration, and

further, to such of you as are interested in the planning of these institutions, I suggest that you make a similar comparison of any establishments which you may know, and I feel sure you will agree that much more room is devoted to corridors than is either necessary or to be desired.

Every square foot of corridor, &c., may be fairly reckoned as representing 20 cubic feet of building, which at 1s. per foot = 20s. When superfluous space at this price per foot is reckoned by hundreds and thousands of feet, the total is considerable, and I think worth serious attention as a factor in the cost of such buildings. But that is not the whole cost, for must be borne in mind that every unnecessary square foot of space involves so much extra expense for maintenance and supervision—items which can be capitalised into a serious sum of money.

To make my argument convincing it is necessary that should show that inconvenient sites are responsible for the waste. I illustrate this by an example, and for obvious reason I have chosen one of my own buildings. The St. Marylebone Baths, of which I show the basement, ground and first floor plans, stand on a deep, narrow and ill-shaped site. Adjoining is a plan showing how the building could have been designed upon the wider and shallower site which might have been secured by the acquisition of the adjoining front land. The area of corridor in one plan is 3,000, and in the other 2,020 square feet. The revised plan occupies 630 feet less land. I show also the plan of Plaistow Baths, the site of which was admirably adapted for economy in means of communication, and I may add that in this building the area of corridor per section is 143 feet only, and that the whole is under easy supervision from the offices. Another plan is that of Stratford Baths, in which the area of corridor is 423 feet per section. This is due not so much to the site as to the position of the entrances at one end. The area could have been greatly reduced if the entrances could have been placed in the side street.

By the courtesy of Mr. F. E. P. Edwards, the city architect I am able to show also plans of the Bradford new baths. As they are even now only in course of construction, they should be designed upon the best and most modern lines.

The Corporation are adopting a general scheme for the whole city, comprising a large central bath and several smaller branch or local establishments. These latter are being designed and carried out by Mr. Edwards; and by no means the least excellence of these plans is the very small area devoted to corridors. The proportion per section is 70 to 80 feet only.

Not infrequently "service corridors" are provided, but they are a useless expense. It is always preferable to make impossible for the superintendent to go about the building without passing through one or other of the departments. The attendants are more likely to keep their sections in order if they are liable to be overlooked at any time of the day.

In the older baths (and indeed it is the case with some modern baths), it was no uncommon thing to find four separate entrances for bathers, one for each class of each sex. Now days more frequently two entrances only are provided, one for each sex. In these democratic days, when class distinction are wearing down, there is less disinclination on the part of the gentler classes to rub shoulders with their rougher neighbours. One pay office therefore suffices, whereas under the former system two at least were necessary. The services of a money-taker, or rather two, are thus saved, representing at least 150l. per annum in wages alone. Personally I have always advocated a common entrance for both sexes as obtainable at any railway station or other public building. I should add that where a bath is used for public entertainments separate entrances should of course be provided.

Waiting-rooms to swimming baths are so little used that they would seem to be scarcely necessary. They are seldom if ever, really comfortable, and the bath hall always the superior attractions. In spite of rules and regulations to the contrary, bathers generally crowd round the bath itself and stand about the footways. This is of course exceeding inconvenient and subversive of order. Is it not preferable to let bathers in waiting sit or stand in the gallery?

In some places there is a small charge made for admission to the gallery, which, of course, does not carry the right bath. From the point of view of economy, a gallery would probably cost less than a waiting-room of adequate area.

Another move in the direction of economy is the abolition of the slipper bath in favour of the spray bath. It is scarcely necessary in these days to compare the merits of the two systems, although it is surprising to find how slowly the latter is replacing the former in view of its undoubted superiority. I will only here remind you of the features which recommend it on the grounds of economy, viz. it occupies just about the space of the slipper bath, and uses half, or less than half the water necessary for the former. In an establishment of, say, 50 baths, the saving in the structure and fittings alone would probably exceed 40l. per bath, or, say, 2,000l., and su-

* A paper on "Public Baths, the Influence of Planning and Construction upon the Cost of Maintenance and Administration," read by Mr. A. Saxon Snell, F.R.I.B.A., at the Sanitary Institute Congress.

posing that each bath was used on an average during the year three times daily, water would be saved to the extent of over 1,000,000 gallons, which at 6d per 1,000 = 25%, or the interest on over 800%. To this must be added the saving in fuel, &c., in heating the water and less cost of attendance. I believe that a well-appointed and arranged set of spray baths, each with its separate dressing-room, and with common warm and plunge baths, would attract better-class bathers in paying numbers. Well-equipped Turkish and Russian baths at a moderate price should also prove paying departments. Special or medical baths are probably more suitably attached to hospitals or hydropathic hotels.

A great deal might be done also to make baths more attractive and inviting and therefore more paying by the study and application of the many little details which seem to appeal to human nature with so much greater effect than is the case with far more important matters. I may instance the circumstance of one particular bath in London which, as far as I know, is certainly not better planned nor decorated, nor better, nor indeed so well fitted as many others, and yet it is, or used to be, the most favoured bath in the Metropolis. The only reason for its popularity appears to be that the whole establishment is tastefully decorated with growing ferns, which flourish exceedingly well in the warm moist atmosphere of a bath. The effect is certainly most attractive, and robs the whole building of the stiffness and cold formality of a public building.

It would appear that the great importance of inculcating the habit of frequent bathing is sufficient to justify managers descending, if you so please, to the small art of making the habit pleasant and attractive at any cost.

I have been given to understand that the Corporation of this city (Bradford) have resolved upon allowing the use of their bath free on certain days to poor children. This is a movement which, I am sure, will be watched with a great deal of interest, and it seems more than likely that, besides the immediate benefit to the children, the habit and love of bathing will be inculcated in a great many of them, and they may, later on, go to increase the number of regular bathers who pay for admittance and thus help to make baths self-supporting.

It seems a great pity that swimming baths in this country can only be kept open during six months of the year. In some establishments at least one bath is kept open all the year round. This is only possible by keeping both bath and hall well heated, though this may be and frequently is overdone. Even so, they are poorly patronised, and it would appear that something is still wanted to attract bathers during the cold months.

It is desirable that all the warm baths should be as close together as possible. I remember some time since reading the description of a design in which the author in effect drew attention to the fact that every section of his scheme was carefully separated from every other, so that there could be no communication between them. I refer to this description merely because it represents the very antithesis of what should be the architect's aim in the arrangement of baths. I should add that his plans showed the warm baths arranged at three different floor levels.

The only divisions required are, in the first place, for the separation of the sexes (and this should commence from the general entrance hall), and secondly, separation of the classes, which need only commence at the waiting-rooms immediately adjoining the baths.

Referring to the plan of the St. Marylebone Baths, I will draw your attention to the arrangement of the warm baths, which most nearly approaches the ideal I have in my mind. You will see that the first and second-class bath sections in the case of both men and women are divided by doors only, so that each set is in a way interchangeable, and by this arrangement a minimum number of attendants is required, and in the slack hours one only would be sufficient for both classes of each sex.

The work of a bath attendant is peculiar in many ways. His energies are used in a very unsatisfactory manner. As a bath attendant he may be very busy for two or three hours in the day, and for the remainder he has little or nothing to do. He fills in his slack time by cleaning and polishing the baths and fittings under his charge, and if he is in charge of a sufficient number he will be well employed most of his time. But his general employment varies according to the season of the year, and if the number of attendants on duty is calculated for the busy season of the year it follows that at other seasons they cannot have sufficient to do to keep them fully employed. As a consequence they are likely to get into that worst of all habits, lounging.

In human labour as in machinery, the best results are obtained by steady and continuous work, though comparison fails when we reckon the length of time each can work on end. It is customary to employ these men for a number of other duties, especially that of repainting and general cleaning work which is required so continuously at public baths. This employment, however, is a good deal resented by thorough-

going trade unionists, and nowadays on public boards we have to reckon with trades unionist feeling.

I fear that I cannot suggest any other remedy than that of endeavouring to convince those who hold as a fetish the ideal of "one man one job," that there are employments in which it is folly and sheer waste to apply this rule, and that a bath attendant's is one of them.

One of the most important parts of a bath scheme, especially from the point of view of economy, is the engineering scheme. The boilers and engineering works generally should be of the best description and designed on the most economical lines for the highest efficiency, and by this is meant commercial efficiency, and it is better to reorganise, if necessary, the whole of the engineering plant of an establishment, even at considerable cost, than to waste power and fuel year after year with inferior plant. Americans regard the high efficiency of machines as a matter of first importance, and I have been told that it is no uncommon occurrence for an American manufacturer to throw out of use a costly machine, which has been erected a few months only, on finding that some machine in the market will do a small percentage more work. But then, Americans above all people understand the enormous value of small margins of profit.

Engineers tell us that every ton of coal of standard quality is capable of producing a certain number of units of heat, which again can be converted into a definite number of units of force, and the aim of every good engineer is to obtain the maximum in both cases. In the case of heat it is to this end that boilers are carefully designed, and should be improved or kept in the best order from year to year. Records should be kept from day to day of the amount of steam produced and coal used, and when the proportion between the two begins to fluctuate it may be taken that either the coal is bad or that the boiler or some part of the apparatus is at fault.

This also applies to the engineering system generally, by which I mean that it is quite possible to reckon what power is required to do certain work and to judge from time to time whether the work is taking more power than it properly should. It is certain that wherever this system is adopted a considerable saving must be made in coal consumption and renewals of machinery, and also that the efficiency of the buildings is greatly increased. The work can scarcely be done scientifically by the working engineer, although I believe that many, if not most of them, do use their judgment in this way in a rough or rule-of-thumb manner.

I venture to think that it would pay most municipalities to employ a special statistical officer to organise a system of engineering accounts for each establishment, and to check from time to time the results obtained from the fuel consumed.

There is not room within the limits of this paper to deal in detail with other matters of construction, but I have no hesitation in asserting that there is much room for economy in this direction.

Owing to the excessive wear and tear upon all fittings it is a matter of great importance that everything should be of the most substantial construction. The unavoidable moisture in the atmosphere in baths necessitates glazed or other impervious surfaces for the walls and floors. The importance of absolute cleanliness in every part of the establishment calls also for the avoidance of all angles, mouldings and other repositories for dirt, as much as it the buildings were for hospital purposes. These contingencies have generally involved the use of costly materials and construction, but there is a tendency to run in grooves in the use of well-known materials and forms of construction. I am confident, however, that a good knowledge of the qualities of materials, combined with judgment and the courage to be original, will enable a bath designer to effect large economies in these matters. It is essential that he should, in the first place, make himself acquainted with the habits of bathers, the peculiar conditions of these buildings and the general working arrangements, all of which can be learned in consultation with any willing and intelligent superintendent. Solidity and simplicity in construction materially affect the question of first cost and to an even greater degree maintenance charges.

In conclusion, it is necessary to add that it is not claimed that the economies to which I have drawn attention will alone render these undertakings remunerative, but they will go a long way towards that desirable goal, and tend to encourage municipalities to still further extend the area of their usefulness.

The Fifty-fifth Annual Meeting of the Somersetshire Archaeological and Natural History Society was held at Chard on Tuesday last and two following days, under the presidency of Mr Francis J. Fry, of Cricket St. Thomas, Whitestaunton Church, manor house and the site of the Roman villa was inspected, and a visit was made to Castle Neroche and its ancient British camp.

NOTES AND COMMENTS.

THE syllabus of the lectures which will be delivered during the forthcoming winter term of the Berlin University is remarkable for the variety of important subjects which are to be treated. Among those relating to art are the following:—"Greek States renowned for Art," by Professor VON WITAMOWITZ-MÖLLENDORFF; "The Pergamon Museum," by Herr WINNEFELD; "Art and Culture in Venice," by Herr ZIMMERMANN; "LEONARDO DA VINCI as Artist and Theorist," by Herr WULFF; "The Art of Europe in the Nineteenth Century," by Professor FREY; "The History of Music from SCHUBERT to BRAHMS" and "MOZART'S Life and Works," by Herr FRIEDLÄNDER; "History of Musical Notation," by Professor FLEISCHER. There will be, as usual, several lectures on English subjects, such as CARLYLE, DICKENS, THACKERAY, GEORGE ELIOT, the England of to-day, the development of England since the seventeenth century, &c. The lectures are independent of the University courses, and are intended to suggest what are the latest conclusions in several branches of knowledge. When we find such subjects as "The Organisation of Modern Wholesale Trade" and "An Explanation of King HAMURABI'S Babylonian Code of Laws" in the course, it is evident that past and present alike come within the range of Berlin curiosity.

THE Santis chain of mountains runs partly through the Swiss canton of Appenzell, and in a geological sense is of great importance. Dr. HEIM, the professor of geology in the University of Zürich, has completed a relief of the mountain range, which has occupied him for no less than five years. From the manner of colouring it becomes artistic as well as scientific. The scale adopted is 1:5,000, and all that can be discovered by geological surveys is exemplified. The model was first made in fine plaster and then transferred to gypsum, and in the carving it was altered and realtered until the utmost exactness was attained. As many details are given as the scale would permit. Among geological and topographical representations Professor HEIM'S relief holds the first place.

ILLUSTRATIONS.

THE REPAIRING OF ST. CRANTOCK CHURCH, CORNWALL:
THE SCREEN.

THE repairing of this interesting collegiate church is not yet completed, although the work has been in progress for three years. The Norman building consisted of a small nave with transepts, and a chancel which was as large as the nave, to accommodate the members of the college. There was the usual central tower, which fell into a ruinous state, so that Bishop BRANTYNHAM, in 1377, ordered its repair. This, however, was not done, for in his mandate, dated December 1399, he left 20*l.* for its restoration, a sum equal to about 400*l.* of our money.

The fabric was in a more or less ruinous condition when it was taken in hand four years ago, and some 4,000*l.* has been expended on the work. The greatest care has been taken by Mr. SEDDING to preserve everything old and not rebuild the walls. The internal fittings are of the best oak, and no time has been spared to endeavour to bring this charming sanctuary back again to its former beauty.

HOUSE TO BE BUILT AT OXSHOTT, SURREY.

THE site of this house is on a hill ridge, from which several pleasant views are obtained, particularly in the direction of the Crown forests, which are not likely to be destroyed by buildings. Thus in placing the house on the site due respect has had to be paid to the prospect as well as the aspect. The carriage entrance is on the north-east side, and the terraced garden front which we illustrate is the south-west side. It is possible that a conservatory will be built against the drawing-room at the south-east side. A fine clump of trees will tend to shelter the kitchen wing from the north.

The facings are to be of hand-made sand-faced bricks of a deep red colour; the gables coped with red Staffordshire bricks and tile-creasing set in cement. Only a few moulded bricks will be used at the extreme top of the

gables, and stonework, except in cills, &c., has been avoided. The wooden frames are shown, and they are to be painted white to contrast with the deep red of the brickwork. The roofs are of Broseley tiles.

The style is suitable to the material used and to modern requirements, and yet pleasantly reminds us of many houses built in the eastern counties under Dutch influence. The architect is Mr. ARNOLD S. TAYLER, A.R.I.B.A., 27 Old Queen Street, Westminster.

CATHEDRAL SERIES: EXETER.—THE NAVE, LOOKING WEST.

THE western view of an English cathedral or church is rarely satisfactory, for it is terminated by a dead wall and a small door. In Mediæval times there may have been altars, statues, or paintings, which produced a more satisfactory effect. Exeter is no exception, unless we consider the window with its elaborate tracery, now filled with PECKETT'S glass. BRITTON dwells on the variety of the design, saying:—"Eight mullions are disposed in a manner to form five different species of the Pointed arch, viz. the acute and the broad lancet, the equilateral triangle filled with tracery, the Tudor or flattened, and the ogee. These mitre into and combine with one large circular compartment and two smaller ones in the angles. Within the large circle are twelve smaller circles enclosing lights of quatrefoil and cinquefoil patterns, and embracing circular compartments of seven other lights bounded by interlacing tracery of triplicated design." There is some difference in detail between the window and those in the transepts, the lines of the former being more flowing.

PREMISES AT READING.

THIS building, fronting on Oxford Street and Chesham side, is an addition to the premises now occupied by Messrs. WILLIAM MCILROY, LTD., which covers between two and three acres. This new addition has a frontage of 464 feet. It is divided into two immense shops on ground floor, with offices for a large staff of clerks. The boiler room is on the first floor; it is panelled with oak, and approached by a rouge and Sicilian marble staircase supplied by ARTHUR LEE & SONS. The marble has been relieved by a band of POWELL'S opus-sectile tiles from Whitefriars Glass Works.

A part of the basement is used as an unpacking warehouse, and is approached by a vanway from Chesham side; the other part has approaches both from the street and the shop, and, as well as the first floor, it will be used for the departments for which there will be no room on the ground floor. The building is fireproof throughout, and in the upper part are provided dining-rooms, sitting-rooms, music room and about 150 bedrooms for assistants. These rooms have been handsomely finished off, and the walls of the kitchen, scullery, larders and all other parts for which an exceptional amount of wear is anticipated are lined with the Opalite Company's "Opalite" or white glazed bricks, and the floors laid with RUST'S vitrified mosaic.

There are many fireproof staircases, also an external fireproof gangway running from end to end at the back of the building, connected by staircases to each floor and to the ground.

The building is entirely supported on solid steel columns supplied by S. GRIFFITHS & CO., of the Railway Foundry, Reading; the steel girders by DORMAN, LONG & CO., of London. There are more than a thousand tons of steelwork altogether.

The front of the building is faced with light-red majolica glazed bricks supplied by Mr. J. C. EDWARDS, of Ruabon, and relieved with buff terra cotta from the Meesham Terra Cotta Works, and Guiting stone from the Taynton and Guiting Stone Quarries, Ltd. The chimneys are built with Mr. J. C. EDWARDS'S buff bricks. The steep pitches of roof are laid with local red tiles, the flat pitches being laid with MAJOR'S patent interlocking Bridgwork tiles. The glazing of the roofs is done by W. E. RENDLE & CO., of London, and the fascias by S. JONES & CO., of King's Cross, London. The hot-water heating is done by RENTON, GIBBS & CO., of Liverpool; the lift is supplied by J. LUCAS & SON; the hot-water service by CALLAS, SONS & MAY, LTD., of Reading. Mr. H. W. GODWIN, of Reading, is the contractor, and Messrs. JOSEPH MORRIS & SON, of Reading, are the architects.

ROYAL ARCHÆOLOGICAL INSTITUTE.

THE annual meeting of the Royal Archæological Institute was held this year in York, and began on the 21st inst. The last time the Institute visited the city was in 1846. The members were welcomed by the Lord Mayor. Afterwards Sir George Armytage, the president, gave a forecast of the business which was to be transacted. In the course of his address he referred to the photographic survey taking place under the direction of the National Photographic Record Society, to which all were invited to send photographs of any antiquarian subjects, whether parts or whole of ancient buildings. It is a very easy matter to do so, and a very small expense, but when these photographs are properly arranged and catalogued as they now are by this Society, and then deposited in the print-room of the British Museum, they become most important evidence of the features of the country at the time they were taken. It is obvious what an advantage it would be to secure a faithful picture of an old building before the restoring architect or local builder commenced operations. It frequently occurs that it is absolutely necessary in the construction of public works that old structures must be destroyed, or at any rate altered to meet the new circumstances. In a city like York, which has good reasons to be proud of its ancient buildings and history, there is a desire to preserve every link that is possible with the past, and due regard will always be given to retaining, as far as possible, the ancient work without preventing the proper development of the more modern. When men of common sense come together to discuss these matters there is always a method to be found of carrying them out if there is a will.

York Cathedral.

The first visit was to the Minster. Mr. J. T. Micklethwaite served as guide. Mr. H. J. Westlake described the remarkable first panel in the upper part of the second clerestory window in the nave. He said that that panel of painted glass was probably the most interesting fragment in the county for many reasons. It was a pity that it had been placed in the clerestory, for it was almost out of sight and difficult to examine, and, moreover, it was never in any way related to its present position. About the year 1880 he had a scaffold erected, and a careful tracing of the window was made. He was then struck with the great excellence of the work. Considering its period, and if it is an English production, it is in itself an evidence of the good condition of art in this country. He did not wish to recapitulate what had already been said about that glass, but if possible he would give a few new suggestions. The glass belonged, almost without doubt, to the church built by Thomas of Bayenz, consecrated bishop in 1070. The choir was, however, pulled down and enlarged by Archbishop Roger from 1154-81, and the nave rebuilt between the years 1291 and 1345. It might, therefore, have been removed from the old nave to the present one about that time. There was a window of similar design at Chartres and St. Denis, which allowed him to date the window 1130, or very near. Those three examples were the earliest examples of that design, which ultimately became so common and so full of beautiful variations. As an example of the finest work of its period it occupied a very important position in art, and it might with advantage be placed in a more accessible position and covered with plate glass both within and without. A student of historical ornament, he said, after further criticism, confined in York Cathedral would have sufficient example in the glass alone to give him a fair education.

Mr. Micklethwaite said it was wonderful that the Minster had preserved its glass after two such fires as had occurred during the last hundred years.

Bolton Castle.

On the 23rd a party numbering something short of a hundred went on from Northallerton by special train, and reached Bolton Castle at eleven o'clock. It was the home of Mary Queen of Scots during part of the time when she was in the custody of Lord Scrope. Part is now tenanted by a keeper on the estate. Mr. W. St. John Hope said:—In the reign of Richard II. it would seem that the Lord of Bolton (John Scrope) and the Lord of Middleham (Ralph Neville) had a building match. The Lord of Middleham lived in a mighty tower on the other side of the valley, and had encircled it with a great wall of new buildings, of which he was very proud. The Lord of Bolton lived in a much humbler abode, and thought he would have a new house. Up to this time the great people had lived in houses which were really fortresses, consisting of a great tower, which sometimes included comfortable rooms and quarters for the garrison. By the end of the fourteenth century the discomfort of living under these conditions had been realised, and a new style came in, and Bolton Castle was, he believed, the earliest example of the new form of house opened out in the middle. They had seen another on the previous day at Wressle, and it would be noticed in the present case everything was rather more severe. This

was accounted for by the fact that it was very much nearer the Scottish border, and had to be more in the nature of a fortress. Mr. Hope explained the arrangement of the castle, with its four towers, one at each corner, coupled up with ranges of buildings, in which were the chief apartments. The historian told them that it was eighteen years in building, and the expenses every year came to 1,000 marks, which would be a very large sum. It was finished before 1399. A very interesting document in French was in the possession of Lord Bolton, the contents showing it to be an indenture between Sir Richard le Scrope, knight, and John Lewyn, mason, in which the latter undertakes to "do the works at Bolton in Wensleydale in the following manner." Its date was September 14, 1378, and they were entirely dependent upon private documents like this to discover the castle's history. Sir Richard did not actually get leave to crenellate until July 14, 1379. Mr. Hope read the document, and pointed out how the plan of this house resembled that of the castle within whose walls they were standing. The chief portion of the translation was as follows:—

"In the first place, a tower for a kitchen, which shall be vaulted and embattled, and shall be of a height of 50 feet below the battlement, and shall be in length of 10 ells and in breadth 8 ells, and the outside walls of the said tower shall be of a thickness of 2 ells. Also there shall be made between the said tower for the kitchen and the gate a house vaulted and embattled, and above the vault shall be three chambers one above the other, and each chamber shall be of the length of 12 ells and in breadth 5½ ells, and the said house shall be of a height of 40 feet below the battlement, and the thickness of the walls outside 2 ells and within 4 feet. Also there shall be an embattled tower which shall be of a height of 50 feet under the battlements, in which tower there shall be a gate vaulted, and above the gate shall be three chambers, one above the other, and they shall be in length 10½ ells and in width 5½ ells. And in the same tower on the side of the gate towards the south shall be a vaulted chamber, and over that chamber shall be three chambers, one above the other, which shall be in length 13 ells and in breadth 7 ells, and the walls outside of the said chambers shall be of a thickness of 6 feet and within of 4 feet. Also there shall be a chamber adjoining the said tower on the side towards the west, which shall be vaulted and embattled, and of a height of 40 feet under the battlement, and over the said vaulted chamber another house, vaulted, and above that a chamber which shall be in length 10 ells with the entry and 5½ ells in width, and the walls without the said chambers shall be of the thickness of 2 ells and the walls within of 4 feet."

The document also gave other details as to material and price. Mr. Hope drew attention to the extraordinary doorways, each of which had been defended by a portcullis, and afterwards led the way through the chief rooms, many of the visitors going to the top of the castle, from which there is an expansive view of the district.

Sir Henry Howorth afterwards expressed the thanks of the Institute to Lord Bolton for the facilities given them. Touching upon the history of the Scropes, he said he shuddered sometimes to think what would have happened if the battles at the end of the great Civil War had not broken the back of the harpies who, after all, had become a most desperate danger and nuisance to the realm.

Middleham Castle, once the residence of kings and the Kingmaker, and known as the Windsor of the North, was next visited. Mr. St. John Hope said that its predecessor stood upon the hill at the back, and was one of the moated mounts they had reason to believe formed a great series of blockhouses which the Conqueror planted about the country. The first Middleham Castle on the hill never had any masonry about it, and was fortified with nothing but wood, and a century elapsed before the one they were visiting was erected. Mr. Hope commented upon the building of the tower within the space surrounded by the outer walls, and said that if the tower were out of the way they would have a plan almost exactly like Wressle and Bolton. The outer work was apparently begun about the middle of the fourteenth century, and the chapel, which was added to the tower, though built in the fourteenth century, was in the Norman manner. After the death of Richard III. it passed into the hands of the Crown. Mr. Hope read the details of a survey of the castle made for the king, in which the various repairs necessary were given in detail, and said that the existence of this document helped them materially to follow the lines of the original building. The tenacity of the masonry was very remarkable, but it was advisable that the owner should support the projecting portions by plain pillars of ashlar. Middleham was a very fine example of the great towers of masonry, started in the reign of William Rufus.

Sir Henry Howorth thanked Lord Masham for allowing the Society to visit this historic place, and said they were thankful also to their expert guide, Mr. Hope. He would, however, like to say that they considered that a great part of the castle was in imminent danger, and unless very careful attention was

given to it, a great part would soon be an absolute ruin. They were not all agreed on the question of the ivy, but when the very entrails of the castle were exposed, it was an undoubted danger. Lord Masham, they thought, ought to preserve this great historic monument by having it tended by careful hands.

Howden Church.

Howden was visited on the 24th inst. The church, once one of the most dignified and beautiful in England, is now partially in ruins, only the nave and transepts being intact. Under the guidance of Mr. John Bilson, F.S.A., who has the work of restoration and preservation in hand, the visitors were enabled to gather what the beautiful edifice was like in the days of old.

Mr. Bilson prefaced his remarks by reading extracts from an article in the *York Archaeological Journal*, by the Rev. W. Hutchinson, a former vicar of the parish—an account of the rise of Howdenshire. The group of townships, the article states, in the fen country around Howden, lying to the north of the Ouse, just above its junction with the Trent, is mentioned in a grant of King Edgar of 959. This grant mentions eight townships as belonging to Howden, and they formed the nucleus of Howdenshire, the name of the parliamentary division now represented by Sir W. H. Wilson-Todd. At a later date they came into the possession of the abbey of Peterborough, but in 1082 William the Conqueror granted the shire of Howden to William of St. Calais, Bishop of Durham. This connection with the see of Durham had an important effect on the later history of the church and shire. The Domesday Survey mentions some eighteen townships in the hundred of Howden as being held by the bishop, and this holding seems to have been increased by the time of Kirkby's Inquest (1284-85), which mentions some twenty-five townships or hamlets as held by the bishop. On the south side of the church is the manor-house of the bishops, which is one of the three houses of importance which they had in Yorkshire, the other two being Crayke Hall, in the North Riding, and Weel Hall, near Riccall. Within the walls of this house Bishop Hugh de Puiset (or Pudsey) died in 119(4)5, and Bishop Walter de Kirkham in August 1263. The latter was buried in the chapter-house in Durham, but his viscera, which was probably removed for the purpose of embalming the body, a process which has been carried out in the case of the late Pope of Rome, were buried under a grave cover of Frosterley marble in the south transept of Howden Church. The stone bears a raised cross and an inscription in Lombardic characters. Bishop Walter of Skirlaw, who was a munificent benefactor of the church, and built the splendid hall of the manor-house, died here on March 24, 1406, and was buried at Durham. In dealing with the architecture of the church, Mr. Bilson said he would like to call attention to a fact bearing on architectural development, a point somewhat neglected. Up to the middle of the thirteenth century the architecture of England ran parallel to the architecture of France, and he pointed out that there was a good deal of French influence in the tracery of the windows. It was not an improvement, but it led up to the flowing form which began in 1315. In France that was not reached until a considerably later date. That form in the window tracery was a perfectly English development, and led on to what was nicknamed Perpendicular, which was also English. Mr. Bilson then, in a highly interesting manner, pointed out the architectural details of the church, and said that there was evidence that the choir was built before the transepts—not the present choir, but one which preceded it. From the nave the party were conducted into the choir, the walls of which only are standing, and they surround now an addition to the burying-ground. The "Chronicle of Lanercost," under date 1272 says:—"About that time a certain prebendary of the church of Howden, named John, a man of quiet life and living without ostentation, skilled in astrology, given to hospitality and charity, passed from this world. He at his own cost began the new choir of the church. What was left over he predicted he would finish after death, and we see it clearer than daylight. For being buried in a stately tomb in the middle of the choir itself, he is held for a saint, and from the offerings of the thronging people we see not only the choir but a spacious and elaborate nave in the course of completion." The choir which was left unfinished in 1272 could not be the existing choir, the style of which pronounced it to be some thirty years later. The magnificent tower, Mr. Bilson pointed out, was built by Walter of Skirlaw to a great height, which tradition says made it a refuge for the inhabitants in the time of floods. He rather regarded that as a cock and bull story, although he was told that floods had been known to come up there. School buildings were added to the church later in the fifteenth or early in the sixteenth century, which was interesting to note, because it had been continuously used as a school up to the present day.

Sir Henry Howorth, before leaving the choir, said that they were met there for two purposes—to study those splendid buildings and to help those who in a poor Yorkshire village

found themselves in difficulties in the custody of a magnificent building such as that; and in Yorkshire, where there were such splendid minsters to preserve. He would like it to go forth that they expressed a strong feeling that that was one of the great Yorkshire churches, and should be preserved in every possible way. It was one of the real treasures of the county, and he knew the difficulty of the clergymen in raising enough money to preserve the ruins and to keep the other part of the church in proper repair. He did not make an appeal because they were not wealthy people, only students, but their duty was to make known to wealthy people that it deserved careful, sympathetic and conservative treatment.

Wressle Castle.

The castle was built in the reign of Richard II., and belonged to the great family of Percy. During the Civil War it was garrisoned for the Parliamentarians, and in 1648 fifteen men were employed to demolish the stronghold. A letter was then written by Wm. Blackstone to Prickett, of York, lamenting the work of ruin that was going on, and saying that the owner had better have paid 120*l.* than it should have taken place. The dimensions and points of interest about the ruins were described by Mr. Bilson.

Sir Henry Howorth said that they could not stand on such ground without general thoughts passing through their minds. In the first place, it took them back to that most important of English reigns, that of a very able king if he had not been overwhelmed by his nobles—Richard II. From that reign great changes could be traced in our English life. Richard married a princess of Bohemia, who brought in new fashions in dress, amongst which boots with such long toes that they had to be tied in knots, and which the "mashers" of that day pressed to the fullest extent. Alluding to the fact that over 200 retainers used to be kept at Wressle, he said that he was staying with the Earl of Derby at Knowsley the other day, and was talking to him about the Derby and Percy families keeping up a number of retainers, and he said he had the largest establishment in England with the exception of Windsor Castle. He explained that in the old days they had to move about from one great house to another or else it would have been impossible for them to have found the means of living. Sir Henry then went on to explain that a mistake was often made with regard to the object of moats. No doubt in embattled and fortified houses they were meant for protection, but in a vast number of cases they were used not for protection, but as ponds in which to keep a store of fresh-water fish. Dr. Hutchinson, who was engaged in inquiries with regard to leprosy, had traced it to the eating of bad fish. The long fasts in Lent compelled people in villages to salt the fish, which turned bad, and consequently every village had its leper-house. The Reformation did away with leprosy. The Mediaeval scourge of scurvy also disappeared with the leprosy. This disease was caused by eating badly salted meat in the winter, when people were unable to keep cattle. The diseases were not caused by bad drains but by bad food.

Selby Abbey.

Mr. J. T. Micklethwaite, F.S.A., undertook to describe this magnificent church, the one great Benedictine monastery of the North of England which survives as a parochial church. Mr. Micklethwaite briefly touched on the three orders of monks—Benedictine, Cluniac and Cistercian—and then proceeded to explain that that abbey was founded in 1069, and also described the manner in which the monks built their places of worship. They first got ready the portion where service was held—the choir—then built the cloisters or living portion and then went on to complete the church by building the nave. They regarded the church as the Puritans did their religion, always in need of amendment, and he pointed out the changes of fashion which were to be seen. In looking for some details to which he desired to call attention, he said "Oh, they are gone; the restorers have been here." In noticing the superb east window, he said much of the old glass was there. It was taken out and laid in the vaults, and some quarter of a century ago it was replaced and mixed with newer work, which was extremely well done. The details of the church were very rich, and there had been some very charming screens which had disappeared. He spoke of the unique cupboards with sliding doors on the north side of the sanctuary in which the plate of the abbey was kept, probably to be in readiness for decorative purposes on high days and holidays. The monks did not invite ladies to drive nails into their beautiful screens and attach a lot of nonsense to them.

The Rev. A. G. Tweedie said he took the whole of the responsibility of what had been done for preserving the ancient work, and they had been actuated by the one motive of preservation. It was not a quarter of a century ago that the old glass was replaced, but twelve years ago. There was more old glass in the window than new. It was the most beautiful window in the whole of England, and the new work would compare favourably with the old. The screens had not been

removed; nothing had been taken away. In some excavations which were carried out he found the foundations of the Norman choir, which was apsidal with apsidal aisles. The rev. gentleman then conducted the party around. He took them into the sacristy, pointing out a peculiar lavatory, and saying that there was not a piscina in Selby, and that was probably where the ablutions were performed. Above the sacristy was a small room supposed to be the scriptorium. The sedilia, on the south side of the sanctuary, is a work of extreme beauty. The canopies were missing up to the time of the late restoration. They were restored and copied from those in Durham Cathedral. Mr. Tweedie pointed out in the lower portion of one of the lights of the east window a figure bearing the name Sarasam, which he said was not to be found in Scripture. One antiquary wrote to him saying that it was Sarah, wife of Abraham. He replied that the figure had a beard, which did away with that theory. Another object of great interest was a portion of a stone coffin, in which was buried Alexander, one of the abbots, who died after he had resigned. The other portion of the coffin is in the museum at York. The abbot's skeleton was found during some excavations twelve years ago.

Sir Henry Howorth thanked Mr. Tweedie for receiving the party, and said they felt the beautiful building was in the tenderest of hands.

Clifford's Tower, York.

The company assembled in the open space within the walls to hear an account of its history.

Mr. W. H. St. John Hope said Clifford's Tower was another excellent example of the moated mount, and was, they believed, put there by William the Conqueror to dominate the town. The Old Bail Hill on the other side of the river, with this castle gave complete control and prevented the Danes coming up the river. During the recent work at the tower there had been brought to light remarkable traces of the defences which originally stood on the mount. They were told that the place was stormed and destroyed in the revolutions on more than one occasion, but they had only to clear away the burnt wood and put up more railway sleepers.

Mr. J. T. Micklethwaite attributed the existing wall to the time of Henry II., and said that originally there were no doubt buildings inside, chiefly of timber. The prison part had at different times been rebuilt, but the tower itself had always been preserved as a relic. Seventy or eighty years ago some ingenious people cut away part of the mount to make a road, and as a result the weight of the building was too much for the earth, and it bade fair to go down into the yard below. He was asked to come down and consult with Colonel Beamish, official surveyor of such buildings, and there was no shadow of doubt that the mischief was not in the walls but in the earth below. They agreed to report that it was a matter to be dealt with by an engineer who was accustomed to deal with earth pressure, and in the end an arrangement was made to carry out certain repairs. The whole of the moving part had been buttressed up, and he believed that part of the wall was now safe from further movement. He would not say that the whole castle was, because the cutting away of the toe of the mount extended to the other end. There had up to now been no sign of movement, and they hoped this state of things would continue. In the course of the work some curious things were found, including the stones on which he was standing, most of them thirteenth-century work. At present, except that some few seemed to belong to the chapel, they could not say really what they were. Below the ground on which they were standing were a series of piles and rails joining them, and this was believed to be the palisade of William's castle, which Mr. Hope had told them about, and he believed it was there below their feet. When these stone walls were built the mound was apparently heightened, and the piling was no doubt left to stiffen the new earthwork. He thought a little investigation to help them to plan it out would be well worth doing. As the Yorkshire Archaeological Society had from time to time undertaken to investigate the work, they might put their hands in their pockets and spend a little on this work. It would be most interesting to find the actual wooden fortification of the eleventh century.

St. Mary's Abbey.

Mr. W. H. St. John Hope dealt with the history of the abbey, and said that owing to the unique character of these remains in this country it behoved them to take every care of them. These foundations which had been recently opened—he used the word foundations advisedly—were beneath the floor of the first church, and were not intended to be seen, consisting simply of coarse rubbish put in to support the superstructure. When the foundations were first exposed he happened to come over and see them, and he was asked what had better be done to preserve them. There were one or two courses open. The first was to bury them again. The Society did not want to do that after spending money in laying them open. Then there was the second course, which had been

adopted for this reason. These beautiful gardens formed a delightful playground for the children of the subscribers, and it was obvious that if they left these rough foundations in a very tender condition, like all newly-excavated work, the children would run on them and reduce them to a more or less shapeless mass. Obviously the first thing to do was to make secure in its place every one of the original stones, and that was what he suggested should be done with blue-lime, the mortar being put in with a stick and not with a trowel. They must not use cement, which was right and proper in its place, but when put between old stonework it had the fatal disadvantage that, owing to its expansive properties, it sooner or later came out. The last state of that work was, therefore, worse than the first. Seeing that the remains were standing up to various heights, he suggested that they should be brought to a common level with brickwork, the advantage of this being that there was no confounding brickwork with eleventh-century rubble. If they had used stone, it would, after some years, have assumed very much the same character as the rubble, and it would have been difficult in future ages to distinguish them. Having done that, they had to guard against rain and frost, and the best way was to cover the top with these magnificent Yorkshire flags. As a result, all this work had been anchored down for posterity. Mr. Hope went on to suggest that the areas which were originally within the church should not be turfed, but would have been better covered with gravel, otherwise he could not see that any other method could have been better.

Mr. J. T. Micklethwaite agreed with Mr. Hope as to the method adopted, and said, incidentally, that the man the archaeologist had to fight against was the man who worked for an ignorant public. They had to convert them, and make them understand that there was something of greater value than the ornamentation of a garden. There was a man called Brown, who seemed to regard ruins as incidents in gardening, but he was dead now, and no doubt doing time for it. He would much rather that these remains were buried again than treated as some who had taken part in the recent controversy wanted to treat them. If the work could not be done properly, as Mr. Brierley had done part of it—there were little details on which he might differ—the best thing to do was to bury them altogether.

Mr. J. Bilson urged the carrying out of excavations on the opposite side, so as to clear up the history of the middle part of the building. There was no other building like this in the country, the analogies being in France. No architect could have put the points more clearly than Mr. Hope. By covering up the plan they would be depriving their descendants of the opportunity of studying them. He had done precisely the same thing at Howden with regard to flag covers, and they could not see the top of the walls, and water could not get in and no one objected. Last year he had the privilege of taking over the excavations at York M. le Comte de Lasteyrie, professor of archaeology at l'Ecole des Chartes, Paris, and a member of the Commission des Monuments Historiques. There was not a man in France whose opinion would carry more weight, and he expressed cordial approval of what had been done, and expressed a wish that all the foundations might be treated in the same manner. Mr. Bilson said he hoped the Philosophical Society would excavate the opposite side, so that they might add to their records.

M. Camille-Eulart (formerly librarian of l'Ecole des Beaux-Arts, now director of the Museum of Comparative Sculpture at the Trocadéro, Paris, and a member of the Commission des Monuments Historiques) suggested that the stones with parts of sunk quatrefoils built into the wall of the thirteenth-century aisle of the choir might possibly have formed part of a pavement, and the incisions might have been filled in with coloured cement. He cordially approved of the methods adopted for the preservation of what had been found. The report was derived from the *Yorkshire Herald*.

ST. BARTHOLOMEW'S HOSPITAL.

THE following report of the Mansion House committee on St. Bartholomew's Hospital has been issued:—

At a meeting of the appeal committee of the Governors of St. Bartholomew's Hospital, held at the Mansion House on January 19, 1903, the Right Hon. the Lord Mayor being in the chair, the following resolution was passed:—"That, having regard to the criticism upon the proposed appeal for the enlargement of St. Bartholomew's Hospital, based on inaccurate information, a committee be appointed to report—(1) Whether it is desirable in the public interest and on financial grounds to retain St. Bartholomew's Hospital on its present site; (2) in the event of the retention of the hospital on its present site, whether any better scheme of rebuilding than that suggested by the Governors can be devised; (3) upon any other matters affecting the hospital that the committee may think it desirable to inquire into. That such committee do consist of

fifteen members, nine to be nominated by the Lord Mayor and six by the Treasurer of the hospital, and that the Lord Mayor and the Treasurer be *ex officio* members of the committee."

In accordance with this resolution the following nine gentlemen were nominated by the Right Hon. the Lord Mayor, viz.:—The Right Hon. Lord Sandhurst, G.C.S.I., G.C.I.E., chairman of the Middlesex Hospital, late Governor of Bombay; the Right Hon. Sir William Hart Dyke, Bart., M.P.; the Right Hon. Sir Savile Crossley, Bart., M.P., hon. secretary of King Edward's Hospital Fund; Sir Thomas Jackson, Bart., formerly chief manager of the Hong Kong and Shanghai Bank; Sir William Emerson, past president of the Royal Institute of British Architects; Dr. Pye-Smith, F.R.S., vice-chancellor of London University, consulting physician to Guy's Hospital; the Hon. Alban Gibbs, M.P.; Mr. Richard Biddulph Martin, M.P.; Mr. Arthur Hill. Sir Trevor Lawrence, as treasurer of the hospital, nominated Mr. Alderman Alliston, Sir William Church, Bart., K.C.B., president of the Royal College of Physicians; Mr. Benjamin L. Cohen, M.P.; Mr. Frederick Morris Fry, a member of the committee of King Edward's Hospital Fund; Mr. John Cary Lovell, Alderman Sir William P. Treloar. The Lord Mayor, as chairman, appointed Mr. Graham Tahourdin to act as secretary to the committee.

The committee proceeded to examine the questions submitted to them, and beg to report:—

(1) As to hospital site.—The committee investigated this point very fully. They received and examined a large amount of evidence given both by inhabitants of the neighbourhood and by others, and they came to the conclusion, with only one dissentient, that it was impossible in the public interest to entertain the idea of removing St. Bartholomew's Hospital from its present site. In this connection they went thoroughly into the question of St. Luke's site, and came to the conclusion that such a removal, even were the site available, would not give the results its advocates anticipate, and that on that site the hospital would be cramped for room and not able to perform its duties even as efficiently as at present. No evidence was brought forward in support of this plan that commended itself to the committee. The committee proceeded to investigate with great care and with the assistance of evidence from competent persons the value of the present site of the hospital. They came to the conclusion that the value of the site of St. Bartholomew's Hospital has been much exaggerated, and that there would be very little, if any, ultimate money profit to the hospital in removing the building from its present situation to any other locality.

2. As to buildings.—The committee next carefully considered the present buildings of the hospital, and the necessary additions demanded by the medical and surgical staff. They are satisfied that important additions to and a considerable rearrangement and improvement of the existing buildings are necessary, and they consider that with the additional land purchased from Christ's Hospital there will be ample room for the provision of a hospital with every modern appliance. The committee, having carefully examined the several plans placed before them, consider that a thoroughly efficient hospital can be provided by a gradual building scheme under which the improvements and alterations contemplated can be secured so soon as funds are obtained. The committee are assured of the great value of the medical school to the hospital and the public. For the continued efficiency of the treatment of the patients, the teaching in the school and the advancement of medical science, greater facilities for research and teaching are absolutely necessary, and call for additional accommodation.

3. The committee also carefully examined the financial position of the hospital itself. The evidence showed that its properties and revenues are judiciously and economically administered, and that the cost per bed compares favourably with that of other hospitals. They find that it is impossible to hope that funds for the additions to and rearrangement of the hospital can be obtained from the resources of the hospital itself. Indeed, the recent purchase of land from Christ's Hospital will entail a charge of over 9,000*l.* per annum on its present revenue, leaving a deficit of 7,000*l.* per annum on the ordinary expenditure. The committee recommend that the rebuilding of such parts of the hospital as are most urgently needed be proceeded with so soon as sufficient funds are collected. They consider that the Governors of St. Bartholomew's Hospital are fully justified in appealing to the public for assistance, and they heartily commend this appeal to the consideration of the citizens of London and to the public generally. The committee do not think that they would be justified in concluding their functions without placing upon record their opinion that from the evidence brought before them the administration of the hospital has been conducted by the Governors in a wise and enlightened spirit, with a due regard to economy and in the best interests of the patients.

MARCUS SAMUEL, Lord Mayor,
Chairman for and on behalf of the Committee.

July 27, 1903.

For the purpose of showing the reasons on which their conclusions are based, the committee append a full statement of their proceedings, and of the evidence taken by them. They note particularly that not one single witness came forward voluntarily to advocate the removal of the hospital from its present site, and they express surprise that no application to be heard was received from any of those who had written and spoken so strongly on the subject. On the other hand, no difficulty was experienced in finding witnesses in support of the case for the retention of the hospital on its present site.

FIREPROOFED WOOD AS A BUILDING MATERIAL.*

IN the construction of large buildings the question of fireproofness has at last assumed its proper position at the head of all other questions concerning the manner of construction.

As representatives of this twentieth century we congratulate ourselves upon our advanced civilisation and our industrial and scientific development; but it is a lamentable fact that numerous problems of vital importance to the life and happiness of our race are still unsolved through stupid neglect.

Two of these problems are fireproof construction and sanitary regulation of disease. There is little cause for complacency over these subjects when contrasting the world's condition to-day with that of two or three centuries ago.

Fortunately we are at last waking to the gravity of the situation, and material advancement has been made in the past decade. It has taken us 2,000 years to learn that great conflagrations are the result of human neglect and ignorance rather than visitations of Divine wrath. The same is true of widespread plagues and distributed malignant diseases.

We have made marvellous progress during the past few hundred years in the method and magnitude of our building operations. The introduction of iron and steel into this class of construction marked an era in architectural history. With their advent came the use of the term "fireproof construction." It was fancied that steel beams, iron columns and tile or concrete floors would make a building indestructible. Alas! we know to our sorrow that the term "fireproof" is often a delusion. Buildings, as generally constructed during the past twenty-five years, were no barrier to fires, and, as a matter of fact, not so safe as if built of solid wooden beams. These would at least be slow-burning and not wreck the whole building by the buckling of columns and beams as soon as heated.

Our cities are filled with magnificent structures, marvellously constructed, but a very small percentage of them are at all fireproof. It is absolutely true that our great cities to-day are but little less inflammable than they were in 1666, when this city was swept by fire from Tower to the Temple, with results sufficiently awful to make a period in history. Similar conflagrations have occurred with painful frequency all over the world since that time, and now, after a lapse of 250 years, are still of yearly occurrence. Were it not for the high efficiency attained by the noble body of men, the firemen, in all our cities, consequences of fire would be far more appalling than they are. This is particularly true in America, where the craze for high buildings has made the fireman's work doubly hazardous.

The time has come when all permanent construction should be strictly incombustible. That the public has awakened to this fact is evidenced by this gathering of representative men from all parts of the world to discuss the various methods of solving the problem.

The necessity of fire prevention is beginning to be appreciated. Energy and money are freely spent in exploiting all kinds of fireproof construction. Fortunately the public has lost its credulity and no longer accepts the statement that a system of construction is fireproof unless it is proven to be such by practical test. Your chairman is one of the pioneers in this class of experimental testing. His splendid work during the past few years by siting the meritorious processes from numerous trashy ones has aided greatly in classifying the many proposed methods of fire protection.

In the United States during the past few years much investigation of this character has been done by the New York City authorities, also by the National Board of Underwriters at their testing laboratory in Chicago, and by the Insurance Engineering Experiment Station in Boston. All are doing excellent work. I am informed that much similar work is being accomplished by experts in various continental cities. I regret that I have been unable to secure records of their work.

If this class of investigation receives the support it deserves, the results will be invaluable, and reduce to a minimum the fire hazard of large buildings. Among the various materials for reducing fire risk is the so-called "fireproof wood." It is

* A paper prepared for the International Fire Prevention Congress by Professor Ira H. Woolson, Columbia University, New York.

upon this subject your executive has kindly requested me to address you to-day.

First of all, let us have a clear understanding of what is meant by the term "fireproof wood." For the information of those unfamiliar with the subject, it should be stated that the term "fireproof wood" is a misnomer; for all such woods will burn if exposed for a sufficient time to a high degree of heat. Strictly speaking, the processes of treatment do not make the woods fireproof, but simply render them fire retardants. Fire-resistant wood is a much more logical term. The public has been somewhat deceived by the representatives of certain processes who make the silly claim that woods treated by their methods are rendered absolutely incombustible. Such statements are foolish, for they lead to expectations of resistance which cannot be achieved. When the deception is discovered it causes unjust criticism and mistrust of the whole product.

The term "fireproof wood" is a trade name, and should not be taken in a strictly technical sense.

New York city is probably now using more fire-resisting wood than any city in the world. This results from two causes: first, the Building Law, which requires that such treated wood shall be used throughout all buildings over twelve storeys (or 150 feet in height); and, secondly, to the fact that the city proper is too limited in area to spread, and enormously high buildings have become necessary. Scores of buildings erected during the past two or three years are over fifteen storeys high, and many of them twenty-five and thirty.

It has been my privilege, under the direction of the Bureau of Buildings, to test most of the wood which has been used in these buildings. For the year ending the first of this month I have tested and reported upon upwards of 3,500,000 feet. The greatest part of this material was for floors, which were laid on the top of strictly fireproof floor construction of concrete or hollow tile. The balance of the material was used for trim. An evidence of the magnitude of building construction now going on in that city is the recent filing of plans with the Bureau of Buildings for one structure in which 2,000,000 feet of fireproofed wood will be required.

I would here add that there are at present three companies supplying this treated wood to the city of New York. There are other companies established for the same purpose in Philadelphia.

The impregnation of wood with chemicals to render it fire-resistant is by no means a new idea. Numerous experiments with various chemicals were made as early as 1825 by Fuchs, Gay-Lussac, Boucherie, and later by Löchlin and other continental chemists. However, it is within the last few years only that the business has been put upon a practical commercial basis.

It is conceded, by most experts who have carefully studied the subject, that the fireproofing of wood is a safeguard, and under ordinary conditions will greatly reduce the fire risk. It will, however, be consumed by continued application of flame, and under certain conditions especially favourable to fire may support a slow combustion by itself, but the same conditions of heat would also ruin many other accepted fireproof materials. To my mind, the non-inflammable nature of the material is its greatest value.

When a fire occurs in a room trimmed with ordinary wood, its inflammability makes it immediately dangerous. The flames leap from one point to another, dashing through windows and transoms, thus spreading the fire to adjoining rooms. If the wood is finished with oil or varnish, the flames will run along it with marvellous speed. If finished with well-treated wood this tendency of spreading the flames is reduced to a minimum; even if the burning material in the room is sufficient to ignite the treated wood, it burns so slowly that life and property are much less menaced. It would at the worst be a distinctly slow-burning conflagration. That in itself is a great safeguard, because it allows time for the arrival of the firemen.

Numerous inorganic materials are being exploited to replace wood entirely in fireproof construction. If it were possible to find a substitute for wood, which possessed its merits and none of its failings, it would be most desirable. So far, I have never seen anything which had the lightness, strength, durability, cheapness, ease of working, and last but not least, the elements of beauty for decorative purposes which wood possesses. For these reasons it will surely long remain a favourite with architects.

Granting the value of fire-resistant wood as a structural material, the next problem is to determine what degree of fireproofness should be exacted, and how the standard of quality can be maintained.

Not being acquainted with the methods employed on this side to accomplish these objects, I will confine my remarks to our practice in New York.

In the early stages of experimentation it was customary to build a small house of the wood to be tested, usually duplicated by a house of untreated wood; then applying a vigorous fire both inside and out and noting results. This method possesses

spectacular elements which are very convincing, and while it may be useful as a general test to demonstrate the degree of immunity from fire that a wooden building may be made to possess, the heavy expenditure of time and money required for such a test precludes the possibility of employing it for regular series work. This is the only value such a demonstration possesses, for the results of fire tests made upon wood treated a year or so ago may bear no relation to the product of the same company to-day. It is essential for public safety that regular serial tests should be made upon all material delivered for use, as is the custom in the manufacture of steel, cement and other structural materials.

Unfortunately there is no recognised test for fireproofed wood. In America a variety of tests have been proposed by different investigators, most of them being the direct application of heat or flame to small test specimens, and noting the duration of flame and glow produced, as well as the amount of wood consumed. One method recently proposed makes the amount and character of gas given off from dry distillation of small fragments of wood a basis of classification, but no uniform method has yet been adopted.

An effort was made a year ago by the Building Bureau of New York city, in conjunction with the various fireproof wood manufacturing companies, to decide upon some standard method of test. But the project was abandoned. The present method of testing is as follows:—

When a shipment of lumber is prepared, an inspector proceeds to the works and selects at random one sample from every 2,000 feet of material. This is sent to the laboratory and tested, reports being sent to the Building Bureau and the manufacturer. Two tests are applied to each sample. One a "shavings test," which is a test used by the United States Navy, and the other a test devised by the writer, which for want of a better name is called a "timber test."

The shavings test, while useful in a general way to determine the flaming properties of treated wood, is nevertheless unsatisfactory. We are now making series of different tests in an endeavour to supplant it with something more reliable. The test is conducted as follows:—A pan 1 foot in diameter and 6 inches deep is mounted on legs. The bottom is formed by a heavy wire screen of $\frac{3}{8}$ -inch mesh. This wire bottom is covered with a layer of shavings 2 inches deep, and a Bunsen burner is applied underneath for twenty-five seconds; then the burner is removed, and the lengths of time during which the shavings support (1) flame and (2) glow are recorded, and also the area of shavings burned.

The idea of this test is that shavings from properly-treated wood will not support flame any considerable time, and that the flame will gradually die out without material enlargement of the burned area. After test, the remaining shavings are thrown away. There are no means for making a permanent exhibit of the results, except by photographs, which would be difficult to take and quite unsatisfactory. The wood must be accepted or rejected on the judgment of the operator, based upon notes taken while observing the test.

Besides these obvious disadvantages, there are two other strong objections to the shavings test: first, the extreme difficulty of always maintaining the same conditions of flame and heat under the shavings; and second, the impossibility of securing a uniform quality of shavings for tests. The Navy specifications call for the use of the Bunsen burner with a flame giving about 500 degs. Centigrade = 932 degs. Fahrenheit. Now, Bunsen burners vary considerably in the size of flame they produce, so, although every precaution was taken and the same standard temperatures were determined in each of two flames at some definite point, the results of tests upon the same kind of shavings might show widely different figures because of the general variation in the character of the flames. Much depends also upon how and where the tests are conducted, whether under a smoke hood with a strong draught, or in an open room where air currents could strike the flame and cause it to sway. The most serious objection, however, to the shavings test, and the one which, in the writer's opinion, is fatal to its use as a standard method of comparison, is the impossibility of making the shavings of uniform size and quality. The samples here exhibited demonstrate the objection made.

These shavings were all made by the same carpenter and were as nearly alike as possible for him to make them. You will note that some are fine like sawdust, while others are very coarse, with all gradations of size between. Another objection is that in coarse-grained wood like oak, the plane, in making the shaving, splits many of the large pores and allows the crystallised chemical to fall out, thus removing a part of the fire-resisting agent. Lastly, no wood in the form of shavings would be exposed to fire in a building. It would seem that further evidence is unnecessary to demonstrate the inappropriateness of this test alone as a standard of comparison.

To avoid the difficulties of this and similar tests the previously mentioned "timber test" was designed. Though not entirely satisfactory, the results, as a whole, have been

gratifying. During the past two years the writer has conducted over 4,000 tests upon fireproofed wood, the majority being "timber tests." Scarcely any criticism of the method of test has been offered by clients, though the results were often not gratifying.

The specimens for this test are accurately cut to a size $1\frac{1}{2}$ inch by $\frac{3}{4}$ inch by 12 inch. These "timbers" are tested in pairs by being laid across the top of a 6-inch gas crucible furnace, in which a constant temperature of 926 degs. C. = 1,700 degs. F. is maintained. This particular temperature was chosen because it is given by the New York Building Code as approximately the heat of a burning building. At the end of two minutes the specimens are removed and duration (1) flame and (2) glow noted for each.

The temperature is under constant control by means of a Le Chatelier pyrometer, the "couple" being placed between the two specimens, thus recording the heat exactly at the point of application. The proportions of gas and air are regulated to furnish a vigorous flame 8 to 10 inches above the furnace, so imitating an ordinary fire.

After test the specimens are sawed in two at the middle and tracings made of the unburned wood. These tracings are then carefully measured by planimeter and the percentage ratios to the original cross-section calculated. The percentage of unburned wood is printed upon the tracing of each specimen, and then blue prints are made which become a part of the permanent record.

The accompanying exhibit contains samples of these blue prints, also a number of tested specimens of different varieties of wood both treated and untreated, showing the comparative results in each instance. It will be noted that the tested specimens show a straight line in the cross-section on the side not exposed to the fire, whereas the untreated specimens are burned on all sides. This is good evidence of the fire-resisting properties of the wood. In general the untreated woods show a cross-section area approximately 10 to 25 per cent. less than the treated samples. However, the value of the "fireproofed" wood cannot be rated by this feature alone. Account must be taken of the tendency to ignite and support combustion. This is indicated by duration of flame and glow, after the specimen is removed from the fire. In every instance the contrast in time of flame and time of glow between the treated and the untreated wood is very marked. The average duration of each taken from 688 tests on four varieties of treated soft woods was 7 and 12 seconds. The same data taken from 846 tests on four varieties of treated hard woods was 10 and 14 seconds.

Similar calculations based upon tests of untreated wood, though not averaged from nearly so many tests, gave for soft woods, flame, 1 minute 19 seconds; glow, 1 minute 53 seconds; and for hard woods, flame, 2 minutes 31 seconds; glow, 6 minutes 29 seconds.

Those figures give a ratio of 1 to 11 and 1 to 9 for flame and glow between treated and untreated soft woods, also 1 to 14 and 1 to 27 for hard woods. That is, the tendency of untreated woods to burn is ten to twenty times that of treated woods. This measure of the property of retarded combustion is as important as the determination of the percentage of unburned areas, for in the first stages of a fire minutes are valuable. Experience has shown that a variation of 5 per cent. should be allowed in cross-section area, because of structural differences in the wood, fluctuation in temperature and personal error in measuring. In fact, like all investigative work, it is never safe to estimate average values from the results of a few tests.

The advantages of this method of test are:—(1) A test piece of uniform size, large enough for practical comparisons, and small enough for numerous tests to be made with slight waste of material, thus insuring a fair average report; (2) a constant temperature and uniform time of application of heat; (3) an estimate of the tendency to support combustion as indicated by the times of flame and glow; (4) the ability to accurately measure the amount of burn, and make a drawing of same for permanent record; the specimen itself can also be easily preserved for future reference if desired. In brief, every element of the test is practically constant except the character of the wood and the treatment it has received. Necessarily, these must always remain variable.

The lumber is thoroughly dried before testing, and care exercised to keep everything uniform.

The specimens are placed so the side which was originally the outside surface of the board faces the fire. This is necessary because the Building Bureau permits one inch outside treatment on floor-sleepers and other large materials, which is encased in concrete or a coating of other fireproofed wood.

It will be noted that hard woods, like long leaf yellow pine, oak and maple, when treated, differ only slightly in unburned area from untreated lumber.

They are naturally "slow-burning" material. It would scarcely be necessary to fireproof hard wood if the preservation of structural strength were the only consideration. But the danger from inflammability should make a surface treatment

imperative. Soft woods which waste rapidly under flame should be treated throughout.

Although treated wood has many advantages as a fire retardant, it also has its failings, the worst being its tendency to become hygroscopic. There are processes which claim avoidance of this tendency to gather moisture when exposed to dampness, but I have had no opportunity to prove their merits. Because of this difficulty the Navy has discontinued the use of fireproofed wood, except for interior trim, furniture, &c.

When in this damp condition a new difficulty arises, because the chemicals employed produce a corrosion on metals. Neither of these difficulties appear harmful where the wood is ordinarily dry and protected by paint, varnish or oils.

A strong point in favour of the treatment is that the wood does not seem to become perceptibly more combustible by the application of oils and varnish. Among the experiments I will make at the conclusion of this paper is one designed to demonstrate this feature.

A further defect of treatment is to weaken the wood and make it brittle. Although this does not always result, it is a recognised possibility, and the Navy specifications reject material which has lost over 30 per cent. of its original strength.

In New York city no attention is paid to the question of strength, for the method of steel construction does not require the wood to support loads.

Whether the treatments are permanent, I am not prepared to state. Our experience with them is too short to predicate a positive opinion. Samples kept in my laboratory two years show no signs of deterioration, and we have here some samples treated in 1895, which we will test to show they still retain their fire-resisting qualities.

Some processes, however, do employ volatile chemicals, as is evidenced by a bloom which appears on the wood after standing for some time; it is also shown upon the sides of these jars of shavings which are about two years old. So far as my experience goes with lumber treated for New York city, there is very little tendency for this sort of deterioration. Neither has there been any evidence of decay. When used under ordinary conditions of dryness, and protected as it usually is, I see no reason why well-treated wood should not remain sound and effective indefinitely. However, I believe, the question is one to be systematically investigated.

There are two other well-known defects, namely, discolouration and difficulty in working due to hardness. Both of these are increased by excessive treatment, hence the manufacturer is always tempted to lessen the treatment. This fact is the only argument necessary for regularly testing the material as delivered for use.

Last, but not least, from a builder's point of view, the wood is costly. But considering the awful destruction of life and property which fire constantly causes, the saving of expense should not be allowed as an excuse for the use of inflammable materials which invite public calamity.

ARCHITECTURAL EXHIBITION IN NEW YORK.

A VISIT to the annual exhibition of the Architectural League, says the *American Architectural Record*, assuredly gives one a somewhat depressing idea of the interest which architecture inspires in New York city. At any one moment in the afternoon there will be perhaps from fifty to seventy-five people somewhat hastily and aimlessly walking around the galleries on Fifty-seventh Street. Of these four out of every five will be women—and women, if this can be said of any women, of no particular interest. Many of them look like professional followers of exhibitions, the kind that will go to any exhibition that is cheap enough and respectable enough. Half the remainder have the appearance of art students, or perhaps of friends or relatives of architectural draftsmen. What one rarely sees is a woman who has apparently any particular reason to be interested in architecture, one, for instance, who would be likely either to build or inhabit a handsome house. And the men put up even a less impressive appearance. There are, in the first place, not enough of them to justify the impression that architecture in New York was anything but an amiable feminine suburban fad; and the majority of those present seem to be either draftsmen or architectural students. Occasionally one sees a man who might be a professional architect in good standing or a well-informed amateur, but what one almost never sees is a man who looks as if he had any business, as apart from professional grounds for an interest in architecture. The men who draw the cheques and who pay for all these fine buildings, they are conspicuously and hopelessly absent.

If the people who go to see an Architectural League exhibition are, to put it mildly, inadequately representative of American interest in architecture, the exhibition itself affords an almost equally inadequate idea of the current work of the

New York architects. The great majority of the leading architects do not exhibit at all, and those who send drawings do so only sparingly, as if their purpose was to get off with as little exhibition and bother as possible. Some of the younger men exhibit more freely, and have apparently taken some trouble to display a fair proportion of their work, but this is true only of a fraction of them. One could never infer, either from the quality or the quantity of the drawings on the walls, that around New York as a centre there was now under way an unprecedented amount of building construction, that the character of these new buildings included large numbers of every prevailing type, and that the activity was particularly noticeable in buildings that make a brave show—in public structures of one kind or another, handsome residences, magnificent hotels and towering office buildings. No exhibition in the existing building could indeed accommodate more than a fraction of the big work which is now being constructed or soon will be completed; but the showing made this year is positively niggardly compared to the wealth of opportunity.

These remarks are not made with any intention of criticising the management of the exhibition on the part of the committee of the Architectural League. Probably no one recognises better than they do the inadequateness both of the attendance and the display. There have been better exhibits made than that of this year, but none in a different class as to representative quality and intrinsic interest. The facts are familiar. As it is this year, so it has been more or less from the start. American picture-shows are with certain exceptions poorly enough attended, and of course an exhibition chiefly of drawings cannot be made as interesting as a picture-show. There is very little popular interest in architecture as an art, and what there is expended chiefly in gazing aloft at the Fuller building. The character and volume of the attendance on the annual exhibitions do not offer architects many inducements to send in their drawings, particularly when they are so very busy that they are for ever trying in vain to catch up to the necessary and endless detail of their work. Whatever they do in the matter they do good-naturedly, out of a desire to assist a worthy purpose, but they do very little even of that. The arts of painting and sculpture as applied to architecture, and the industrial arts generally, are as meagrely represented. In this field the possible material, while possessing more popular interest, is not so abundant. In respect to the industrial arts, as far as original designs go, it is so very small as to constitute almost a negligible quantity. There is more architectural sculpture, but not very much that architects or sculptors have any opportunity to exhibit. Cartoons for mural paintings, and often the panels themselves are more numerous and form one of the most valuable parts of the exhibition; yet even here the things one has heard about and would like to see are very seldom on the walls there. In short the committee in charge are confronted by an extremely difficult and thankless task and find it impossible to obtain the cordial co-operation they need, either from the people who are doing much of the work or the people who are paying for it.

For our own part we fail to see how this state of things is to be remedied, except slowly—so very slowly under existing conditions that people might well decide in advance to get tired of waiting. Fortunately there is a chance at least of an important change of conditions. The Fine Arts Federation is endeavouring to raise money to erect a very much larger building than that now occupied on Fifty-seventh Street, a building so large that all the different art societies of New York can hold joint exhibitions under one capacious roof. There are no signs as yet that the very considerable sum of money will be soon forthcoming, but it is the kind of an idea which generally finds backing among the many liberal givers of New York city. None of the societies now making exhibitions in New York city would receive more benefit from this consolidation than would the Architectural League, just because none of the annual exhibitions needs for its popularisation more than does that of the League the assistance of a full representation of the allied arts. It cannot be expected that anybody except professionals will take very much interest in architectural drawings, and while, of course, an architectural exhibition would be absurd without a liberal display of such drawings, the exhibitions must depend for popular interest upon other classes of exhibits. It would be to the signal advantage of co-operative exhibitions that the architecture could be carried into greater public notice on the back of arts that have the advantage of displaying not merely drawings or photographs of the real thing, but the real thing itself.

Under such circumstances the exhibitions would surely arouse a much livelier interest on the part of possible exhibitors. A larger proportion of the architects who are doing the big work could be induced to show drawings and photographs, and what is equally important it would be much more to the interest of the many important houses who sell objects of industrial art to display the character of their work. The exhibits which come under this head even more conspicuously fail to represent the extent and quality of the current work than

do the architectural drawings, but if the exhibitions were held in a large building which supplied abundant space and which would attract in one way or another large crowds of people, it should not be difficult to induce the interior decorators to put on exhibit special rooms designed, arranged and furnished by their own people, which would prove exceedingly interesting to many thousands of people. Every year there are brought through New York by some of the Fifth Avenue importers many rare and valuable objects purchased abroad, and destined eventually for the rooms of some splendid private mansion, and surely these importers could be persuaded to send some of these mantelpieces, fabrics, furniture and architectural remnants to an exhibition which would be spectacular enough to attract the attention of thousands of people. Then, too, if the necessary money were available, it would be possible to devote part of the space to displays of a distinctly educational character, to the showing of well-designed typical rooms, which could be executed at comparatively small expense. Indeed this educational purpose is an essential part of the whole scheme, and could be developed in many other exceedingly interesting ways. The erection of a building such as the one proposed would in effect be the subsidising in the most effectual possible way the very important work of popularising the different branches of American art. It could and would form a better agency for that purpose even than a great museum, for it works with living forces and might produce living results. Provided it could obtain a sufficient endowment it would become in effect the art university of the country, the centre around which all the representative workers and progressive forces in American art could be grouped, and by means of which the impulse could be communicated both to the coming generation and to the uninstructed public. The idea is one of the greatest promise; it is peculiarly the product of American conditions and is based on the most approved American methods; it could be made to do as much, if not more, for architecture than for any other of the arts.

TESSERÆ.

The Battle of Issos.

IN last week's *Architect* there was a reference to the great Pompeian mosaic which Dr. Pernice supposed was derived from a painting by either Helena or Apelles. From what was said by Pliny, it was formerly believed to be a repetition of the celebrated picture by Philoxenus of that subject; for, independent of Alexander and Darius being the two most conspicuous figures, the design and composition of the work are so superior to the execution that its original has evidently been the production of an age long anterior to the degenerate period of the mosaic itself. With the single exception of the execution, the mosaic exhibits in every respect merits of the highest order, and is certainly one of the most valuable relics of ancient art. The composition is simple, forcible and beautiful, and its original, if not actually a production of the most renowned times of Grecian painting, still cannot have been far short of meriting the commendation bestowed by Pliny upon the battle-piece of Philoxenus, which was painted by order of Cassander, king of Macedon, about 316 B.C. The painter was a pupil of Nicomachus of Thebes, whom he imitated and even surpassed in rapidity of execution. He is said by Pliny to have discovered some more expeditious methods of operation in painting. He was the most rapid painter of antiquity.

Terrington St. Clement Church, Norfolk.

This is another of the gigantic parish churches; but it approaches far nearer than any other to the cathedral type, though it still remains quite as far from its complete realisation. Its nave and west front externally fully realise it, and it is not fair to mention its central portion as failing, for the transepts have been mutilated and the central tower, evidently designed, has been destroyed or never completed. But as usual the distinctive character of a minster is absent from the choir and from the internal elevations. It is, however, a most magnificent building, stately in itself and valuable as a study of the peculiar Transitional style of the district. The west front is of extreme splendour, fully equalling, if not throwing into the shade, those of Yatton and Crewkerne. Like them it consists of the extremities of the nave and aisles, each supported by turrets, but the proportion of the whole seems better than in either of the Somersetshire examples. The windows, especially the great window of the nave, are fine examples of the local intermixture of Decorated and Perpendicular tracery. The west doorway, on the other hand, is singularly small and plain for the general character of the composition. This splendid front, however, loses much of its effect by the close proximity of the campanile, which stands just detached to the north of it. This is a bold plain structure, evidently of much later Perpendicular date than the church, and probably erected when the design of completing the central tower was relinquished. It is

much to be regretted that its architect did not apply it to some such purpose as at West Walton instead of making it as it does almost entirely ruin this noble façade. The nave has seven bays and fourteen clerestory windows, and especially on the south side, which is most enriched, is a grand and well-proportioned structure. The transepts are the full height of the nave, but they have been shortened, and thereby have also lost the western aisles with which they were originally furnished. The choir has no aisles, and is every way inferior, having only reached the height of the main building by the addition of a later clerestory of brick. The internal effect of the church is very noble, but much simpler and plainer than might have been expected from the splendour of the exterior. The piers are plain octagons and the arches quite plainly chamfered, but their proportion, which is extremely fine, takes away any notion of rudeness or imperfection. The roof is rather high-pitched, but does not exhibit the genuine East-Anglian character.

Roman Colouring.

The crudeness of colour and asperity of tone observable in the Roman school, though founded on simplicity, is perhaps a greater proof of their want of eye and taste than of a pure historic principle. Harmony of colour consists in the due balance of all, equally remote from monotony and from spots. Though each part of Roman pictures be painted with sufficient breadth of manner, their discordance is such that they do not coalesce into one whole, but appear unconnected fragments in apposition. Their theory of shade is so defective that the parts deprived of light of the same body, or the same piece of drapery, are not effaced but coloured. If the positive reds and blues of the Roman school invigorate the eye, they likewise command it, and counteract the grandeur of history in a degree not much inferior to the bad effect produced by the imitation of stuffs discriminated according to their texture; their bright asperity and bleak purity equally pervert the negative and subordinate character of drapery, and attract a larger share of attention from the beholder than they deserve. A Madonna in the hands of Carlo Maratta, and sometimes even of Raphael, at least in his earlier productions, is the least visible part of herself. The most celebrated Madonna of Andrea del Sarto, though in fresco, is certainly more indebted to her drapery than her face, perhaps still more to the sack on which her husband rests, and from which the picture got its name. From this censure we ought to except Michel Angelo da Caravaggio and Andrea Sacchi, whose works, though else so dissimilar in principle and execution, coincide in reducing colour frequently to little more than chiaroscuro; the one for melancholy and forcible, the other for visionary or devotional effects. "The Pilgrims adoring the Madonna with the Infant," in Sant' Agostino, by the former, seem not painted but tinged in the last golden ray of departing eve, whilst the "Vision of San Romualdo," by the latter, surrounds us with grey twilight and gradual evanescence.

GENERAL.

The Prince of Wales, as president of the Society of Arts, presented on Monday, at Marlborough House, the Society's Albert medal to Sir Charles Augustus Hartley, "in recognition of his services, extending over forty years, as engineer to the International Commission of the Danube, which have resulted in the opening up of the navigation of that river to the ships of all nations."

The Total Cost of the legal proceedings relating to the ownership of the Irish gold ornaments was 3,114*l.* cs. 2*d.* The fees of the law officers were 595*l.* 5*s.* The amount paid by the British Museum for the ornaments was 600*l.* The Treasury paid the taxed costs of the British Museum, the defendants in the action, amounting to 1,486*l.* 12*s.* 2*d.* The ornaments were on Monday deposited in the Dublin National Museum.

The Playing Cardmakers' Company have issued their awards in the competition for the best designs for the backs of playing cards. First prize (the H. D. Phillips prize), Mr. F. D. Welenn, 15 Avenue Road, N.W.; second prize, Mr. G. D. Woodfield, 33 Huddleston Road, Tufnell Park; third prize, Mr. W. S. Riley, 98 St. Saviour's Road, Leicester; and fourth prize, Mr. E. Phillips, Princes Rock, Plymouth.

The Metropolitan Park Commission of Boston propose to construct a path around the highest hills as a memorial of Charles Eliot, the late American landscape architect. Against a rock forming one abutment of the parapet of a runic stone arch bridge is to be placed a bronze tablet "dedicating to the memory of Charles Eliot the bridge, the path and the landscape itself—a monument of a grandeur unapproachable by any human construction."

Sir Samuel Montagu has offered to the London County Council a sum of 10,000*l.* for housing purposes, and it is proposed to allocate the gift to a portion, about 25 acres, of the White Hart Lane Estate, Wood Green, and on which cottages for the working classes will be erected.

The Metropolitan Asylums Board will apply to the Local Government Board for an order authorising the managers to incur an expenditure not exceeding 8,680*l.* on the erection of the proposed additional buildings at Joyce Green Hospital, such expenditure to be defrayed by means of a loan repayable within a period of thirty years.

The Dean Farrar memorial committee have resolved that, in the event of the necessary funds being obtained, the memorial to the late Dean of Canterbury should take the form of carrying into effect his design for filling the west window of the chapter-house of the cathedral with coloured glass to match the east window, and of completing certain details in the restoration of the chapter-house.

The Court of Common Council have agreed to support the suggestion made by the further Strand, improvement committee in a memorial to the London County Council that the buildings in Aldwych should not be extended into what should be the roadway of the Strand.

The Parish Church of Bosham, in Sussex, which contains Roman as well as Saxon masonry, is to be restored under the direction of Messrs. Colson, Farrow & Nisbett, architects, of Winchester and London. It is twice mentioned in the Domesday Survey, and in the Bayeux tapestry Harold is represented as entering it in order to perform his devotions before sailing for Normandy.

The London County Council are about to expend 39,550*l.* upon the erection of 146 cottages on the Norbury estate and 40,100*l.* in connection with the formation of roads and sewers on the same estate, besides 120,317*l.* on the erection of 414 cottages on the Totterdown Fields estate, Tooting.

Three Hundred Diplomas of the Paris International Exhibition which have not reached their destination have been returned to the commissioner, M. Picart. Some of the winners are dead, others have given wrong addresses, while a third class considered it was not worth while to leave any address.

The Victoria and Albert Museum has acquired for 550 guineas the seventeenth-century woodwork and carving, ascribed to Grinling Gibbons, at 3 Clifford's Inn, 21 feet long and 10 feet high, with bolection moulding, designed chair rail, deep skirting and four doorways, and great chimneypiece surrounded by extremely rich carving of the date of Sir Christopher Wren.

Mr. Thos. Hellyar Foord, of Rochester, has subscribed 5,000*l.* to Dean Hole, to be applied to the restoration of Rochester Cathedral.

The Italian Minister of Public Works has invited tenders for the building of an aqueduct to provide the Apulian plains in the "heel" of Italy with water from the Apennines. The total length of all the ducts will be 1,071 miles.

M. Edmond Haraucourt, director of the museum of comparative sculpture at the Trocadéro, Paris, has been appointed director of the Cluny Museum in the place of M. Enlart, who has retired.

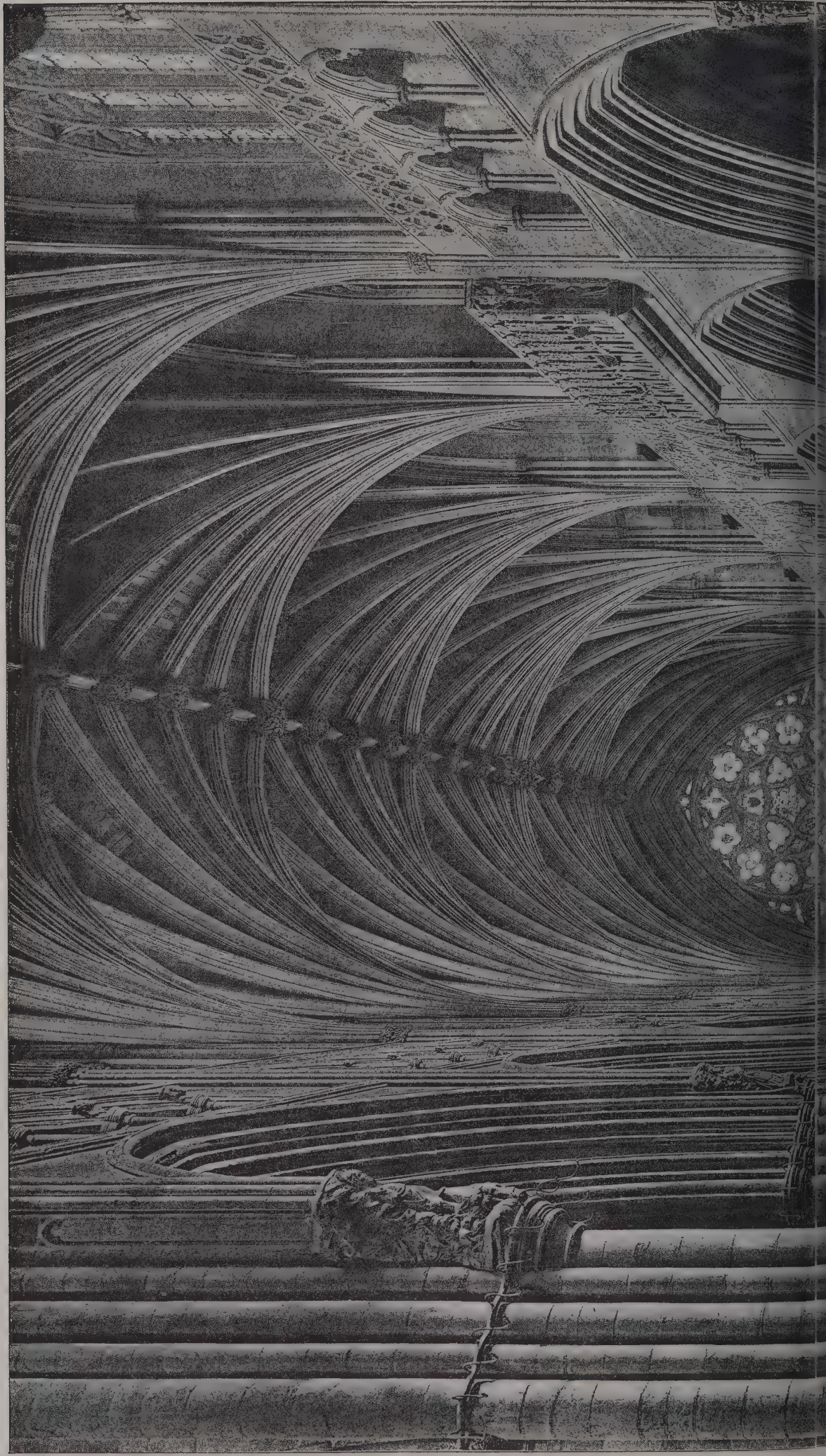
Mr. Cavendish, as representing the First Commissioner of Works, has informed Sir H. Maxwell that not a particle of the stonework of the river front of Somerset House has been painted, therefore the question of the effect of white lead paint on Portland stone does not arise. The pediment and enrichments, together with the lower part of the dome, are of stucco and wood (almost entirely the latter). This work has probably been painted during the whole time of its existence. The vases are of a clay composition, and have also always been painted, as is evidenced by the fact that the old coats of paint are from $\frac{1}{4}$ -inch to $\frac{3}{4}$ -inch thick.

Mr. E. W. Richards has been appointed principal of the London County Council Brixton Technical Institute. The Institute, which will be opened next session, is situated in the Ferndale Road, Brixton, and is intended to be an important centre for instruction in building trades. Mr. Richards has had experience both in practical building work and in teaching building trade subjects. He has been engaged in teaching in the evening classes at polytechnics and technical institutes, and for the past seven years he has held the position of head of the building trades department at the Northern Polytechnic, Holloway.

St. Andrews' University will appoint on September 19 a lecturer in geology at a salary of 300*l.* per annum, the lecturer to conduct courses qualifying for graduation in arts and science.

An Historical and Archaeological congress, organised by the Archaeological Society of the province of Namur, will be held at Dinant, Belgium, from August 9 to 13. The federated historical and archaeological societies of Belgium, under the patronage of His Majesty the King of the Belgians, will take part in the congress. Among the subjects for discussion will be primitive settlements in Belgium, the history and traces of Roman occupation, the Frankish invasions and the progress of the arts. An exhibition of choice pieces of the chased copper and bronze wares formerly made in Dinant has been organised in connection with the gathering.

The Architect, July 31st 1903.





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CATHEDRAL SERIES, No. 457.—EXETER: THE NAVE, LOOKING WEST.



1903.



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ING.
Architects.

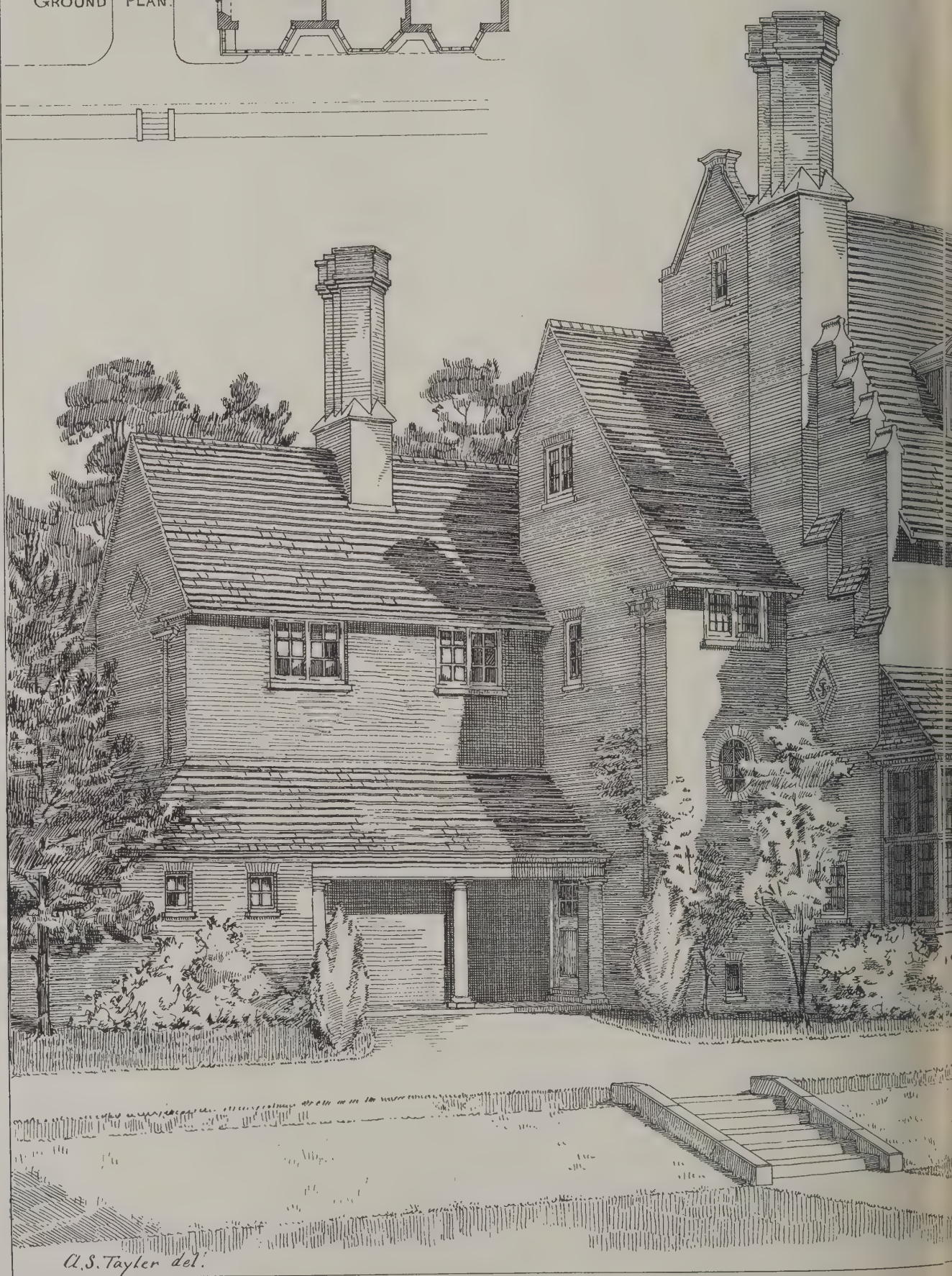
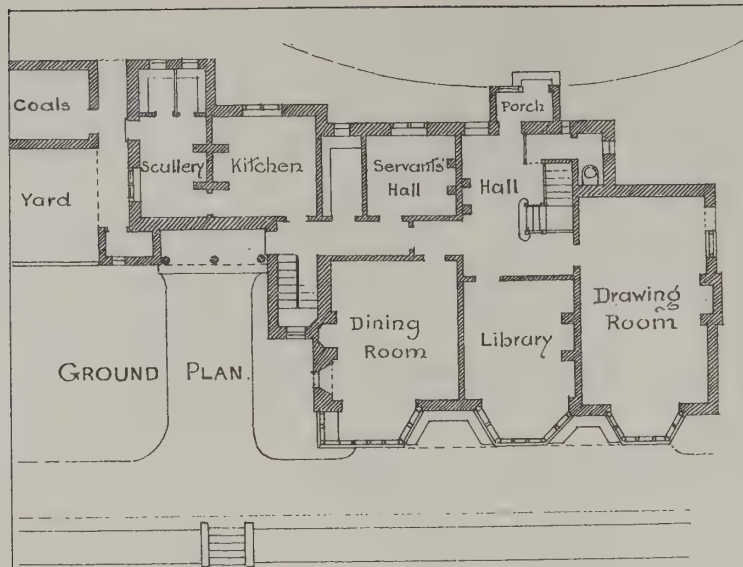
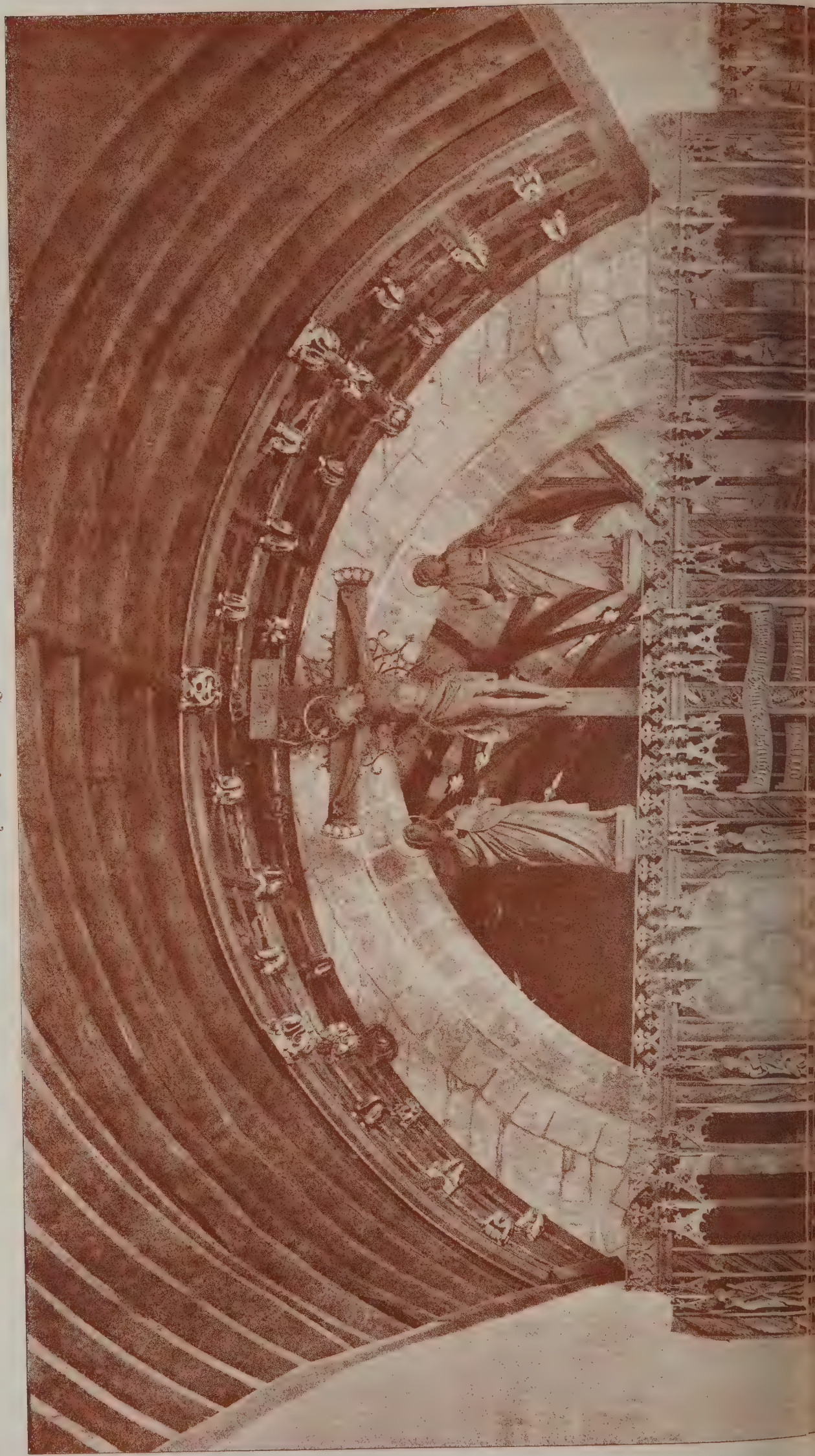
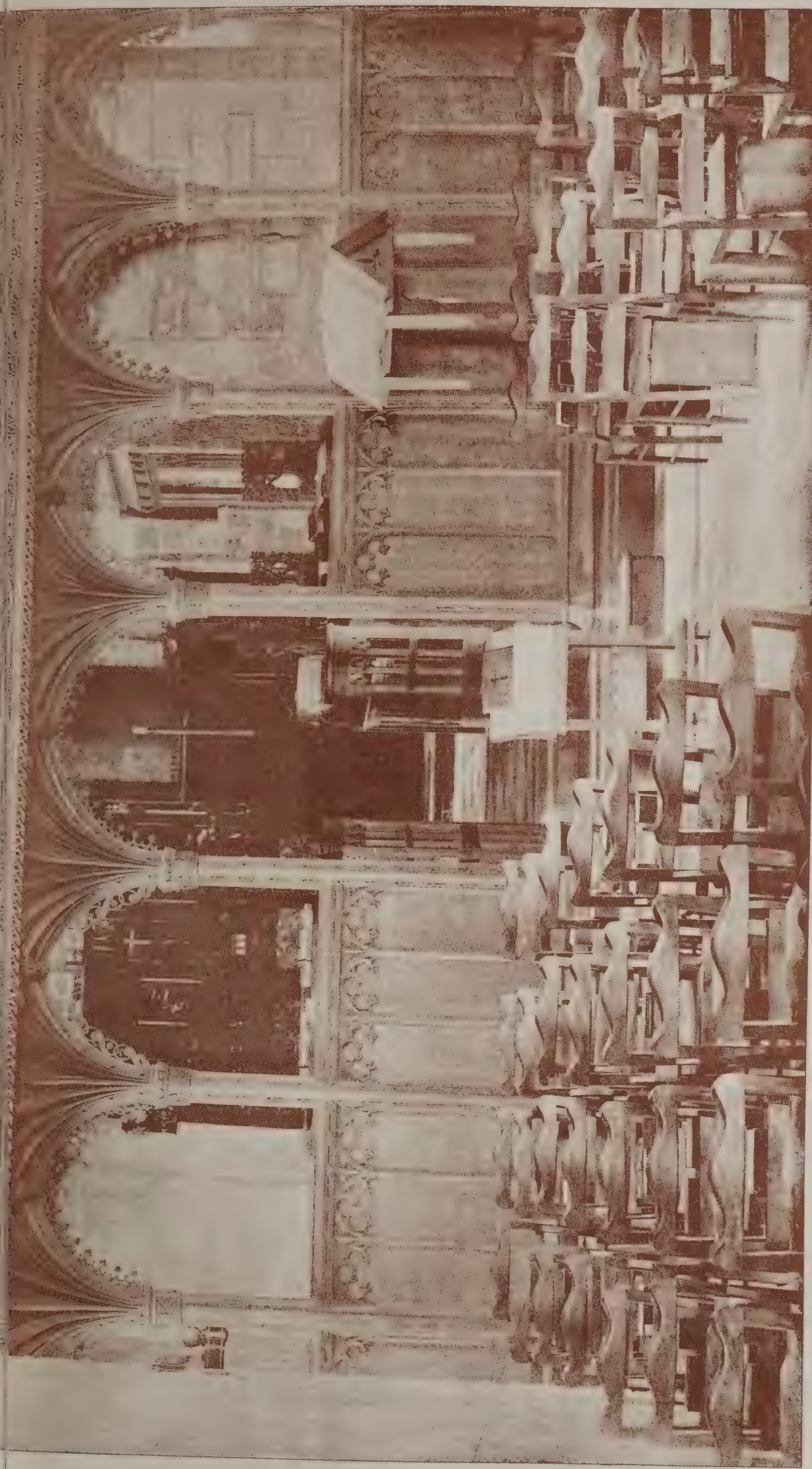




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The Architect, July 31st 1903.





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THE REPAIRING OF S. CRANTOCK CHURCH, CORNWALL: THE SCREEN.

EDMUND SEDDING, F.R.I.B.A., Architect.

THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BLACKPOOL—Aug. 31.—Competitive drawings are invited for new offices to be erected at the corner of Sefton Street and Nixon Street, Blackpool. The architect whose design is selected will be appointed to carry out the work. The competition is limited to architects having offices and practising within the water area of the Fylde Water Board. Mr. C. Arthur, 34 Victoria Street, Blackpool.

HOWDEN—Sept. 12.—Plans and estimates are invited for improving and extending the sewerage of the contributory place of Howden. The successful competitor will be awarded a sum of 15% and the usual commission for superintending the execution of the works. Mr. Henry Green, clerk.

HUNSLET—Aug. 5.—Designs and estimates are invited for ornamental gates, and for fencing of lift wells at the new workhouse, Rothwell Haigh. Mr. Fred W. Mee, clerk, Union Offices, Hunslet, Leeds.

LONDON—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75% design placed first, and one of 25% for second. Mr. Edward Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100%, 50% and 30% respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

CONTRACTS OPEN.

ASHFORD—Aug. 7.—For repairs and renewals of roofing to certain portions of the schools at Ashford, Middlesex. Mr. F. G. Beeching, clerk to School Board, Ashford, Middlesex.

AYLESBURY—Aug. 11.—For repairs at the union workhouse. Mr. Frederick B. Parrott, clerk, 16 Bourbon Street, Aylesbury.

BACUP—Aug. 12.—For the erection of an infants' school in Lanehead Lane, Bacup. Messrs. Smith & Cross, architects, Town Hall Chambers, Rochdale.

BARROW-IN-FURNESS—Aug. 5.—For the erection of Central Hall, Hartington Street, Barrow-in-Furness. Mr. John F. Curwen, architect, &c, 26 Highgate, Kendal.

BISHOP AUCKLAND—For the erection of a Methodist minister's house, Cockton Hill, Bishop Auckland. Mr. T. E. Davidson, architect, 32 Clayton Street West, Newcastle-on-Tyne.

BOLTON-UPON-DEARNE—Aug. 10.—For the erection of a wall at Blacksmith Shop Corner, Goldthorpe. Mr. J. Ledger Hawksworth, clerk, Bolton-upon-Deane.

BOWNESS-ON-WINDERMERE—Aug. 5.—For the erection of residence, Bowness-on-Windermere. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

BRIDGEND—Aug. 7.—For the erection of an infirmary block, casual wards and porter's lodge at the workhouse. Mr. P. J. Thomas, architect, Bridgend.

BRISTOL—Aug. 31.—For the erection of one or two warehouses at Cumberland Basin. Mr. W. W. Squire, engineer, Engineer's Office, Underfall Yard, Cumberland Road, Bristol.

CHIC ST. OSYTH—For the erection and completion of detached residence at Rowheath, Chic St. Osyth, Essex. Mr. George Gardiner, architect, Marine Parade, Clacton-on-Sea.

COLWYN BAY—Aug. 24.—For the erection of isolation hospital, including pavilion and ward blocks, administrative building, laundry and outbuildings. Mr. Jos. H. Roberts, clerk, Council Offices, Station Road, Colwyn Bay.

CREWE—Aug. 7.—For the erection of a new post office at Crewe, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification and a copy of the conditions and form of contract may be seen on application to the Postmaster.

DISTINGTON—Aug. 3.—For the enlargement of Dyon school, Distington. Mr. H. Hill, Dyon Side, Distington.

EMBLETON—Aug. 7.—For pulling-down present Wesleyan chapel and erecting new chapel and school at Embleton. Mr. Allinson, Bassenthwaite Lake station.

EPSOM—Aug. 15.—For the erection of a dépôt, comprising cart-sheds, stables, horsekeeper's quarters, lofts and storehouses, and for a post-mortem room in Church Street, and stables and barn at the sewage farm in Hook Road. Mr. Edward R. Capon, surveyor, Council Offices, Bromley Huist, Epsom.

EXETER—Aug. 10.—For the erection of building, &c., at the City Bank, Exeter. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

FAVERSHAM—Aug. 7.—For the erection of a police station, cottages, &c. Mr. Charles Turner, clerk, Sessions House, Maidstone.

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No 13



No 48



No 49



No 50



No 51

GRIMSBY.—Aug. 7.—For the erection of a residence, Bargate, Grimsby. Mr. Herbert C. Scaping, architect, Court Chambers, Grimsby.

GWINEAR.—Aug. 9.—For the erection of farm buildings and repairs to farmhouse at Gwinear. Mr. Sampson Hill, architect, Green Lane, Redruth.

HEREFORD.—For the erection of a furniture repository, Commercial Road, Hereford. Mr. W. W. Robinson, architect, King Street, Hereford.

IRELAND.—Aug. 4.—For rebuilding business premises, residence and stores at Bishop Street, Londonderry. Mr. J. P. M'Grath, architect, Commercial Buildings, Foyle Street, Londonderry.

IRELAND.—Aug. 4.—For the erection of eight water-closets at the workhouse, Strabane. Mr. J. E. Sharkie, clerk, Poor Law Offices, Strabane.

IRELAND.—Aug. 5.—For concreting floor, &c., at male probationary ward, and supplying and fixing ventilators at female probationary ward, Limerick workhouse. Mr. H. J. Guinane, clerk to Guardians, Limerick.

IRELAND.—Aug. 6.—For alterations to dormitories at the Armagh lunatic asylum. Mr. R. H. Dorman, county architect, Armagh.

IRELAND.—Aug. 6.—For the erection of vestry and porch and entire renovation of the interior of Ballee Church, near Downpatrick. Specifications, &c., can be seen at the rectory.

IRELAND.—Aug. 8.—For the erection of a residence at Fermoy. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Aug. 8.—For the erection of cottages in the following townlands:—Speenogue and Inch Level, two cottages; Magherabeg and Inch Level, two cottages. Mr. J. J. S. Barnhill, the engineer to the Rural District Council, 1A Strand, Londonderry.

KING'S LYNN.—Aug. 4.—For the erection of a warehouse in Page Stair Lane, King's Lynn. Mr. Herb. Tilson, architect, Railway Road, Lynn.

LEEDS.—For the erection of house at Bramhope. Messrs. Child & Co., architects, 149 Park Lane, Leeds.

LIMEHOUSE.—Aug. 4.—For the erection of bandstand, caretaker's watchbox, gymnasium, apparatus, conveniences and shelter, boundary walls and iron railings at Brickfield Gardens,

Spenslow Street. Particulars may be obtained at the General Constructional Section (Architect's Department), 18 Pall Mall East, S.W.

LONDON.—Aug. 12.—For the erection of a scullery adjoining the dining-hall at the workhouse, Sidney Road, Homerton, N.E. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONGTOWN.—Aug. 3.—For cementing part of Blackbanl school house. Mr. Wm. Dixon, correspondent, Longtown.

LUDGERSHALL.—Aug. 3.—For alterations and additions to the new police residence at Ludgershall, Wilts. Mr. Charles S. Aday, county surveyor, County Offices, Trowbridge.

MANCHESTER.—Aug. 5.—For the erection of retaining and boundary walls and other works at Forge Lane extension and Hulme Lane, Bradford. Specification, bill of quantities and form of tender may be obtained on application at the City Surveyor's Office, Town Hall, Manchester.

NEW MALDEN.—Aug. 31.—For the erection of new public offices, fire station, stabling, &c., at New Malden, Surrey. Mr. William Hope, architect, Seymour Road, Hampton Wick.

NORTHWICH.—Aug. 4.—For the erection of the Gospel Union mission hall, Northwich. Mr. E. T. Ward, architect, Winnington Street, Northwich.

PENSHAW.—Aug. 5.—For the erection of station building at Penshaw, for the North-Eastern Railway Company. Mr. William Bell, architect, Central Station, Newcastle-on-Tyne.

PRESTON.—Aug. 10.—For rebuilding New-in-Pend bridge. Mr. W. Compton Hall, county bridgmaster, County Offices, Preston.

RASTRICK.—Aug. 13.—For the erection of stabling, &c., at the George inn, Rastrick. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

ST. AGNES.—Aug. 6.—For the erection of offices and additions to residence at St. Agnes. Mr. Sampson Hill, architect, Green Lane, Redruth.

SCOTLAND.—Aug. 3.—For the erection of a new passenger station at Plean Junction, near Bannockburn, for the Caledonia Railway Company. Mr. J. Blackburn, secretary, 302 Buchanan Street, Glasgow.

SCOTLAND.—Aug. 3.—For the erection of a new detached villa at Murthly asylum, Perth. Mr. David Smart, architect, Perth.

SCOTLAND.—Aug. 11.—For the extension of the workshops and offices connected with the gas department in Wall

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et. Messrs. Sinclair & Ballantyne, architects, 95 Bath
et.

SCOTLAND.—Aug. 12.—For the erection of tenements in
Edgemarket and St. Margaret's Place. Sir J. D. Marwick,
in clerk, City Chambers, Glasgow.

SCOTLAND.—Aug. 13.—For the erection of farm buildings
Longrigg Green estate. Mr. J. H. Rea, Gatehouse, Esk-

SCOTSWOOD.—Aug. 7.—For improvements at Messrs.
son & Co.'s works, Scotswood, near Benwell, Northumber-
L. Mr. W. P. Pattison, Council Offices, Benwell.

SEELY OAK.—Aug. 24.—For the erection of a boiler-house
the workhouse, Seely Oak. Messrs. C. Whitwell & Son,
itects, Temple Row, Birmingham.

SHREWSBURY.—Aug. 3.—For the erection of a covered
te sale ring (walls of brickwork and slated roof). Mr. W.
ple Eddowes, borough surveyor, The Square, Shrews-

SHREWSBURY.—Aug. 4.—For the erection of station
ings and other works at Shrewsbury station, for the joint
nittee of the London and North-Western and Great Western
ay Companies. Mr. A. E. Bolter, secretary to joint
nittee, Paddington Station.

LEIGHTS.—Aug. 5.—For the erection of three cottages at
hts, Yorks, for the North-Eastern Railway Company.
William Bell, the company's architect, York.

SUNDERLAND.—Aug. 10.—For the erection of St. Mary's
vicarage, Tyne Dock. Messrs. Joseph Potts & Son,
itects, 57 John Street, Sunderland.

THORNTON HEATH.—Aug. 7.—For the erection of a
g office at Thornton Heath. Conditions and form of
act may be seen on application to the Postmaster at
on.

THURLES.—For the erection of butcher's stall and resi-
at Thurles. Mr. William Maher, Main Street, Thurles.

VERSTON.—Aug. 8.—For alterations and additions to the
ston and District cottage hospital, comprising new wards
operating theatre, &c. Messrs. J. W. Grundy & Son,
iects, Central Buildings, Brogden Street.

WALES.—For the erection of four dwelling-houses at Glyn-
r. Mr. Thomas Edwards, Tanrhawyd, Wales.

WALES.—Aug. 4.—For alterations and additions to the
Corn Exchange inn, Gilwern. Mr. B. J. Francis, architect,
Abergavenny.

WALES.—Aug. 4.—For the erection of a nine-stall stable,
refreshment-room and outbuildings at the Navigation inn,
Gilwern, near Abergavenny. Mr. B. J. Francis, architect,
Abergavenny.

WALES.—Aug. 4.—For structural alterations, painting and
decorating at 29 The Parade, Cardiff, and for the extension of
playground and new covered verandah at the girls' intermediate
school. Mr. George Thomas, architect, Queen's Chambers,
Cardiff.

WALES.—Aug. 6.—For the erection of a chapel at
Ynysybwl. Mr. Arthur O. Evans, Pontypridd.

WALES.—Aug. 6.—For the erection of a school at
Rhostyllen, to accommodate 160 girls. Mr. T. Morris, archi-
tect, Argyle Street, Wrexham.

WALES.—Aug. 7.—For the erection of new coastguard
buildings at Cemaes, Anglesea, consisting of houses for three
men and a watch-room, &c. Drawings and specification can
be seen at the office of the Director of Works Department,
21 Northumberland Avenue, London, W.C.

WALES.—Aug. 8.—For the erection of fifteen houses at
Watts-Ville, near Cross Keys, Mon. Mr. R. J. Strong, the
United National Collieries, Cross Keys, Mon.

WALES.—Aug. 10.—For the erection of a vestry at
Edwardsville, near Treharris. Mr. W. Dowdeswell, architect,
Bryntaff, Treharris, R.S.O.

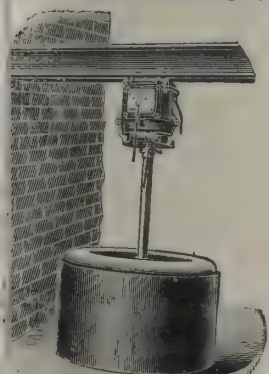
WALES.—Aug. 10.—For the erection of forty houses at
Pontnewynydd. Messrs. Fisher & Sons, architects, Club
Chambers, Pontypool.

WALES.—Aug. 13.—For the erection of a boys' school, and
for additions to and alterations of the existing schools in Pill
Street, Cogan, Penarth. Mr. G. A. Birkenhead, architect,
Caledonian Chambers, Cardiff.

WALES.—Aug. 15.—For alterations and additions to the
chapel for the trustees of Kidwelly Calvinistic Methodist
chapel, Kidwelly. Messrs. John Anthony & Sons, Anchor
House, Kidwelly.

WARRINGTON.—Aug. 17.—For rebuilding of church at
Newchurch. Messrs. Travers & Ramsden, architects, &c.,
44 Church Street, Leigh, Lancs.

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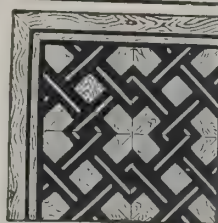
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WALES.—Aug. 19.—For the erection of an organ chamber and altering, repairing and renovating Llandilofawr parish church. Mr. David Jenkins, architect, Llandilo.

WALES.—Aug. 26.—For the erection of a school at Troedyrhiw for 400 boys. Mr. J. Llewellyn Smith, architect, Aberdare.

WARRINGTON.—Aug. 5.—For the construction of a concrete engine foundation, for the electricity and tramways committee. Particulars on application to the Borough Electrical Engineer, Electricity Works, Howley, Warrington.

WATERLOO.—Aug. 6.—For the erection of (Contract No. 1) park shelter and tool-house combined at Victoria Park, Waterloo; (2) park shelter and bowl-house combined at Bowersdale Park, Seaforth. Mr. F. Spencer Yates, surveyor, Town Hall, Waterloo.

WHITBY.—For alterations and additions to Bagdale Old Brewery. Mr. Harold G. Walker, architect, Skinner Street, Whitby.

WINFRITH.—For alterations and additions to Winfrith House, Winfrith, near Dorchester. Mr. F. R. Bates, architect, Newport, Mon.

WOODHOUSE.—For the erection of club premises at Woodhouse. Messrs. Buttery & Birds, architects, 1 Basinghall Square, Leeds.

ON the 25th inst. a large party of members of the Lancashire and Cheshire Antiquarian Society made an excursion to Warrington for the purpose of examining the foundations of a house recently uncovered on the site of the Roman civitas at Stockton Heath, which is being explored at the expense of the museum committee of the Warrington Corporation, under the direction of Mr. Thomas May, one of the local members of the Society, who acted as leader on the occasion. A silver denarius of Nero found on the site by Mr. May serves to fix the date of the remains. The party then proceeded to examine the potters' kilns, and also visited the Warrington parish church, Grappenhall Church and Warrington Museum, where a large number of objects obtained from the excavations have recently been deposited.

TENDERS.

ALVECHURCH.

For carrying out sewerage scheme at Alvechurch. F. C. HOLLOWAY, Wolverhampton (accepted). £1,987

ASHTON-IN-MAKERFIELD.

For sewerage work of a public sewer in Old Road, Ashton in Makerfield. Mr. THOMAS BURGESS, surveyor. WEBSTER & WINSTANLEY, Wallgate, Wigan (accepted). £820

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For constructing a collecting basin at Wyford, and laying new 18-inch diameter main from Batheaston.

COCHRANE & SON, Dudley, mains and pipes (accepted). £10,788

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BINGLEY.

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Bolton, Bingley, heating engineer	66	14	0
Thornton, Bingley, slater	52	0	0
& W. Harris, Bingley Road, Cross Roads, near Keighley, plasterer	48	1	2
Anderson, jun., Bingley, painter	32	2	3

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HOPKINS & SON, Albert Street, Birmingham (accepted) £41 7 2

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making new drive across the King's Park, Boscombe, and other works in connection therewith. Mr. F. W. LACEY, borough surveyor.

P. SAUNDERS, Poole Road (accepted) £1,554 0 0

BRIGTON.

For the erection of eight five-roomed artisans' dwellings in Elm Grove. Mr. FRANCIS J. C. MAY, borough surveyor.

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H. A. Caxton-Jay	3,600	0	0
Sattin & Evershed	3,592	0	0
J. & W. SIMMONDS, Ashford Road (accepted)	2,552	0	0

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T. Vale	2,413	17	4
H. Law	2,342	14	6
T. Allsopp	2,263	14	9
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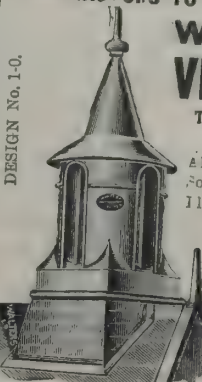
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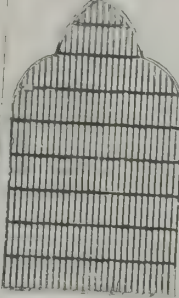
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tested Hot-water Pipes, Castings, Connections and Fittings
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CHEESHIRE.

For alteration and additions to the sexton's lodge at Bebington Cemetery. Mr. WILLIAM GRIFFITHS, architect, 5 Hamilton Square, Birkenhead

R. Baines	£642	0	8
R. T. Amery	459	0	0
G. H. Morton & Son	449	12	0
G. Ellidge	427	19	6
P. McLachlan	399	18	0
J. & J. Satterthwaite	388	16	10
J. LEE & SON, Higher Bebington (accepted)	398	0	0

CHEPPING WYCOMBE.

For street works. Mr. C. T. J. RUSHBROOKE, surveyor.
Dashwood Avenue.

G. H. Gibson	£440	0	0
W. Lee & Son	412	0	0
T. Free & Son	385	0	0
J. SMITH (accepted)	353	18	0

Abercromby Avenue.

G. H. Gibson	680	0	0
W. Lee & Son	649	0	0
T. FREE & SON (accepted)	585	0	0

Sewer and surface-water drain, Oakridge Road.

G. H. Gibson	845	0	0
W. Lee & Son	821	0	0
T. FREE & SON (accepted)	705	0	0

Additional stables and cart shed.

W. Lee & Son	254	0	0
J. T. Harris	249	0	0
J. Bond	237	0	0
G. H. GIBSON (accepted)	234	0	0

DARTFORD.

For the erection of a boundary wall at the infectious hospital, Bow Arrow Lane, Dartford, Kent. Mr. ROBERT MARCHANT, architect, 28 Theobald's Road, London, W.C.

W. Smith & Sons	£2,175	0	0
T. Knight	2,082	0	0
F. Jennings	2,055	2	0
A. T. Ridley	1,912	5	6
Scott & Branton	1,910	0	0
Multon & Wallis	1,785	0	0
F. Spencer & Sons	1,730	0	0
Abbott & Herbert	1,693	10	0
W. F. BLAY, Spital Street, Dartford (accepted)	1,544	0	0

DOVERCOURT.

For the construction of a landing stage on the beach. Mr. H. DITCHAM, borough surveyor.

Smith & Beaumont	£167	10	0
T. Durrant & Son	119	15	4
E. E. NEWTON, Harwich (accepted)	114	17	6

ENFIELD.

For street works in Garfield Road, Ponder's End; Uplands Park Road, Enfield. Mr. RICHARD COLLINS, surveyor.

Uplands Park.

Kitteringham & Co.	£1,400	0	0
W. Peters & Co.	1,112	0	0
E. J. BETTS, Enfield Highway (accepted)	1,112	0	0

Garfield Road.

Kitteringham & Co.	720	0	0
W. Peters & Co.	598	0	0
E. J. BETTS (accepted)	535	0	0

ERITH.

For supply and erection of 600 feet of wood pale and space fencing, 4 feet 6 inches in height, in South Road, Erith.

E. C. White	£47	10	0
A. Turner & Son	46	13	0
F. Spencer & Son	44	4	0
G. H. Gunning & Sons	42	17	0
Friday & Ling	42	0	0
G. Wyman	40	0	0
Rowland Bros.	39	10	0
J. F. VARRALL, Belvedere (accepted)	32	10	0

FOREST HILL.

For additions and alterations to No. 26 London Road, Forest Hill, S.E. Mr. RANDALL VINING, architect and surveyor.
89 Chancery Lane, W.C.

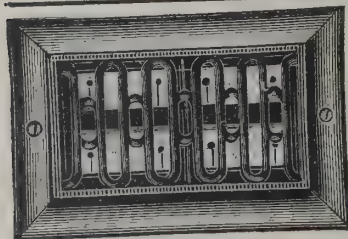
A. Black & Son	£1,700	0	0
Turtle & Appleton	1,653	0	0
J. & C. Bowyer	1,637	0	0
Alfred Sykes	1,578	0	0
A. W. Coombs	1,569	0	0
J. Smith	1,535	0	0
T. R. ROBERTS & CO. (accepted)	1,510	0	0

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FULHAM.

For making-up the carriageway and paving the footways of Townmead Road (section 6). Mr. FRANCIS WOOD, borough surveyor.

Roadway.

J. Meston	£1,833	2	11
G. Wimpey & Co	1,447	0	0
B. Nowell & Co.	1,439	0	0
H. J. Greenham	1,215	0	0
J. Mears	1,100	0	0

Footway.

Imperial Stone Co.	308	0	0
J. Ellis & Sons	290	15	0
Patent Victoria Stone Co.	284	0	0

For making-up the carriageway and paving the footways of Kelvedon Road. Mr. FRANCIS WOOD, borough surveyor.

Roadway.

H. J. Greenham	£479	0	0
J. Mears	440	0	0
G. Wimpey & Co.	418	0	0
B. Nowell & Co.	403	0	0

Footways.

B. Nowell & Co.	58	0	0
J. Ellis & Sons	54	12	6

For the erection of Ingram House, Stockwell Road, S.W. Mr. ARTHUR T. BOLTON, architect, 2 The Sanctuary, S.W. Quantities prepared by Messrs. WIDNELL & TROLLOPE, surveyors, Broad Sanctuary Chambers, Great Tothill Street, S.W.

Foster & Dicksee	£47,777	0	0
Trollope & Sons	43,950	0	0
Holloway Bros.	43,731	0	0
Shillitoe	43,000	0	0
Higgs & Hill	43,354	0	0
Rudd & Sons*	40,500	0	0

* Accepted on a reduced scheme.

GREAT BROUGHTON.

For painting, colouring and varnishing the schools.

R. Harding	£30	0	0
WILLIAMSON & SONS, The Goat, Cockermouth (accepted)	18	3	6

GRIMSBY.

For new firebox and driving wheels for the 13-ton road roller.

Firebox.

Wright & Co.	£135	10	8
Stephenson & Co.	129	13	6
Great Grimsby Coal, Salt and Tanning Co.	114	0	0
WALKER (accepted)	43	0	0

Driving wheels.

Charlton & Co.	57	0	0
Great Grimsby Coal, Salt and Tanning Co.	48	5	0
AVELING & PORTER, Rochester (accepted)	35	0	0
Phillips	31	0	0

HALIFAX.

For the erection of a dwelling-house at King Cross. Mr. ARTHUR T. WHITELEY, architect, 41 Stanley Road, King Cross.

Accepted tenders.

T. CRAWSHAW & CO., King Cross, Halifax, mason	£325	0	0
H. Bancroft & Son, Halifax, joiner	92	0	0
Lumb Bros., King Cross, Halifax, plasterer	54	15	0
W. Ward, Halifax, plumber	36	0	0

HASTINGS.

For sewerage works in Downs and Hoad's Wood and Elphinstone Roads, Hastings. Mr. P. H. PALMER, borough engineer.

Accepted tenders.

H. Small, 63 Winchelsea Road, Ore, Downs and Hoad's Wood Road, £304 1cs.; Elphinstone Road, £49 10s.

For supply of the steel and ironwork required in the roofs of the engine and boiler-houses at the Brede pumping station. Mr. P. H. PALMER, borough engineer.

CROSS & CROSS, Union Works, Walsall (accepted) £174 0 0

HEMEL HEMPSTEAD.

For repairs to The Lawn, Hemel Hempstead. Mr. ARTHUR F. BRIGGS, architect, 9 Queen Victoria Street, E.C.

C. Miskin & Sons	£925	0	0
Mansfield & Son	580	6	6
James Darvill	580	0	0
Josiah Hales	397	0	0

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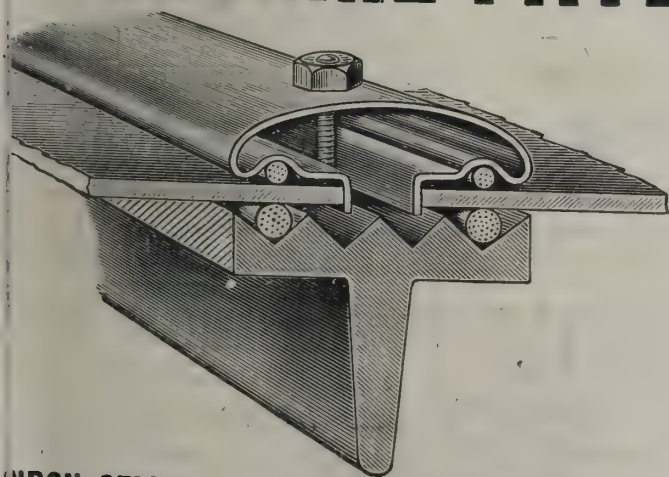
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HORLEY.

For additions to Timberham, for Mr. F. E. Charles. Messrs.
 THOMAS DINWIDDY & SONS, architects, Greenwich, and
 54 Parliament Street, S.W.
 C. Nightingale & Sons £1,015 0 0
 T. Bushby & Son 949 0 0
 T. DICKENS, Charlwood (accepted) 870 0 0

HOVE.

For internal and external painting at the East Hove Board
 school (D'Avigdor Road), Hove.
 Brown & Sons £347 0 0
 W. Whiteman 338 0 0
 Olliver & Sons 274 0 0
 S. Hopkins 200 0 0
 GATES & SONS, 1 North Road, Brighton (ac-
 cepted) 275 0 0

IPSWICH.

For painting at the Guardians' offices at 19 Tower Street,
 Ipswich.
 J. Stock & C. Dodd £24 8 8
 F. H. Orvis 10 15 0
 J. Boyce 9 3 0
 CRISP & SMITH, Orwell Place (accepted) 8 19 6
 J. R. Self 8 12 6

IRCHESTER.

For the construction of sewage outfall works. Messrs. SHAR-
 MAN & ARCHER, engineers.
 Hacksley Bros. £2,329 0 0
 G. Henson 2,175 0 0
 Young 2,131 10 0
 Willmott 1,945 10 0
 Berrill & Green 1,800 0 0
 Smart 1,788 0 0
 GOODMAN & MURKETT (accepted) 1,724 0 0

IRELAND.

For the various plumbing works in connection with the town of
 Downpatrick.
 W. NEILL, Irish Street (accepted) £15 10 0

IRELAND—continued.

For the erection of eighteen labourers' cottages on selected
 sites within the Lurgan district. Mr. W. W. LARMOR,
 surveyor, Banbridge.

Eight Cottages—Design No. 2A.

T. Collen £1,640 0 0
 W. J. Haire 1,600 0 0
 G. PATTON, Windsor Avenue, Lurgan (ac-
 cepted) 1,400 0 0

Ten Cottages—Design No. 2.

T. Collen 2,200 0 0
 G. Patton 2,150 0 0
 W. J. HAIRE (accepted) 2,100 0 0

KINGSLAND.

For three additional storeys to warehouse, Kingsland, N.
 Mr. J. RANDALL VINING, architect and surveyor,
 89 Chancery Lane, W.C.

J. Marsland & Sons £2,938 0 0
 Perry & Co. 2,900 0 0
 Clark & Mannoch 2,887 0 0
 J. & C. Bowyer 2,825 0 0
 McCormick & Sons 2,819 0 0
 C. Wall 2,671 0 0
 A. Black & Son 2,637 0 0
 TURTLE & APPLETON (accepted) 2,497 0 0

KNARESBOROUGH.

For carrying-out the Follifoot waterworks scheme. Mr.
 RICHARD ANAKIN, engineer, 11 Dragon Terrace, Harro-
 gate.

T. Rowland £2,584 16 6
 R. A. Crowe 2,477 9 0
 R. Barker 2,430 6 10
 T. Bell 2,230 6 8
 A. Dickinson 2,196 3 1
 T. E. Sugden 2,150 0 0
 C. Dickinson 2,120 0 0
 T. Smith 2,157 14 0
 F. N. Simpson 2,070 11 10
 H. Matthews 2,010 0 0
 B. Oxley 1,956 9 1
 C. BIRKILL, York (accepted) 1,745 13 0

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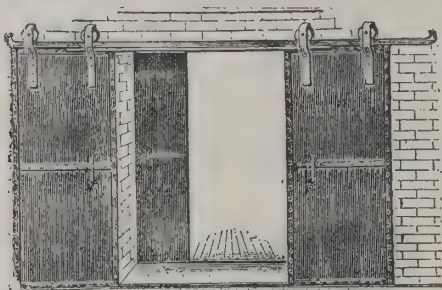
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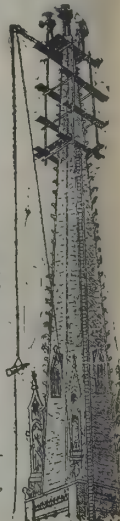
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LANARK.

For the construction of sewage purification works.

DUNLOP & CO, Lanark (*accepted*) . . . £4,796 0 0

LANCHESTER.

For the construction of sewage-disposal works at the small-pox hospital, Maiden Law. Mr. J. R. LUPTON, surveyor.

*Accepted tenders.*J. Atkinson, Knitsley, Consett, mason . . . £63 10 6
J. Strachan, Consett, ironwork . . . 19 7 7

For sewerage and sewage-disposal works at Pear Tree, near Burnhope. Mr. J. H. LUPTON, surveyor.

S. DART, Annfield Plain, Durham (*accepted*) . . . £91 4 0

LICHFIELD.

For the erection of four-bed observation wards at the work-house, Lichfield, Staffs. Mr. D. C. MARKS, architect, St. Mary's Chambers, Lichfield.

J. H. Wood . . . £964 11 11
H. Smith & Sons . . . 882 4 4
A. Walmesley . . . 848 0 0
W. H. James . . . 810 0 0
W. Hopkins . . . 795 0 0
T. LOWE & SONS, Burton-on-Trent (*accepted*) . . . 785 0 0

LITTLEBOROUGH.

For the electric lighting of the Council offices, public library and fire station, with the necessary generating plant, &c. Mr. W. C. C. HAWTAYNE, consulting electrical engineer, 9 Queen Street Place, London, E.C.

ROCHDALE ELECTRIC CO., LTD., Shaw Clough, Rochdale (*accepted*).

LIVERPOOL.

For the supply of about 250 yards of unclimbable iron fencing.

W. MILLER & SONS, Wolverhampton (*accepted*).

Note.—Sixteen tenders sent in.

LONDON.

For new staircase and alterations to 98 Fenchurch Street, E.C. Mr. ARTHUR F. BRIGGS, architect, 9 Queen Victoria Street, E.C.

Patman & Fotheringham . . . £1,403 0 0
Turnbull & Son . . . 1,350 0 0
Mansfield & Son . . . 1,315 0 0
John Greenwood & Co. . . . 1,141 0 0
ASHBY & HORNER (*accepted*) . . . 1,047 0 0

LONDON—continued.

For the erection of a cricket and football pavilion of timber with corrugated iron roof at the recreation ground, New Southgate. Mr. C. G. LAWSON, surveyor.

G. W. Varndell . . . £1,434 12 0
Bradshaw . . . 1,197 0 0
Hardy Bros. . . . 1,094 0 0
D. Tucker . . . 1,015 0 0
F. W. Hardy . . . 1,035 12 0
Smith & Co. . . . 963 0 0
Newby Bros. . . . 926 0 0
Wilton . . . 886 10 0
Hadley & Sons . . . 799 0 0
Cowling & Co. . . . 727 0 0
T. J. HAWKINS (*accepted*) . . . 671 0 0

For the supply and erection of iron staircases at the work-house, Edmonton, near Silver Street station (G.E.R.), for the Guardians of the Strand Union.

H. & G. Measures . . . £450 0 0
Pryke & Palmer . . . 256 0 0
Hayward Bros. & Eckstein, Ltd. . . . 246 0 0
Cadogan Ironworks . . . 199 0 0
W. & S. Jones . . . 191 0 0
W. A. Baker & Co., Ltd. . . . 170 0 0
Haward Bros. . . . 164 0 0
T. Pearce . . . 159 0 0
J. & F. May . . . 142 0 0
Powers & Deane-Ransome, Ltd. . . . 125 0 0
St. Pancras Ironworks Company, Ltd. . . . 115 0 0
Herring & Son . . . 110 0 0
Jones's Ironfoundries and Engineering Company, Ltd. . . . 106 2 4
G. ROWE & SON, Lower Edmonton (*accepted*) . . . 80 0 0

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For heating apparatus in new portion, Upper Hornsey Road school, Holloway.

Wippell Bros. & Row . . . £425 0 0
J. Wontner-Smith, Gray & Co. . . . 359 0 0
M. Duffield & Sons . . . 321 0 0
Palowkar & Sons . . . 319 0 0
G. & E. Bradley . . . 325 0 0
Bates & Sons . . . 298 10 0
The Brightside Foundry and Engineering Co. . . . 297 0 0

* Recommended for acceptance.*

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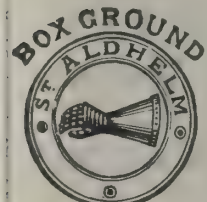
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For special school, Hearnville Road site, Balham.

G. Neal	£5,345	0	0
Stevens Bros.	4,535	0	0
E. P. Bulled & Co.	4,419	0	0
J. Garrett & Son	4,299	0	0
Rice & Son	4,269	0	0
H. Wall & Co.	4,207	0	0
Marchant & Hirst	4,149	0	0
E. Triggs	4,031	0	0
General Builders, Ltd.	4,024	0	0
W. Akers & Co.	3,963	0	0
W. Harris	3,952	0	0
Martin, Wells & Co., Ltd.*	3,769	0	0

For junior and senior mixed school of two storeys and infants' school of one storey, Denmark Hill site, Camberwell (East Lambeth, W.).

J. Appleby & Sons	£22,695	0	0
Johnson & Co.	22,119	0	0
J. Smith & Sons, Ltd.	22,075	0	0
J. & C. Bowyer	21,978	0	0
E. Lawrance & Sons	21,949	0	0
J. Garrett & Son	21,929	0	0
Holliday & Greenwood, Ltd.	21,791	0	0
F. & H. F. Higgs	21,586	0	0
Martin, Wells & Co., Ltd.	21,455	0	0
W. J. Mitchell & Son	21,397	0	0
Wm. Downs	21,352	0	0
J. & M. Patrick	20,615	0	0
J. Marsland & Sons*	20,494	0	0

For drainage and sanitary work at Union Street school, Woolwich.

W. Downs	£2,684	0	0
G. Parker	2,656	0	0
Johnson & Co.	2,574	0	0
Ashby & Horner	2,569	0	0
Lathey Bros.	2,517	0	0
W. J. Mitchell & Son	2,497	0	0
J. & C. Bowyer	2,415	0	0
T. D. Leng	2,237	0	0
Thomas & Edge*	1,900	0	0

* Recommended for acceptance.

LONDON SCHOOL BOARD—continued.

For enlargement of Millbank school, Westminster.

H. Wall & Co.	£2,145	0	0
W. King & Son	2,134	0	0
Holloway Bros., Ltd.	2,109	0	0
Treasure & Son	2,088	5	0
Spencer, Santo & Co., Ltd.	2,067	10	0
T. L. Green	1,884	0	0
J. Simpson & Son	1,863	15	0
General Builders, Ltd.	1,758	0	0
E. Triggs	1,660	0	0
Stevens Bros.	1,636	0	0
Martin, Wells & Co., Ltd.	1,563	0	0
Rice & Son	1,549	0	0
C. F. Kearley	1,529	0	0
C. Dearing & Son*	1,473	0	0

For partitions, &c., at Harwood Road school, Fulham.

W. Hammond	£979	0	0
T. Hooper & Son	699	0	0
H. Line	671	0	0
E. P. Bulled & Co.	666	0	0
Lathey Bros.	629	0	0
H. Bouneau	576	0	0
J. & M. Patrick*	509	0	0

For erection of new school in accordance with revised plans, Townmead Road site, Fulham (Chelsea Q.).

W. King & Son	£28,817	0	0
C. F. Kearley	28,225	0	0
J. Carmichael	27,761	0	0
Martin, Wells & Co., Ltd.	27,352	0	0
Stimpson & Co.	27,287	0	0
Hudson Bros.	26,725	0	0
T. L. Green	26,510	0	0
J. Grover & Son	26,357	0	0
J. Appleby & Sons	26,227	0	0
Holloway Bros., Ltd.	26,118	0	0
Lathey Bros.	25,976	0	0
Leslie & Co.	25,339	3	5
Treasure & Son	25,246	0	0
E. Lawrance & Sons	24,714	0	0
C. Dearing & Son	24,590	17	6
G. E. Wallis & Sons*	24,148	0	0

* Recommended for acceptance.

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PREMISES AT READING.

LONDON SCHOOL BOARD—continued.

For new school, Southfield site, Merton Road (West Lambeth C.A.).

William Smith & Son	£23,678	0	0
H. Holloway	22,497	0	0
J. Smith & Sons, Ltd.	22,122	0	0
Martin, Wells & Co.	22,003	0	0
J. Carmichael	21,928	0	0
Lathey Bros.	21,857	0	0
C. F. Kearley	21,659	0	0
F. & H. F. Higgs	21,599	0	0
Holliday & Greenwood, Ltd.	21,596	0	0
Hudson Bros.	21,572	0	0
W. Downs	21,558	0	0
J. & C. Bowyer	21,293	0	0
J. Garrett & Son	21,191	0	0
J. Marsland & Sons	21,140	0	0
Stimpson & Co., Ltd.	20,990	0	0
E. Lawrance & Sons	20,975	0	0
G. E. Wallis & Sons	20,371	0	0
J. & M. Patrick *	19,419	0	0

For additional heating, Ben Jonson school, Stepney.

Adams & Son	£795	0	0
Wippell Bros. & Row	587	10	0
W. G. Cannon & Sons	549	0	0
J. Esson & Son	537	10	0
F. Biggin	510	0	0
M. Duffield & Sons	495	0	0
J. Wontner-Smith, Gray & Co.	470	0	0
G. & E. Bradley *	447	0	0

* Recommended for acceptance.

LONDON SCHOOL BOARD—continued.

For new graded school, Bonneville Road site, Clapham Park (West Lambeth A E.).

J. Carmichael	£21,517	0	0
Holliday & Greenwood, Ltd.	21,460	0	0
Lathey Bros.	21,279	0	0
J. Marsland & Sons	21,233	0	0
Stimpson & Co.	20,641	0	0
F. & H. F. Higgs	20,637	0	0
J. & C. Bowyer	20,593	0	0
J. Smith & Sons, Ltd.	20,552	0	0
W. Downs	20,535	0	0
W. J. Mitchell & Son	20,483	0	0
G. E. Wallis & Sons	20,478	0	0
E. Lawrance & Sons	20,338	0	0
Treasure & Son	20,325	0	0
J. Garrett & Son	20,310	0	0
J. Appleby & Sons	20,273	0	0
Holloway Bros., Ltd.	20,062	0	0
Martin, Wells & Co., Ltd.	19,665	0	0
J. & M. Patrick *	19,411	0	0

For drainage and sanitary works, Ackmar Road graded school, Fulham.

G. Neal	£2,514	0	0
Lathey Bros.	2,399	0	0
Durbin & Katesmark	2,390	10	0
R. P. Beattie	2,360	0	0
J. Peattie	2,347	0	0
F. Bull *	2,279	10	6

For redividing classrooms, &c., Turin Street boys and girls' school, Bethnal Green.

Johnson & Co.	(Schedule, plus 20 per cent.)		
Turnbull & Son	£1,615	0	0
F. & F. J. Wood	1,598	0	0
E. Lawrance & Sons	1,555	0	0
G. S. S. Williams & Son	1,479	0	0
J. Stewart	1,385	0	0
F. Bull	1,333	0	0
J. Grover & Son	1,292	0	0
McCormick & Sons	1,246	0	0
Belcher & Co., Ltd.	1,100	0	0
Marchant & Hirst *	990	0	0

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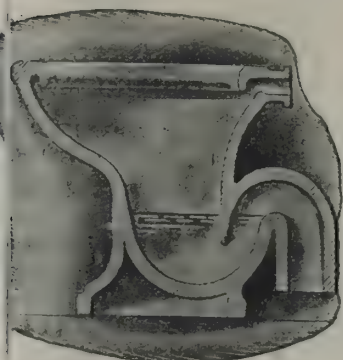
Absolute and perfect flush guaranteed with 1½ gallons of water.

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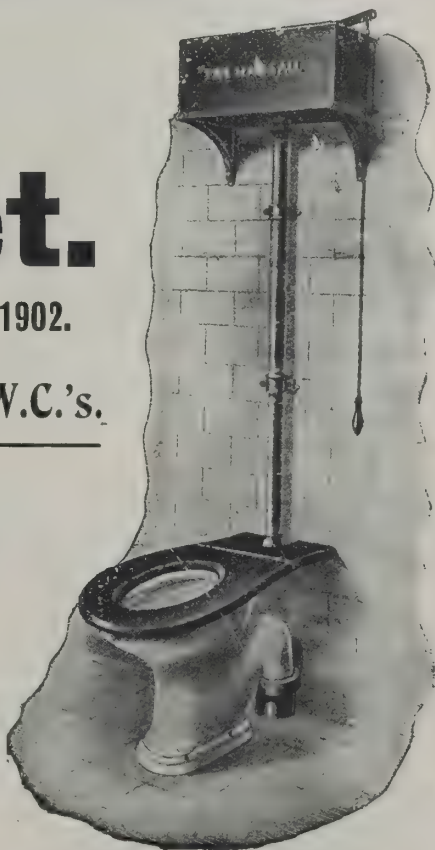
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LONDON SCHOOL BOARD—continued.

For sanitary and drainage works, Morden Terrace school, Lewisham Road.		
G. Parker	£2,945	0 0
J. W. Falkner & Son	2,790	0 0
Johnson & Co.	2,650	0 0
Lathey Bros.	2,635	0 0
R. P. Beattie	2,630	17 0
W. Downs	2,548	0 0
J. & C. Bowyer	2,487	0 0
A. Porter*	2,350	0 0
For refitting offices, Princess Road school, Regent's Park.		
J. Peattie	£677	0 0
Marchant & Hirst	673	0 0
T. Cruwys	668	0 0
G. S. S. Williams & Son	642	0 0
G. Neal	623	0 0
Stevens Bros	612	0 0
F. Ball*	598	0 0

* Recommended for acceptance.

The work at the following schools will be done during the summer holidays—July 25 to August 22. Where exterior as well as interior work has to be done, an additional week will be allowed for the former.

For painting exterior, cleaning and partly painting interior, divisional offices, 8 Avonmore Road.

Hudson Bros.	£135	15 0
W. Hammond	129	0 0
Macey & Sons, Ltd.	127	0 0
F. CHIDLEY (accepted)	91	6 0

For painting exterior, Ellerslie Road.

Hudson Bros.	£123	0 0
Bristow & Eatwell	113	0 0
W. Hornett	109	0 0
W. R. & A. Hide	95	10 0
F. Chidley	95	0 0
F. T. Chinchin & Co.	89	10 0
W. HAMMOND (accepted)	89	0 0

For painting interior, Hughes' Fields (old and new portions).

T. D. Leng	£452	0 0
W. J. Howie	314	0 0
E. Proctor & Son	324	0 0
W. Hayter & Son	250	0 0
S. E. MUSGROVE (accepted)	224	5 0

LONDON SCHOOL BOARD—continued.

For painting interior, Popham Road (infants').		
C. & W. Hunnings	£216	10 0
A. Porter	205	10 0
H. Runham Brown	173	0 0
Belcher & Co., Ltd.	159	4 0
Marchant & Hirst	154	0 0
J. Haydon & Sons	152	0 0
McCormick & Sons	140	0 0
C. DEARING & SON (accepted)	114	0 0

For painting interior and exterior, Whittington.

H. Runham Brown	£656	0 0
C. & W. Hunnings	532	0 0
G. Kirby	528	0 0
H. Wall & Co.	525	0 0
Marchant & Hirst	495	0 0
STEVENS BROS. (accepted)	474	0 0

For painting exterior, the Woolwich (pupil teachers' school), Maxey Road.

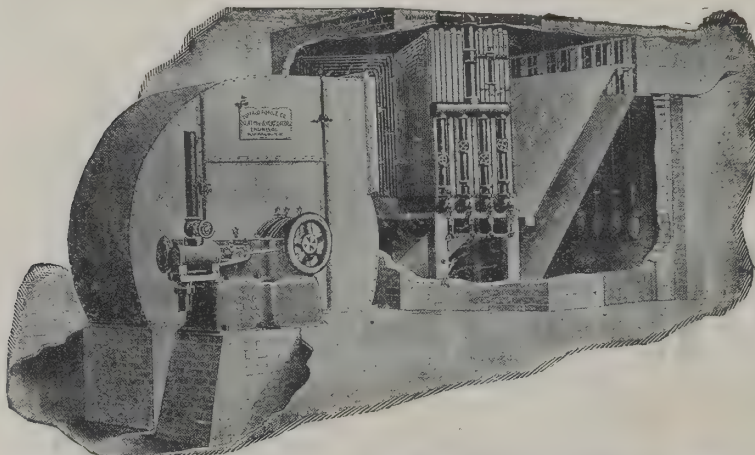
H. Groves	£79	0 0
J. Garrett & Son	59	0 0
E. Proctor & Son	59	0 0
J. H. Hodgkin	52	15 0
W. BANKS (accepted)	51	17 6
W. Hayter & Son	45	0 0

For painting exterior and interior, Royal Hill.

Lathey Bros.	£504	0 0
E. B. Tucker	348	0 0
H. Groves	245	0 0
W. Banks	236	17 6
W. Hayter & Son	218	0 0
W. J. Howie	209	0 0
C. G. JONES (accepted)	208	12 6

For painting interior and exterior, Daniel Street.

Johnson & Co.	£650	0 0
W. Hornett	526	0 0
Stevens Bros.	494	10 0
W. Chappell	475	0 0
G. Barker	435	0 0
W. Silk & Son	433	0 0
J. Haydon & Sons	405	0 0
BELCHER & CO, LTD. (accepted)	393	0 0

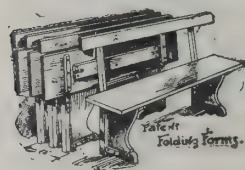


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Entire Seating of a Hall folded flat round
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Entire satisfaction where in use.

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painting interior (old portion), Stanley Street.			For painting interior, Calvert Road (old portion).		
Garrett & Son	£475	0 0	W. Banks	£229	17 6
V. J. Howie	410	0 0	W. J. Howie	225	0 0
Proctor & Son	390	0 0	H. Leney & Son	196	0 0
I. Groves	385	0 0	W. HAYTER & SON (accepted)	166	0 0
V. Downs	384	0 0	For painting interior, Catherine Street.		
E. Musgrove	306	4 6	H. Runham Brown	£608	0 0
V. HAYTER & SON (accepted)	296	0 0	McCormick & Sons	495	0 0
painting exterior, Forster.			Barrett & Power	485	0 0
McCormick & Sons	£178	0 0	Stevens Bros.	414	0 0
Kirby	176	0 0	W. Hornett	381	0 0
Grover & Son	166	0 0	J. HAYDON & SONS (accepted)	329	10 0
ate Bros.	155	0 0	For painting exterior, Reddins Road.		
tevens Bros.	152	0 0	W. Sayer & Son	£144	0 0
W. Harris	119	0 0	J. F. Ford	134	0 0
& W. HUNNINGS (accepted)	117	0 0	F. & H. F. Higgs	118	0 0
painting exterior, Homerton Row.			W. Hooper	111	12 6
Chessum & Sons	£230	0 0	J. & C. Bowyer	110	0 0
V. Shurmur & Sons, Ltd.	227	0 0	Rice & Son	101	0 0
Porter	225	0 0	MAXWELL BROS., LTD. (accepted)	98	10 0
elcher & Co., Ltd.	213	10 0	For painting interior and exterior, Cavendish Road.		
Wales	209	0 0	Dowsett & Jenkins	£755	10 0
V. Silk & Son	197	0 0	W. J. Coleman & Co.	564	0 0
Grover & Son	196	0 0	Lathey Bros.	564	0 0
ORFIELD & Co. (accepted)	158	0 0	E. Triggs	480	0 0
painting interior, Arthur Street.			J. Garrett & Son	446	0 0
I. Line	£395	0 0	W. Johnson & Co., Ltd.	429	0 0
V. Hooper	349	0 0	RICE & SON (accepted)	397	0 0
Triggs	333	0 0	For painting interior and exterior, John Ruskin.		
V. Sayer & Son	305	10 0	J. R. Sims	£734	0 0
I. Groves	289	0 0	W. V. Goad	562	0 0
Maxwell Bros., Ltd.	289	0 0	W. Sayer & Son	498	0 0
V. J. HOWIE (accepted)	259	0 0	J. Garrett & Son	490	0 0
painting interior and exterior, Oliver Goldsmith, and the divisional offices.			H. J. Williams	425	10 0
Lathey Bros.	£669	0 0	MAXWELL BROS., LTD. (accepted)	398	0 0
V. Sayer & Son	553	0 0	For painting exterior, Kentish Town Road.		
E. Triggs	507	0 0	T. Cruwys	£98	10 0
V. Hooper	458	2 6	A. Balfour & Co.	68	10 0
Maxwell Bros., Ltd.	446	0 0	F. & H. F. Higgs	68	0 0
& C. BOWYER (accepted)	437	0 0	H. Wall & Co.	59	0 0
			Marchant & Hirst	49	0 0
			F. CHIDLEY (accepted)	46	0 0

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Finger Plate 3541.

NEW BROMPTON (KENT).

For the erection of a shop, stores, &c., Byron Road. Messrs.
J. W. NASH & SON, architects, 245 High Street, Rochester.

E. West	£2,099	0	0
H. Harris	2,052	0	0
J. Davidson	1,891	0	0
H. E. Phillips	1,850	0	0
E. Filley	1,717	0	0
J. L. Trueman	1,659	0	0
J. Leonard	1,630	0	0
W. C. Snow	1,629	0	0
West Bros.	1,599	0	0
F. Luff	1,595	0	0
G. Gates	1,590	0	0
G. E. WOOLLARD, New Brompton (accepted)	1,589	0	0

NORTHWICH.

For the construction of outfall works at Hartford

W. Prescott	£647	0	0
T. Rowland	610	0	0
E. W. Bostock	585	0	0
Beckett & Co.	543	14	5
S. Hutton	522	7	9
J. Dale	467	16	3
W. Forster, Hartford *	410	0	0

* Recommended for acceptance.

ST. ALBANS.

For (a) supplying and fixing certain hot-water warming apparatus to detached buildings, hot and cold water services, tanks, hydrant mains and fittings, steam and other cooking apparatus, and hand laundry plant at the new asylum for the county of Middlesex, at Napsbury, near St. Albans, Herts; (b) supplying and fixing certain steam-pipes, calorifiers, radiators, &c., to the main asylum building and hospital. Messrs. YOUNG & BROWN, engineers, 104 High Holborn, London, W.C.

Accepted tenders.

Section A.

C. Wall, Upcerne Road, Chelsea	£22,318	0	0
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Section B.

Moorwood, Sons & Co., Ltd., 52 Gray's Inn Road, Holborn	11,552	0	0
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ST. COLUMB.

For the construction of sewers, from 7-inch to 12-inch diameter with manholes, lampholes, &c. Mr. R. HANSFORD, WORTH, engineer, 42 George Street, Plymouth.

R. Neal	£1,974	0
J. & T. Binns	1,921	0
W. E. Bennett	1,786	0
E. Duke	1,766	0
G. Miners	1,756	0
W. Brown	1,669	0
R. HOOPER, St. Agnès, Cornwall (accepted)	1,367	0

ST. PANCRAS.

For the wiring and fitting St. Pancras infirmary, Dartmouth Park Hill, N., for electric light.

BARLOW BROS. & CO., Shaftesbury Avenue, W.C. (accepted)	£1,093	12
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SCOTLAND.

For the erection of refuse destructor, adjoining the electric works.

Accepted tenders.

R. Hutchison, mason and bricklayer	£2,627	0
L. Copland, iron and steelwork	791	0
J. M'Lauchlan & Sons, joiner	398	0
W. Auld & Son, slater and plumber	359	0
W. Miller, plasterer	95	0
H. D. M'Gregor, painter	67	0

SPROWSTON.

For rebuilding offices and alterations to cloak-rooms at the Sprowston mixed school, Sprowston, Norfolk. Mr. C. BROWN, architect, Cathedral Offices, Norwich

R. L. Leveridge	£379	0
Haydon & Daniels	366	0
J. Anderson & Son	329	0
H. S. Watling	324	0
W. V. Woodward	320	0
S. W. Utting	320	0
Tyrell Bros.	259	0
E. E. Huggins	245	0
J. J. Howes	245	0
A. D. Boddy & Son	244	0
Lincoln & Bush	239	17
W. J. HANNANT, Churchill Road, Norwich (accepted)	240	0

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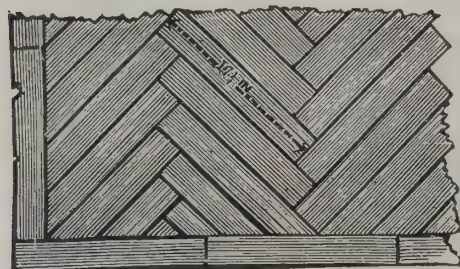
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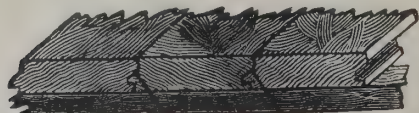
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SOWERBY BRIDGE.

For additions to the Calder Oilcloth Works, Sowerby Bridge.
Messrs. JACKSON & FOX, architects, Rawson Street,
Halifax.

Accepted tenders.

J. Turner & Son, Sowerby Bridge, mason	£535	10	0
F. Greenwood & Son, Gibraltar, Halifax, joiner	299	0	0
W. Robinson & Son, Sowerby Bridge, plasterer	162	0	0
J. Stafford, Sowerby Bridge, plumber	55	10	0

WALES.

For rebuilding 52 and 53 Glebeland Street, Merthyr. Mr.
C. M. DAVIES, architect, 112 High Street, Merthyr.

Jenkins Bros.	£1,363	0	0
S. Hawkins	1,358	0	0
E. Sullivan	1,350	0	0
J. WILLIAMS, Castle Street, Merthy Tydfil	1,345	0	0
(accepted)			

For painting at Cefn cemetery and the small-pox hospital,
Merthyr.

Cefn cemetery.

J. Jenkins	£65	0	0
W. H. WILLIAMS, High Street, Merthyr	55	0	0
(accepted)			
R. Jones	48	0	0

Small-pox hospital.

J. Jenkins	50	10	0
R. Jones	45	0	0
W. H. WILLIAMS (accepted)	22	10	0

For the erection of boundary wall, laying-out footpaths, &c.,
Pant cemetery extension, Merthyr Tydfil. Mr. T. F.
HARVEY, surveyor.

W. Brown	£1,128	8	0
D. Price	1,013	2	0
E. Jones	930	7	0
J. F. Seal	839	0	2
JONES & DAVIES, Dowlais (accepted)	806	14	0

For the construction of bridges and roadways at Berwyn, near
Llangollen, Denbighshire.

J. STRACHAN, 222 Newport Road, Cardiff (ac- cepted)	£3,300	0	0
--	--------	---	---

For rebuilding wall at the casual wards, Stow Hill, Newport,
Mon.

F. W. POWLES (accepted)	£27	10	0
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WALES—continued.

For the erection of 250 dwelling-houses at Aber Bargoed.
Mr. GEO. KENSHOLE, architect, Hanbury Road.

J. Newcombe	£52,320	0	0
Jones Bros.	47,257	10	0
Williams & James	46,950	0	0
J. Howells	46,210	0	0
G. Edwards & Son	42,590	0	0
A. S. Morgan & Co.	42,460	0	0
C. Sora	40,903	10	0
Thomas & Hughes	40,360	0	0
W. WILLIAMS & SONS, New Tredegar (ac- cepted)	39,550	0	0

For the erection of three additional classrooms at Abertillery
to accommodate 170 children, with cloakroom, store-room,
&c. Mr. R. A. ROBERTS, architect, Abercarn, Mon.
Quantities by architect.

D. Lewis	£1,780	0	0
R. Tudor	1,745	0	0
N. Bagley	1,724	0	0
GAEN BROS., Abertillery (accepted)	1,632	2	0

For painting, colouring, &c. (1) the house and chapels at Cefn
cemetery and (2) the small-pox hospital (iron building) at
Twynyrodyn, Merthyr Tydfil.

House and chapels at Cefn.

J. Jenkins	£65	0	0
W. H. WILLIAMS, High Street, Merthyr (ac- cepted)	55	0	0
R. Jones	48	0	0

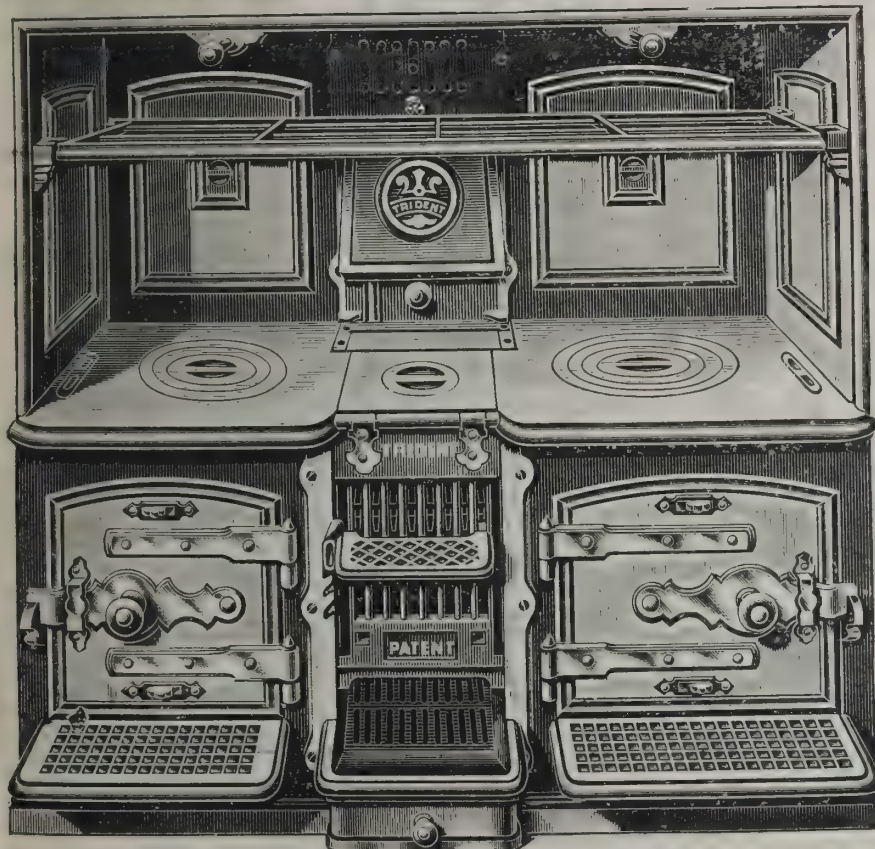
Small-pox hospital.

J. Jenkins	50	10	0
R. Jones	45	0	0
W. H. WILLIAMS (accepted)	22	10	0

For the construction of an underground public convenience
in North Road, Cardiff. Mr. W. HARPUR, borough
engineer.

F. Bond	£3,490	0	0
Knox & Wells	3,344	18	1
D. W. Davies	3,340	0	0
W. Symonds & Co.	3,276	4	5
E. Turner & Sons	3,247	16	1
J. ALLAN & SON, Cardiff (accepted)	3,089	0	8

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WALES—continued.

For the erection of two dwelling-houses at Aber Bargoed.		
Mr. G. KENSHOLE, architect, Station Road, Bargoed.		
W. Morris	£620	0 0
D. Edwards	615	0 0
THOMAS & HUGHES, Llanbradach (<i>accepted</i>)	595	0 0
For the erection of a new lodge at the sanatorium, Canton.		
Mr. W. HARPUR, borough engineer.		
G. Burgess	£563	15 1
W. Symonds & Co.	501	13 8
W. T. Morgan	490	0 0
Blacker Bros.	488	0 0
Knox & Wells	424	0 0
F. Bond *	410	0 0

* Recommended for acceptance.

WICKLEWOOD.

For alterations and additions to the workhouse at Wicklewood, Norfolk. Mr. J. OWEN BOND, architect, 15 Upper King Street, Norwich.		
Chapman & Son	£2,795	0 0
Scarles Bros.	2,713	0 0
Taylor	2,654	0 0
Holmes & Son	2,638	0 0
Skipper & Bartram	2,588	10 0
Bowden	2,588	0 0
Smith	2,446	18 0
Boddy & Son	2,359	0 0
Young & Son	2,347	0 0
Gill	2,334	0 0
Semmence	2,331	0 0
Greengrass	2,321	0 0
Hawes	2,303	0 0
Blyth	2,290	0 0
GUNTON & PALMER, Costessey (<i>accepted</i>)	2,187	12 0

WYMONDLEY.

For alterations and additions to Wymondley House, Heris, for Mr. James W. Courtenay. Mr. W. TAPRELL ALLEN, architect, Hitchin and Stevenage. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.		
J. Spratt	£4,358	0 0
Coulson & Lofts	4,200	0 0
S. Redhouse & Sons	4,049	0 0
W. Seymour & Sons	3,955	0 0
WILLMOTT & SONS, Hitchin (<i>accepted</i>)	3,489	0 0

WISBECH.

For improvements at the Union workhouse. Mr. F. BURDETT WARD, architect, 7 York Row, Wisbech (and Spalding). Quantities by the architect.		
R. Dye	£2,650	0 0
J. Guttridge	2,579	12 8
R. Shanks	2,537	10 0
J. S. Johnson	2,525	15 0
G. J. West	2,522	4 6
Elworthy & Co.	2,328	5 0
E. Girling & Co.	2,316	4 0
J. W. WILKINSON, Elm (<i>accepted</i>)	2,217	11 0
For heating apparatus, hot-water services and ventilating appliances.		
Robert Dawson & Co., Ltd., Stalybridge	£480	0 0

VARIETIES.

IN our report of the comprehensive exhibit of Messrs. George Freeman, Ltd., at the Sanitary Institute Exhibition, which appeared in our issue of July 17, we referred to the beautiful examples of tiles and tilework shown on their stand that were so generally admired. These should have been described as the "Flaxman" art tiles, manufactured by Messrs. Wade & Co., for whom Messrs. Freeman are agents.

THE Bexhill Town Council have resolved to organise a competition for the erection of a memorial clock tower, the total cost not to exceed 200*l.*, including architect's fees.

FOUNDATION-STONES of new fire-stations in the Old Kent Road and at Evelyn Street, Deptford, have been laid by the chairman of the fire brigade committee of the London County Council.

PRINCESS HENRY OF BATTENBERG went on Tuesday to Scarborough to open the new town hall in Castle Road, which has been erected to the designs and under the supervision of the borough engineer, Mr. Harry W. Smith.

PRINCESS LOUISE, Duchess of Argyll, has consented to open a block of artisans' dwellings erected by the Liverpool Corporation on a site from which insanitary property was cleared. This is part of a scheme of rehousing which will involve an expenditure of nearly a million sterling.

THE Geological Museum will be closed during the repainting of the interior from August 1. The business of the

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No. III.—Painters.

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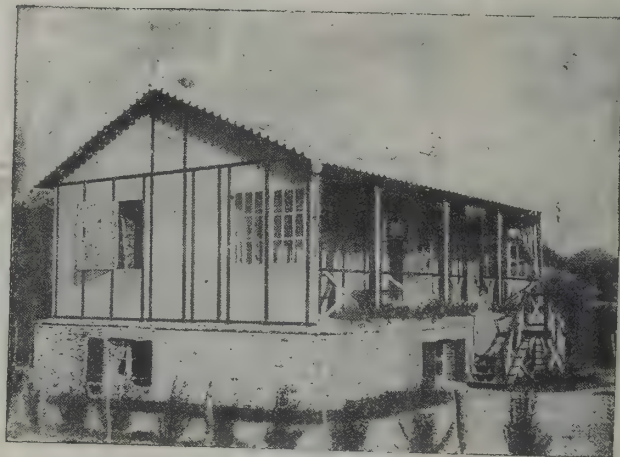
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Geological Survey will be carried on as usual and all visitors coming to the Museum for special information may obtain admission.

WE are pleased to see that a much-needed improvement is being made in Theobald's Road, where the unsightly wall which for so many years has shut off the green and shady pleasance of Gray's Inn is now in course of demolition, and a low wall surmounted by ornamental railings is to take its place.

THE Prince of Wales Pier, Dover, constructed at a cost of 500,000*l.*, was utilised for the first time by the Hamburg-American Line on Sunday last. The steamer *Prinz Sigismund*, outward bound from Hamburg, occupied only a few minutes in taking up her position alongside the pier and landed her passengers most expeditiously.

THE proprietors of the *Engineering Times* are about to issue a special colonial export number for circulation amongst buyers and users of machinery in our colonies. This number will describe machinery and engineering specialties particularly suited to colonial requirements, and will provide a good opportunity for engineering firms in the United Kingdom to bring their productions under the notice of steam and machinery users in India, South Africa, Australasia, Canada, &c.

ON Saturday afternoon members of the Hampstead Antiquarian Society were conducted over Lincoln's Inn by Mr. W. Paley Baildon, and after visiting the great hall, library, chapel and other points of interest, they assembled in the old hall, where Mr. Baildon gave a lecture on the history of the Inn. The Society of Lincoln's Inn was first heard of in 1422, when they rented the Bishop of Chichester's town house, in what is now Chancery Lane, for 6*l.* 13*s.* 4*d.* a year.

A SPECIAL meeting of Perth Town Council has been held for the purpose of signing a deed of agreement as between Sir Robert Pullar, of Tayside, and the Lord Provost, magistrates and Town Council of Perth, by which Sir Robert Pullar undertakes to present a sum of 8,500*l.* to the Town Council to meet the cost of the erection and equipment of a new set of public washhouses, provided that if the cost should exceed this sum it would be met by the Council. The sum gifted by Sir Robert considerably exceeds the estimates for which tenders have been received.

AT an adjourned meeting of the preventive medicine and vital statistics section of the Royal Institute of Public Health, Liverpool Congress, 1903, held on Tuesday, July 21, it was

proposed by Dr. Vacher, county medical officer of health for Cheshire, seconded by Dr. H. Scurfield, medical officer of health for Sunderland, and unanimously resolved:—"That this 1903 congress of the Royal Institute of Public Health held at Liverpool approves of the efforts made by the Worshipful Company of Plumbers in promoting the Plumbing Registration Bill, believing that such a measure will be for the safeguarding of the public health, and beneficial to all classes of the community, and appeals to the Government to give facilities and support to the measure."

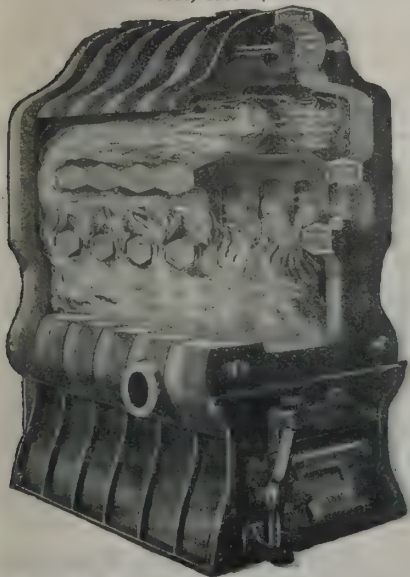
THE Wilts Archaeological Society met last week at Stonehenge, when the Rev. E. H. Goddard gave an interesting account of the raising of the leaning stone. Professor Story Maskelyne, in thanking Sir Edmund Antrobus for the kind invitation to visit Stonehenge, said that by raising the leaning stone, the biggest stone of its kind in England, Sir Edmund had carried out one of the most important pieces of archaeological work he had known. People might quarrel about the barbed wire fence and the rights of way, but in his opinion the greatest public right in Stonehenge was the preservation of the monument, and that the present owner was doing to the best of his abilities.

THE new headquarters of the 1st Lancashire Royal Engineers (Volunteers), in Mason Street, Edgehill, Liverpool, were opened on Saturday afternoon. They include a drill-shed 150 feet by 70 feet, and an outside parade ground 60 yards by 60 yards for engineering work and drill. A commodious room is set apart for the use of the officers, and immediately above it, and of the same dimensions, is one for the sergeants. There are also senior and junior officers' dressing-rooms, a clothing store, general stores, an armoury, a fine modelling shed and an excellent recreation-room for the men, so that the corps is now well equipped for carrying on the important work attaching to its particular branch of the service. The cost amounts to 6,000*l.*

THE Bishop of the diocese reopened on Wednesday the parish church of Lower Guiting, near Cheltenham, and dedicated the restoration work which has been recently carried out and a combined vestry and organ-chamber which has been added to the sacred building. The church had been allowed for many years past to fall into a very dilapidated condition. Since the advent of the Rev. G. B. Sharpe as curate-in-charge the work of renovation has been taken up earnestly, and the completion of the restoration has involved an out-

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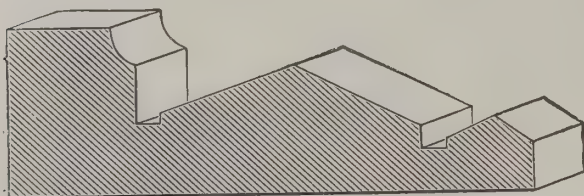
lay of about 2,600*l*. The whole of the chancel, with the exception of the priests' doorway, has been taken down and rebuilt, and the nave and transepts have received new roofs and been otherwise renovated, while a vestry and organ-chamber have been built over the heating-chamber. The Bishop warmly congratulated the curate-in-charge and the parishioners on the good work done, and expressed confidence that the debt of 700*l* odd on the renovation fund would be speedily wiped off.

THE Infirmary at Brunswick Square, Camberwell, which has been undergoing renovation and extensions for two or three years, has just been opened, in its modernised and enlarged form, by the Board of Guardians for St. Giles, Camberwell, in which parish the buildings are situated. The buildings now present towards the wooded square an extensive and handsome frontage. They occupy several acres of ground, are arranged on the "scattered home" system, which the St. Giles Board claim to have introduced for the first time into the Metropolis, and are all connected by glass-covered ways and subways. The accommodation has been increased from about 330 to 800 beds, and includes a separate block for children, who, in the absence of separate provision for them, have hitherto been treated with the old people, but can now be accommodated separately to the number of about eighty. There are some twenty wards which can be used for isolation cases, and special wards for cases of consumption, arranged as nearly as possible on "the open door" system, with flat roofs for airing courts. All the modern electrical appliances have been introduced for medical treatment, among other improvements being the electric bath, electric lifts and labour-saving devices of various kinds. The contract price for the new buildings amounts to close on 170,000*l*, which the modernisation of the old structures brings up to nearly 200,000*l*. The architect is Mr. E. T. Hall, the contractors being Messrs. Holliday & Greenwood.

THE illuminations at Belfast in honour of the royal visit were on an extensive scale, in many respects surpassing those provided for Dublin. Messrs Robinson & Cleaver's huge premises were decorated throughout by Messrs. Defries in a novel and effective manner. Along the whole of the frontage in Donegal Place were fixed just above the fascia double festoons of amber-coloured lamps surmounted with green shamrock. Flaming cut-crystal stars 6 feet in diameter, with St. Patrick's Cross in the centre, were fixed at intervals. A fine piece of crystal work was fixed in the centre of the build-

ing, consisting of a cut-crystal star 30 feet in circumference, arranged to revolve by mechanical means. It contained thousands of crystals, every shade of colour being represented, and when in motion produced a brilliant effect. A massive cut-crystal Imperial crown upon a crimson cushion was fixed above the star, a facsimile of the one used at the Imperial Durbar this year in India. On one side of the crown a cut-crystal shield bore the King's cypher, "E. R. VII," and on the opposite side a similar shield contained the royal quarterings. Each shield was surmounted by a crystal crown. Above the central crown another design in cut-crystal represented crossed Union Jacks. A special service pipe was supplied direct from the main in order to provide sufficient gas for the extensive display. On the Donegal Square side the illuminations were of an electrical character, and consisted of festoons of flowers around the windows, ornamental shields surmounted by crowns and banners of crimson and gold plush emblazoned with English, Irish and Scotch devices. A prominent feature of the design was the greeting, "A Hearty Welcome to your Majesties," in huge white letters on a crimson ground. Festoons of pure Belfast linen enter largely into the scheme of decoration. Messrs Robinson & Cleaver's decorations were claimed to be the finest example of artistic decoration ever executed in Ireland. The County Down Railway terminus was also decorated on an elaborate scale by Messrs. Defries. The Northern Banking Company's premises were lit up, as well as other prominent firms, amongst whom were Messrs. J. Arnott & Co in the High Street, the Scotch House, the Ulster Club, Messrs. Anderson & Macauley, Donegal Place, Messrs. Thomson Bros., Messrs Riddels, Ltd, the Royal Hotel, Wellington Place, Kingscourt, Wellington Place, Messrs. Haig, &c.

A GREAT amount of skill and ingenuity, intelligently and scientifically applied, has been exercised in devising systems that shall render buildings fireproof or, at any rate, fire-resisting, and it is now possible so to erect them that the danger of fire is practically reduced to a minimum. A problem closely allied to this question, and one of equal importance, is how to effect the escape of persons from a burning building and enable them to be taken to a place of safety before the fire has time to secure a dangerous hold, which generally has occurred before the fire escape can be brought from its station and placed in position. Probably no means will be absolutely certain to effect this, while it remains a part of our complex



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human nature that on a sudden emergency, and when most wanted, presence of mind is generally absent. An apparatus, however, that is always at hand, whether wanted or not, is without complications, quick in action, and that can be manipulated by any ordinary person, is as near solving the problem as we can hope to get.

Messrs. Waddington & Co., who are exhibiting their "Monarch" fire escape at the Fire Exhibition, Earl's Court, may be congratulated on its simplicity and effectiveness. It consists of a steel tube of 2½ inches to 3 inches in diameter and about 7 feet in length, in the head of which twin-pulley blocks are fixed. Over one a lifeline runs, going down through the tube, carried round two others, and returning through the tube to the second one at the head, and forms a double lifeline which can be of any length according to the height of the building. All that is necessary to fix the escape after the window is opened is to put the head through it and place the spur at the base into a hole in the floor, 1 inch square, that is made at the same time the escape is delivered. When in position a simple but reliable check that is fitted outside the tube and controls the lifeline is level with the window, and is to hold the line fixed while a person who has already slipped into a rope-sling which is attached by a safety hook is being taken through the window, as well as to control them if necessary while descending. At the crown of the tube is attached a guide rope held by passers-by or attached to any object on the road, which enables the person rescued to be carried past any projection of the building or clear of the flames issuing from a floor below, although every one could be rescued before the fire obtained such a hold. As soon as the ground is reached another hook on the lifeline is ready to receive the second person being brought into position by the descent of the other half of the line. The last person in the building is able to descend equally well, as he has perfect control over the line, while persons can be rescued from any floor below the escape. Ambulance slings are provided by means of which invalids can be lowered in a reclining position and carried to a place of safety. Although these escapes are suitable for all kinds of buildings and of any height, they are of special service for use where windows overlook narrow passages or alleys where the ordinary escape could not be taken. That they are a speedy means of rescue was demonstrated at Wellington Mills, Stockport, in December last, when sixty-five persons were sent down from seven storeys high in fifteen minutes.

TRADE NOTES.

THE new Lancashire inebriates' home, Langho, near Preston, has had a four-dialled illuminated striking clock and bell fixed in the tower by Messrs. Wm. Potts & Sons, clock manufacturers, Leeds, from Lord Grimthorpe's plans.

THE work of redecoration of Union Street Baptist church, Maidstone, has been completed, and the old place looks as well as ever. The interior work was entirely done with Hall's sanitary washable distemper within a period of one week. The short time taken to complete the job has caused some local comment. The decorators were Messrs. Spiers & Perott.

A NEW and handy system of document filing is being introduced by the Globe Wernicke Company, Ltd., formerly Thomas Turner (Leicester), Ltd. The advantages, which are sufficiently obvious, of this system may be summed up in a few words—efficiency, economy of space, portability and cheapness. The Globe Wernicke elastic cabinet is made in nests of a few compartments, and the user can provide himself with as few or as many of these nests as his needs demand, and these can stand on his desk, fill a recess, or form a screen or even partition according to his requirements, and in either of these positions present a neat and orderly appearance.

BUILDING AND BUILDERS.

THE memorial-stones have been laid of a Welsh Calvinistic Methodist chapel for Altrincham.

THE foundation-stones of the Hazel Grove Reform Club, Manchester, were laid on July 25. The new club will be erected in brick and Portland stone, and will provide a good clubhouse for the Liberals of the district, whose present accommodation is wholly inadequate. The total cost is estimated at about 1,500/.

THE foundation-stone of St. Brigid's Church, Aran Island, was laid by His Grace the Most Rev. Dr. Healy, Roman Catholic Archbishop of Tuam. The church is being erected to the designs of an Irish architect, the contract has been entrusted to a Galway man, and one of the conditions of the contract is that everything used in the erection of the building must be of Irish material.

A LOCAL Government Board inquiry was conducted at Leeds town hall by Mr. W. O. E. Meade-King concerning an application by the Leeds Corporation for sanction to borrow

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TELEGRAMS,

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400,000*l.* for the purposes of street improvements, and 100,000*l.* for waterworks purposes. The first sum is in connection with the purchase of properties for improving from 175 to 200 public streets in the city, and the latter for ordinary extensions of the waterworks, a few new mains, &c. There was no opposition.

EUSTON HALL, Suffolk, the seat of His Grace the Duke of Grafton, K.G., which was almost entirely destroyed by fire in the spring of last year, is being rebuilt. Externally the general lines and character of the old building are to be maintained, but internally the arrangements have been remodelled to meet present-day requirements. The works are being carried out by Mr. Thomas Heath, of London and Towcester, under the directions of Mr. W. H. Atkin Berry, F.R.I.B.A., of the firm of Kidner & Berry, London.

THE foundation-stone of a new permanent church in Eardley Road, in connection with the parish of St. Mary's, Kippington, was laid on the 22nd inst. For some twenty odd years an iron church in the Granville Road has served the purpose of an auxiliary building to St. Mary's, but for some time this has shown signs of decay, and as it had also become inadequate to the demands upon it, efforts have been made to provide the necessary funds for erecting a permanent church. Plans were prepared by Mr. J. T. Lee, and an estimate sent in by Messrs. Cornish & Gaymer, of Norwich, for 2,900*l.*, has been accepted; the work at present to include chancel, transepts, vestries and a temporary nave.

ELECTRIC NOTES.

THE foundation-stone was laid on the 20th inst. of the new electric light station which is being erected on the western shore, Southampton, on land which has been reclaimed from the sea. The foundations have been completed, and the work in connection with the superstructure is also well forward.

THE New Zealand Government intends to make use of a powerful waterfall called the Huka Falls, in North Island, for the purpose of obtaining electricity. A Swiss engineer named Alloa, of Berne, has been engaged by the Colonial Government to construct an electric station on the falls, and has already left this country for New Zealand. It is estimated that the electric force which will be obtained will be sufficient to light the principal centres in the North Island and to supply power for the tramway systems.

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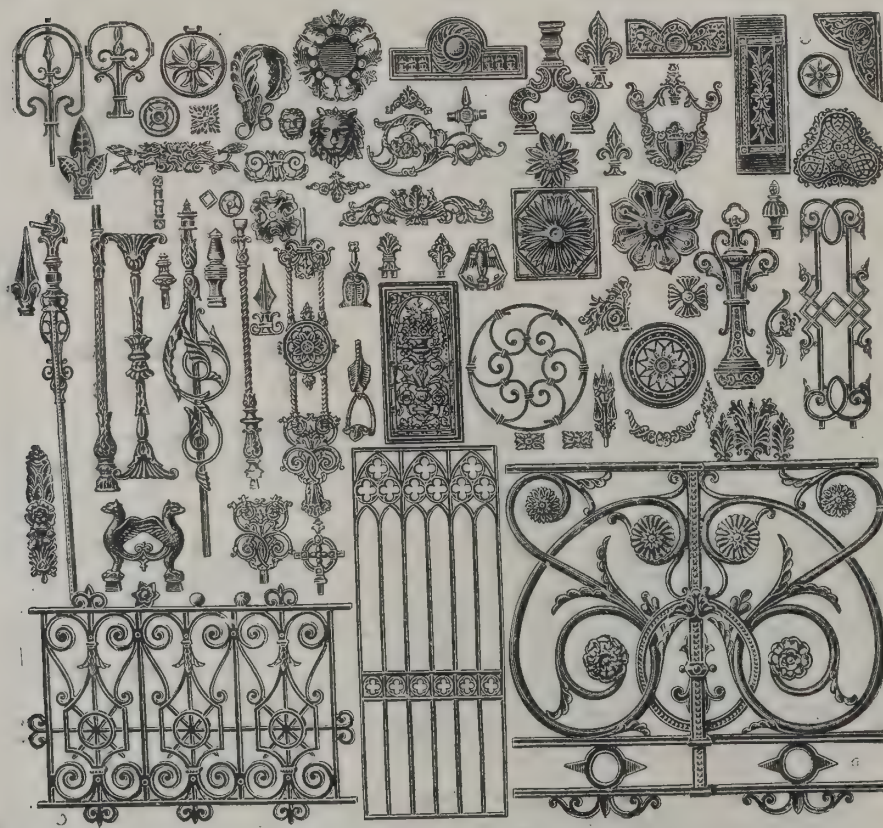
MESSRS. MEASURES BROTHERS have been intimately connected with the metal trade, especially in its most important products, since the introduction of the rolled beam as an auxiliary in building construction. They have gained so wide a reputation from their success in carrying out large contracts as well as ordinary business, their names are potent among architects, engineers and builders. The conversion of the firm into a limited liability company was therefore an event in the financial world. It was not to be expected that the interests of a younger generation were to be sacrificed by the arrangement. That would be contrary to justice. A new firm was accordingly established, with the title of Messrs. H. & G. Measures, and the partners having knowledge and energy besides bearing a name which was influential, attained the success that was to be expected. The competition was carried on in an equitable spirit. The shareholders, however, realised the situation, and at a meeting held in February a committee consisting of Mr. Walker, Mr. Bedford and Mr. Redman was appointed to confer with Messrs. H. & G. Measures and Messrs. Measures Brothers in order to endeavour if possible to purchase the business of Messrs. H. & G. Measures, of Croydon, or to amalgamate on such terms as would be likely to work best in the interests of Messrs. Measures Brothers.

After negotiations terms were arranged which were approved by a large majority of the shareholders at meetings held on June 26 and July 13. The result is that Messrs. Measures Brothers, Ltd, have amalgamated with Messrs. H. & G. Measures. The rivalry is not only ended, but the company gains additional strength, as Mr. Harold Albert Frederick Measures and Mr. Gilbert Emile Arthur Measures become directors of the Company. In its new and developed form there will be increased power, and it may be said without exaggeration the firm of Messrs. Measures Brothers, Ltd, will be equal to deal with the most difficult and most extensive contracts in which iron and steel are elements.

STANDARDISATION OF CAST-IRON PIPES.

THE final report of the committee on the standardisation of cast-iron pipes has been presented to the Association of Waterworks Engineers. It is signed by Messrs. Frederick

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SURREY.

WRITE FOR QUOTATIONS.

Griffith, president; William Watts, past-president; H. W. Pearson, M.Inst.C.E., Baldwin Latham, M.Inst.C.E., E. Brough Taylor, M.Inst.C.E., and Reginald E. Middleton, M.Inst.C.E. The interim report showed that the general feeling of waterworks engineers and pipefounders was favourable to the standardisation of cast-iron pipes, subject only to some difference of opinion as to the limits within which standardisation should be confined. The manufacturers were said to be unanimous in desiring to carry out any standardisations decided upon, and to stock such patterns as might be approved. The recommendations were that standards should be based upon the external diameter rather than the internal; to limit the number of sizes standardised to those in common use in this country; as regards coating, that greater uniformity should be observed in the mixing of the composition and in the method of dipping the pipes; as to the form of joint, special attention should be paid to the design of sockets for lead joints without yarn of any description, as well as to turned and bored joints; that the number of patterns standardised should be kept as low as reasonably possible, and that the standard length for all diameters be adopted; that the quality of the metal should be standardised, but that it is undesirable to include waterworks fittings or anything but cast-iron pipes and specials in common use. The committee do not consider that the metric system of measurements can be conveniently adopted at the present time. They intimated that the next step to be taken is to refer the whole matter, including the recommendations herein contained, to the engineering standards committee, on which the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Iron and Steel Institute, the Institute of Naval Architects and the Institute of Electrical Engineers are already represented. They received a very cordial invitation to this effect from Mr. Charles Hawksley, past-president of the Institution of Civil Engineers, who also suggested that the committee would, no doubt, be pleased to invite the Association to appoint delegates as members of the sub-committee which would be detailed to consider this subject. Under these circumstances it was recommended that the invitation be cordially accepted, and that the two reports be forwarded to the secretary of the standards committee with a request for the early consideration of the whole matter, and an undertaking to render the committee every assistance which they may invite. The report was adopted unanimously.

ELECTRIC LIGHTING IN MARYLEBONE.

A SHORT time ago the London County Council, upon the recommendation of its finance committee, resolved not to grant the application of the St. Marylebone Borough Council for sanction to the borrowing of 1,274,000*l.* for the purchase of that portion of the undertaking of the Metropolitan Electric Supply Company, Ltd., which is within the borough, under the award of the arbitration. The ground for the refusal was that the committee was advised that it could not sanction the proposed loan without further statutory authority being given to the Borough Council authorising it to borrow. Since communicating their decision to the Borough Council a letter has been received from the Parliamentary agents asking whether, if the Borough Council obtains a license from the Board of Trade under the Electric Lighting Act, 1882, to supply electricity within the borough this will remove the legal objection to the Council sanctioning the loan. The solicitor to the County Council has, upon the instructions of the finance committee, obtained the opinion of Mr. Haldane, K.C., M.P., upon this question, and he has advised that if the proposed license is obtained from the Board of Trade the Borough Council will obtain such legal power to borrow as will justify the Council in sanctioning the borrowing. Inasmuch, however, as the maximum period for which the Borough Council can be authorised to supply electricity under such license is seven years, Mr. Haldane advises that the period for the repayment of the loan should be limited in the first instance to the period of the license. After the Borough Council has completed the purchase of the undertaking and the Board of Trade have fixed the date of the commencement of the St. Marylebone Electric Lighting Order, 1901, the Council will be in a position to vary its order sanctioning the borrowing by extending the period for repayment of the loan thereby authorised. The finance committee now report that this matter had been attended by many difficulties, and they had heard a deputation of ratepayers urging them not to recommend the sanction of the loan. The acquisition of the undertaking, however, had been rendered compulsory by Act of Parliament, and the purchase price had been determined by arbitration. In these circumstances it appeared to them that Parliament had taken upon itself the responsibility for the proposal, and the Council was hardly in a position to exercise the discretion reserved to it in ordinary cases. The committee accordingly recommend that counsel's opinion should be communicated to the Borough Council, pointing out that when they had obtained the Board

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of Trade license the Council will be prepared to entertain the application for a loan upon its merits.

A CREMATORIUM FOR BIRMINGHAM.

THE new crematorium at Sheldon Coppice, near Rocky Lane, Birmingham, on the Birmingham and Walsall Road, is rapidly approaching completion, and will be opened, it is expected, in September by Sir Henry Thompson, the president of the Cremation Society. The need of such a building has been felt for a considerable time, as every year has seen an increase in the number of those who favour cremation against the present mode of burial. The chief objection to cremation, on sentimental grounds, which must always be respected, is gradually disappearing. A Birmingham company was formed during the latter part of 1901 to provide a crematorium for the Midlands, and eventually the present site, which is about an acre in extent, was obtained. The crematorium is situated in a delightful country spot some distance from any dwelling-house, and is sheltered by a number of fine trees and surrounded by a wealth of vegetation. It seems an ideal spot for such a building.

Architectural beauty is not lost sight of in the crematorium. Mr. Frank B. Osborn, the architect, has examined the construction of the Woking Crematorium (which is, perhaps, the best known in England), and other similar buildings. The building is, therefore, of a complete and thoroughly up-to-date character. The chapel and crematorium stand in the centre of the land, and are approached through an entrance gateway and drive from the main road, at which there is an ornamental lodge. At the entrance to the chapel there is a large porch or vestibule. The size of the chapel itself is 50 feet long by 25 feet wide, and about 40 feet high to the ridge, with an open-timbered roof, the total length of the building being about 107 feet. On one side there is a vestry and registry office with a separate entrance, and on the other side a small mortuary chamber. The chapel is principally lighted by lofty clerestory windows, and underneath these on both sides are artistic recesses for the reception of urns containing the ashes of the dead. If relatives prefer, these urns may be placed in cloisters of ornamental design, which they will be at liberty to erect in the grounds. The chapel, which is of an ecclesiastical character, in brick and red stone with tiled roof, will be provided with chairs and furnished with a reading-desk and harmonium. The

catafalque, suitably draped, will be against the end wall opposite the entrance, and is to stand on a stone platform approached by two steps. It may, if desired, be decorated with flowers. Immediately behind the catafalque, and concealed by curtains, is an iron door leading to an intermediary chamber. On the north-west side is a lofty ornamental tower, 80 feet in height, containing the stack.

The interior of the cremating chamber is at no time visible to mourners. The coffin, when brought into the chapel, is placed upon a catafalque. When the committal sentence in the religious service is reached the coffin passes noiselessly, by means of an invisible mechanical arrangement, into the intermediary chamber, and finally into the incinerating chamber, but not till the mourners have left the chapel. The incinerating chamber is filled with gas of an intensely oxidising character in a state of incandescence. The firebrick walls are heated to an orange-red glow by a coke fire placed far below it. There are no flames, no smoke, only a lurid, unchanging glow. The temperature attained is about 2,000 deg. Fahr.—the melting point of silver. The process occupies about an hour; pure white ashes are all that remain, and they are removed through a small door at the side, where an urn is placed to receive them. These incinerary urns or vases are made in earthenware, white and coloured marble, bronze or copper, and many of them are of a graceful and artistic design, and bear inscriptions to the memory of the departed. In some instances the remains are taken home, but this does not often occur.

The movement in favour of cremation began in 1874, and had many obstacles to contend with—not only public prejudice, but ecclesiastical and Governmental obstacles. Throughout the country these are gradually disappearing, and to many the advantages of cremation over earth burial have become apparent. In 1900 the cremations numbered over 300, and there seems little doubt that each succeeding year will show a steady increase in the number. This progress is largely the result of the exertions of men like Sir Henry Thompson, who has been described as the father of the cremation movement in this country, and several prominent members of the medical profession. Dr. Alfred Hill, the retiring medical officer for Birmingham, last year contributed an important paper on the subject, in which he strongly favoured cremation, both on sanitary and economic grounds. Already crematoria have been erected at Manchester, Glasgow, Hull, Liverpool and Leicester, and other places are now following London's lead.

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The Architect.

THE WEEK.

THE prejudice against restoration has been recently exhibited at Malpas, in Cheshire. The parish church is in the hands of Mr. C. HODGSON FOWLER, of Durham, whose experience in work of the kind is well known. He may be considered as one of the "conservative restorers," and has not shown any partiality for innovations. Now, Malpas Church, which is an excellent example of Gothic, at one time presented pinnacles which were a necessity of the style. But, as often happens, such features are particularly subject to atmospheric influence, and only the remains of them are now visible. Mr. FOWLER in his scheme included their addition, and as an experiment he had one set up in order to be satisfied about the proportions. The contrast between the old stonework and the bright sandstone addition was necessarily marked, but it hardly warranted the outcry raised against the innovation. It was supposed that the church was perfect in its plainness, and that the effect which had delighted living parishioners, if not their predecessors, was doomed to be destroyed. The architect accepted the situation philosophically. He said that the church would look richer with them, but as all had gone, he did not think to make a strong point of the desirability of replacing them on the naves and aisles. The chancel needed them to take off the bare look, for instead of being richer than the nave it was poorer. As the pinnacles were thus required on the south-east and north-east angles, they ought to have them on the sides. Without them the porch looked unfinished. If they did not decide to have them on the nave and aisles they would have restored, or rather repaired, all the old stonework, and not have introduced any work of mere imagination, which pinnacles must be. One of the churchwardens declared that the pinnacles would be very obtrusive, they could not be otherwise; and they would not become time-worn for years and years. Their newness would appear so obvious that this would form a chief objection. He was satisfied with the old church as it was, and he thought it was best to leave well alone. Although much was brought forward against the proposal, when it came to the voting there was no opposition to a resolution which stated that the restoration should be left in the hands of the Rector and Mr. HODGSON FOWLER, and that the church should be brought as near as possible to its original state. It is generally supposed that restoration is a fraud, because people cannot at first glance discriminate between old work and new. At Malpas there could be no charge of that kind, for the new masonry and carving was thought to be too obtrusive. But any cause will serve when an attack in such cases has to be made, although it might be supposed that a rector and his architect are as much likely to have interest in the church as any layman in the parish.

WE cannot understand why architects should be treated as if they were officers of a law court, and were bound to be present whenever any proceedings are taken against them, or at least that they should be represented by counsel. The financial interest which an architect may have in any lawsuit may be so insignificant that attendance is likely to cause a loss to him which he cannot afford. The rigorous requirements of the courts have been exemplified in the action *SANDERSON v. The Blyth Theatre Company and HOPE*, which was heard a few days ago in the Court of Appeal. The plaintiff sought to recover 189*l.* 11*s.* 6*d.* from the company for work and materials which were ordered by Messrs. HOPE & MAXWELL, the architects. The company denied the order. The plaintiff was then allowed to make Mr. HOPE one of the defendants. Then the company alleged that Mr. HOPE had no authority to employ the plaintiff. Mr. HOPE also denied that he was the agent of the company. The jury found verdict for the plaintiff against the company. The judge who heard the case decided that Mr. HOPE should recover his costs from the plaintiff, but that those costs as well as the plaintiff's should be paid by the company. The company, however, obtained leave to appeal from the part

of the judgment by which they were directed to pay costs incurred by plaintiff, making Mr. HOPE a defendant, and the costs to be paid to him. Mr. HOPE was, no doubt, advised to take no part in the appeal. This conduct did not find favour with the Court. The appeal was dismissed. The occasion was taken to make some strong remarks not so much on what Mr. HOPE did as on what he avoided doing. Lord Justice ROMER said:—"I do not think that I myself should have given to the defendant HOPE, having regard to his defences and conduct, any costs whatever, either as against the plaintiff or co-defendant. But I do not think it is open to the appellant on this appeal to go into the question whether the defendant HOPE should have been paid his costs, for the following reasons:—No doubt at the trial the plaintiff did not question HOPE's right to costs. But the question as to costs was adjourned. At the adjournment HOPE was not present, but the appellant company was present. If the company had taken the point that HOPE ought not to have had his costs, HOPE could have been brought before the Court again and the matter been fully argued and decided. But the company did not raise the point, and I think the company and the plaintiff must be taken to have agreed that there was no 'good cause' shown for depriving HOPE of costs. The only point argued by the company was that the Court had no jurisdiction to add HOPE's costs to the plaintiff's, and in that way order the company to pay them, and I think it is too late now for the company to argue that the defendant HOPE never ought to have had his costs provided for as they have been. I think, moreover, that the leave to appeal was given on the question of jurisdiction only, and this view is borne out by the notice of appeal and by the fact that the defendant HOPE is not before this Court. And, lastly, with regard to the suggestion that the costs of HOPE have been made to include costs of the issues on which he failed, I need only say that the taxation of those costs was in the presence of the company, and that it is too late now to question the amount taxed." As Mr. HOPE did not suffer, and the appeal was dismissed, there must have been sufficient reasons to justify his absence. But the case should be taken as a warning by architects, for it is better to submit to the loss of a day or two in Court rather than appear indifferent to what is being transacted there.

ONE of the most beautiful drawings in the Louvre is a study of the bust of a young woman by WATTEAU. A coloured etching of it by M. PENNEQUIN appears in *L'Art*, and is a masterpiece of reproduction. The pictorial effect of the original is gained simply by means of a red crayon with a few touches of black. All depends on the vigour and yet delicacy of the strokes. The copy is no less effective, and may be taken as one of the few cases which justify the revival of an extinct art. The same number is attractive by the articles on this year's Salon, some letters by Madame TALMA, the wife of the tragedian, an account of the French explorations at Antinoë, an article on HECTOR BERLIOZ, with fine illustrations, and one on JOSEPH DROZ, the historian. The illustrations are evidence of unceasing efforts towards the attainment of perfection.

As long as the so-called fine arts are allowed to maintain a monopoly of distinction, it is not to be expected that those engaged in the decorative arts will be contented with their lot. It may be said there is no dividing line between the two, but that is one of those philosophical conclusions which can never be consoling. This was the attitude adopted by M. BARTHOLDI, the sculptor, recently, when distributing the prizes to the students of the Ecole des Beaux-Arts Décoratifs. The difference in ancient and modern systems of teaching art was that formerly antiquity predominated, whilst now the individuality of the artist is allowed the fullest play. M. BARTHOLDI asserted it was a benefit to vulgarise art, and, moreover, it was a patriotic duty, for the supremacy of France had to be upheld in *objets d'art* as well as in things that might appear to be more important. But designers cannot forget that it was only in recent years their works were admitted into the Salon, and that privilege was only conceded when it was found that the rival society made no distinction between fine art and industrial art.

ACADEMY REFORM.

THERE are periodical epidemics of discontent in this country for which there appears to be no remedy. One of the most localised attacks artists, and takes the form of temporary animosity against the Royal Academy. The public in general are indifferent to the sufferers, for to them what is most important is the exhibition of pictures, and whatever may be the errors of the Forty, it must be admitted that a shilling's-worth of entertainment is provided every summer. But as regards artists, they are not satisfied with providing materials for the show. They wish also to obtain remuneration for their labour. If visitors will simply glance at pictures instead of purchasing them, there is disappointment, which is followed by outbreaks, and the Academy is treated as if it were some jealous agent who stands between buyers and vendors. This season is generally considered to have been exceptionally noticeable for the hesitation and penuriousness of dealers, and, as usual, the consequence is a desire for revolution in the government of the Academy. It is not a logical aim, but no other serves so well.

By acting in that manner artists and their friends display a want of originality. They are simply imitating the crowd who advocate the transformation of Government departments whenever any inconvenience is caused by the action of one of the officials. There seems to be a peculiar aptitude in English folk for a demand of the kind. Just as the old lady was frightened almost to death when HORACE WALPOLE remarked that there was a strong smell of thieves in her house, so we are always ready to believe that in every corporate institution there are wrong-doers inimical to all those virtues are superior to theirs. It is well, perhaps, that officials who are liberally paid for raising obstacles to the prosperity of the country should be suspected and watched. But the Royal Academy is not, and never was, a Government department, and we doubt whether much advantage has been gained by considering it as if it corresponded with an ordinary circumlocution office. That it is defective there is no denying, and it could hardly be otherwise. It came into the world under equivocal circumstances, and its whole history shows that it can never emancipate itself entirely from its original weakness. As the history of its foundation is generally overlooked, it may be allowable to briefly refer to it.

Up to the middle of the eighteenth century the arts of this country were without any organisation. Everything was left to individuals. Foreigners came over and often attracted commissions; but, to do them justice, they made no arrangements by which any of their countrymen would gain a footing in this country. With an equal amount of luck it was possible for Englishmen to gain as many advantages. WILLIAM KENT was not a genius nor a foreigner, but having influential friends he was enabled to design public buildings, to look after royal pictures, to paint portraits and ladies' dresses. His successor, one SHACKLETON, probably was as versatile, as incapable and as successful. The patrons were not proficient enough to distinguish between what was good or bad in what was known as art. HOGARTH being without powerful supporters, and being deprived by nature of the fawning tongue and suppliant knee, had the courage to appeal to the British public by his prints. He was no doubt acting in an undignified way by selling works of art as if they were spoons. But he was following his own notions of right and wrong. As became a man of business he wished to secure protection for what he produced, and he agitated in his own way until he obtained a Copyright Act, a novelty by which design was recognised as an asset.

HOGARTH was a tradesman, and, like other men of the same class, he enjoyed his club, which was known as the St. Martin's Lane Academy. He had succeeded by his unaided efforts, and he considered that other men would do well to follow his example. But there were some of his fellow-members of the Academy who concluded it would be an advantage if they imitated, as far as circumstances would allow, the French institutions which were under the patronage of the king. They wished to erect a building, to teach students, and to exercise authority. For those reasons they desired to have more members. On November 13, 1753, at five o'clock in the evening,

it was proposed to hold an election of thirteen painters, three sculptors, one chaser, two engravers and two architects. The effort was not successful. Two years afterwards an attempt was made to create a rival academy for the better cultivation, improvement and encouragement of painting, sculpture, architecture and the arts of design in general. Some of the members of the old St. Martin's Academy, including NEWTON, the secretary, were among the projectors. The required funds were to be obtained by means of an appeal to the public. But owing partly to bad management no money came in. The self-reliant HOGARTH was opposed to the attempt, for he maintained that England was not cultivated enough either to appreciate or to subsidise art. If hereafter, he said, the times alter, the arts, like water, will find their level. He took up art as a development of engraving on plate. But the shopkeeper's spirit was still strong in him, and he considered it was unreasonable for a clever man to sacrifice his interests for the sake of growing famous in art, when, as he said, "his next door neighbour, perhaps a porter brewer, or an haberdasher of small wares can, without any genius, accumulate an enormous fortune in a few years, become a lord mayor or a member of Parliament, and purchase a title for his heir." A remark which was characteristically British.

The co-operation sought after among artists was brought about unexpectedly by an effort of a charitable kind. HOGARTH presented a portrait he painted of Captain CORAM, the founder, to the Foundling Hospital, as well as a design for a decoration which was to be placed over the entrance. Some other artists followed his example, and in return they were elected governors, with authority to hold an annual meeting "in order to consider what further ornaments might be added to the building without expense to the charity." The hospital became attractive on account of its pictures, and, observing the tendency of the public mind, the artists resolved to organise an annual exhibition of their own. The Society of Arts granted the use of their largest room, but on the condition that the exhibition would be gratuitous. Eventually there was a compromise, and 6d. was charged for admission and 6d. for the catalogue. The first exhibition took place in 1760. It was intended to apply the money received for admission in charity. But afterwards it was agreed to utilise it for the advancement of art as soon as by accumulation it had reached the sum of 500*l*. The Society of Arts was dissatisfied with supporting an exhibition which was not gratuitous. In 1761 some of the exhibitors preferred to show their pictures in an auction room at Spring Gardens. There were, however, some members who accepted the proposition of the Society of Arts, and consequently in that year the public were able to enjoy a pair of exhibitions. HOGARTH supported the Spring Gardens experiment, partly because he considered pleasure should be paid for, and because the admission fees were to be distributed in charity. He also prepared two designs for the catalogue, and owing to their interest 13,000 copies were sold.

The difference between the artists led to an important result. In 1764 it was decided to appeal to the king to incorporate the Spring Gardens exhibitors as a society; a royal charter was granted in the next year. One of the first acts of the new society was a resolution that the directors should consider the institution of a public academy. Afterwards it was announced that His Majesty intended to take the arts under his protection, and the resolution was therefore repealed. The models, lamps and furniture in the old Academy of St. Martin's Lane were removed to premises in Pall Mall which had been rented by DALTON, the treasurer, as a printshop. The words "Print Warehouse" were removed and "Royal Academy" was painted in its stead. The change might have been a pantomime trick. Disappointment resulted. It is doubtful whether GEORGE III. had given his sanction to the scheme. The king, who was liberal, certainly did not contribute to the funds, and it was necessary to charge a guinea a year to all the students. There was a possibility that owing to the dissensions which ensued the new Academy must collapse. A schism followed, and one party, of which BENJAMIN WEST was a prominent member, resolved to establish another society. The king heard of the project through the newspapers, and informed WEST of his willing-

ness to patronise any body that would be more likely to lead to an improvement of art. The king's statement was enough to prove that the scheme which had just failed was not justified in appearing as a Royal Academy.

When we remember that in 1759 no society of artists in the ordinary sense of the word existed, and no exhibition, the position of affairs in 1768 was therefore remarkable. There was the Free Society of Artists, a society for the relief of the distressed and decayed brethren, their widows and children, exhibiting in the rooms of the Society of Arts in the Strand. There was the Incorporated Society of Artists of Great Britain in Spring Gardens, and there was the offshoot of the latter, which assumed the title of the Royal Academy. The king endeavoured to be impartial. He told KIRBY, its president, that the Incorporated Society "had His Majesty's protection; that he did not mean to encourage one set of men more than another; that having extended his favour to the Society by royal charter, he had also encouraged the new petitioners; that His Majesty's intention was to patronise the arts; that the Society might rest assured his royal favour should be equally extended to both, and that he should visit the exhibitions as usual." The seceders from the Incorporated Society were more diplomatic than KIRBY and his brother directors. The consequence was that the belief was made to grow that His Majesty's favour was monopolised by the latest of the societies. The conduct of REYNOLDS suggests the mysterious operations undertaken. He had nothing to gain from membership of any of the societies, but he was persuaded to join the Incorporated. On account of the dissensions he declined to act as a director, and he made a promise of standing aloof from all the societies. Sir ROBERT STRANGE, the engraver, said that REYNOLDS was tempted to change his resolution by the possibility of obtaining a knighthood. But as REYNOLDS gave no explanation of his conduct, we may allow him the benefit of the doubt and give him the credit of being inspired mainly by a desire to see artists on a better footing than was possible in the existing societies.

It is no less difficult to determine what was the true cause of the schism. According to FARINGTON, there were too many artists, for there were 141 in the Incorporated Society, and among them, it is alleged, were some whose greatest efforts were "the loaf and cheese that could provoke hunger, the cat and canary bird, and the dead mackerel on a deal board," or, in other words, their productions resembled those we now see chalked on pavements. At such a period it could not be said that the promoters of the Academy were illiberal when they admitted forty Academicians, twenty Associates and six engravers. In fact, it cannot be denied that among the early members were men and women who would not now be regarded as artists. But what was liberal in 1768 must be considered as very restricted in our time. The numbers of painters, sculptors and architects have been increased to a remarkable extent. But the Academy has not been proportionately expanded, or rather it would be more correct to say it has been narrowed, for where are the representatives of the six original engravers? The history of the Academy shows that originally it was no more than a society somewhat limited in its membership; but if it had to be constituted under such circumstances as prevail in our time, there is reason to assume that the number of the members would have been largely increased. If we may judge of the king's intentions by his words, we may say that the Academy would have resembled the present Society of French Artists, and the distinction of R.A. or A.R.A. would correspond with the "Sre" to be found in French catalogues, and which simply means established membership of that particular society.

The writer of an article in the *Quarterly Review* says that the old idea of a semi-private, semi-public body, limited in numbers, self-elected, yet claiming to be representative, must for good and all go. Such a body is, in the nature of it, out of joint with the times. To this we would add that it is not in character with the original constitution of the Academy as a society. If the members were to be the peers of art we may be sure GEORGE III. would have held the appointment of them in his own hands, and his successors would have rigidly preserved the privilege. All that the Academy professed to be was no more than an amended

Incorporated Society, and the original right of selection of membership was granted to it.

We do not allow for a moment that the Academy has failed in its duty. The members are, after all, only human, and after nearly 140 years it is creditable to them as artists and as Englishmen that only one instance has arisen in which it was necessary to expel a member for conduct which was dishonest. JAMES BARRY's case of course does not count. There has been no irregular appropriation of funds by Academicians. There have been no appeals for aid from outsiders, and financial affairs have been conducted in a business-like and straightforward manner. But all this does not get over the fact that the Academy has not been for many years as representative of British art as it was intended to be, and as it was at the outset. By allowing the greater part of the space on the walls to painters, and by having a majority of painters among the Academicians, art in England has become identified with painting, and the consequences have been unfortunate. One of the remedies proposed by the *Quarterly Review* is that a second exhibition should be held every year, in which architecture, sculpture, carving, drawings and engraving, with minor arts, should alone be represented. That may afford some compensation for existing shortcomings, and it deserves to be tried as an experiment. But much more requires to be done. The representative character of the Academy should be restored or recreated, and until a revolution of that kind is accomplished the professed aspirations of the founders will not be realised.

THE NEW LIGHTS FOR OLD BILL.

ALTHOUGH it has been once read in the House of Commons few Parliamentarians can expect the Bill for amending the law relating to easements of light to become an Act in the present Session. There are too many measures which are supposed to be of more pressing interest requiring consideration and to which precedence will be allowed. The delay will not be disadvantageous. Any Bill having for its sponsors lawyers of the standing of Mr. FLETCHER MOULTON and Mr. HALDANE, besides Messrs. ROBSON, H. D. GREENE and H. ROBERTSON, would not be taken as immature, but, on the other side, its production being attributed mainly to the Royal Institute of British Architects and the Surveyors' Institution, it labours under the prejudice of being suspected of inheriting some taint of professional disorders. At the present day there is always scepticism about lawyers' experiments in legislation, but in the Ancient Lights Bill experts as well as advocates, the gentlemen who derive most profit from the actions, are combined. On that account it is not likely to secure public approval without close examination. Whenever success depends on confidence in the creators of a Bill it should have its origin with the Government of the time. The reform of the law in this case would be a public benefit, and should not be left to an endeavour by private members.

Few men can be considered as making land in the way the Northern Farmer "stubb'd Thornaby waiste." Yet land is treated like manufactured goods. Light can be still less a product of human industry, but it is believed to be so much of an individual possession that, as Lord CRANWORTH once said, it is not sufficient to assert that no loss arises to a plaintiff because he can continue to carry on his business as successfully as before the obstruction arose. It is no exaggeration to suppose that with light the dog-in-the-manger policy is allowable, for the Courts will not be satisfied with investigating how far light, considered as an "accessory to a corporeal hereditament," was used by a plaintiff, but the possible uses to which it may be turned by his representatives at a future period, and for purposes which are now unknown.

In our time science, and especially optics, has endeavoured to impart some certainty to claims and defences. But at an earlier period the sacred rights of property must have guarded outlooks to an amazing extent. There was, however, one possibility available for those who wished to build in the neighbourhood of one of those absolute proprietors. From the reign of HENRY III. the Courts granted limitations to claims of various kinds, varying from sixty

years to four years. By the Statute of Limitations custom was changed into a right. The Act of JAMES I. is exceedingly miscellaneous, for it treats of the king's claims to concealed manors, the custom of paying twopence on every caldron of sea coals at Newcastle-on-Tyne, actions of trespass, and so forth. But it was a recognition of the principle of the necessity of time as an element in the creation of certain rights. About 200 years afterwards the Prescription Act of WILLIAM IV. made the enjoyment of light for twenty years become a right which was absolute and indefeasible. Limitation being once accepted, much follows from it which was not anticipated. The popular notion of an ancient light is that it is an obstruction to building, and many an excellent site is left vacant for years through apprehensions of the actions which are sure to arise when a structure is erected. But as in other matters, there are two sides of the subject to be considered. A large amount of inconvenience is caused by new buildings to the owners and occupiers of those which are older, but there is no redress. The phrases "dominant owner," "servient owner," "dominant tenement," "servient tenement," are suggestive of feudalism and injustice, but as affairs turn out the servient owner and his tenement sometimes become the most intolerable to those who contemplate the relations judicially.

The phrases are introduced in the new Bill. The dominant owner's right to light (for the subject of air is prudently neglected) is limited "to such amount passing over the servient tenement as is reasonably necessary for the comfortable use and enjoyment of the dominant tenement if a dwelling-house, or for its beneficial use and occupation if used as a place of business or for any other purpose than a dwelling-house, and he shall not be entitled to any extraordinary amount of light necessary for any particular purpose, trade, or occupation." There is no chance of gain, for "nothing in this section shall confer on the owner of any dominant tenement over the tenement servient thereto any right to a greater amount of light than he would have possessed if this Act had not passed." Nor does the section apply to a tenement in which "a trade or occupation requiring an extraordinary amount of light has been continuously carried on for ten years—during the continuance of such trade or occupation." The section applies only when the right of the owner becomes absolute and indefeasible after the commencement of the Act.

At present obstruction to light must be by means of some material body. A stack of packing-cases has been held to be an obstruction. By the proposed Bill an obstruction in the form of a notice will be sufficient. HAMLET tells us we should "find quarrel in a straw when honour is at stake," and as insignificant a trifle will serve as a *casus belli* hereafter. It is a true mathematician-lawyer's device. An owner who fears his tenement may one day become servient to his neighbour's has only to send a notice corresponding with one in the schedule, and "on and after the day of service of an obstruction to light notice the access of light to the windows mentioned in the obstruction to light notice shall be deemed to be obstructed in like manner as if the same were actually and physically obstructed." Any person aggrieved by the notice can seek the same remedy as if there was an actual or physical obstruction. The notices are to be treated with respect, instead of being cast into a waste-paper basket. According to the Bill, on the sale of any tenement it shall be the duty of the vendor to disclose any obstruction to light notice which may have been served in respect of that tenement, and it shall be the duty of any person who may receive an obstruction to light notice under this Act, in respect of a tenement which he holds as occupier or lessee for a term of years or for lives, to forward or deliver such notice forthwith to his next superior landlord.

It sometimes happens that public improvements lead to a number of actions for obstruction to light. Public buildings of a grandiose character are in consequence occasionally treated like hideous factories. BRODRICK'S law courts and town hall in Leeds had for a time to be delayed until the claim made by the owner of a two-storey building for obstruction to light was settled. The new Bill says:—"No title shall be acquired by prescription under the Prescription Act, 1832, or at common law or otherwise by the owner of any building which shall have been erected after

December 31, 1890, and which abuts on any street, to a right to light passing over a tenement on the opposite side of that street."

An impetus will be given to the preparation of plans. The owner of a building which is to be taken down and rebuilt may cause plans, elevations and sections of such building to be prepared. He may also apply to the official surveyor for a certificate of the correctness of the plans, sections and elevations. Fees are to be paid to the surveyor whether he grants or refuses to grant the certificate. If not granted it will be necessary to prepare fresh plans. If the applicant is dissatisfied with the refusal he can make application to a new Tribunal of Appeal. The certificate is to be taken as conclusive evidence of the correctness of the plans in any action which may follow. The official surveyor, who may be a district surveyor of the Metropolis, a county surveyor or a borough surveyor elsewhere, is to keep a register of the drawings, which are to be open for inspection at the town or county hall on payment of a fee.

Whenever a servient owner contemplates rebuilding or alterations he is to give facilities to the dominant owner or his representative to inspect the plans, sections and elevations; and if there are no drawings he must give such information as may reasonably be required. Within seven days he is to serve a notice of his objections or the terms on which he is willing to permit the servient owner to construct his building. The notice is to contain particulars of the dominant owner's interest and the name of a surveyor who will act on his behalf. If within seven days the servient owner announces that he accepts the terms of such notice, it will be deemed that an agreement between the parties has been come to. If the servient owner refuses the terms, he is to give notice thereof and to state the name of a surveyor who is to act on his behalf. The two surveyors are to endeavour to determine the questions in dispute, and should they fail the matter is to be referred to an umpire, who must be a member of the Royal Institute of British Architects or the Surveyors' Institution. In the event of either party neglecting to appoint a surveyor or of an umpire refusing to act, either party can apply to the President of one or other Society to appoint an umpire. The award is to be taken as conclusive and as not to be questioned in any Court, but either of the parties may appeal to the Tribunal of Appeal, where the award can be rescinded or modified. Where the amount awarded exceeds 500*l.*, and one of the parties refuses to accept the decision of the Tribunal of Appeal and gives security, to be approved by the Tribunal, to prosecute his appeal, all proceedings in the Tribunal shall be stayed, and the appellant may bring an action in the High Court against the other party. The procedure is to be similar to that followed in a commercial court of the High Court, or as near thereto as circumstances permit.

The Tribunal of Appeal for the purposes of the enactment is to be constituted as follows:—The Secretary of State will appoint three members, who are to be barristers; the Royal Institute of British Architects and the Surveyors' Institution will each appoint three members. The appointment is to be for a year, but the members would be eligible for reappointment. The Lord Chancellor can remove any member for inability or misbehaviour. Not less than three members, of whom one is to be a barrister, shall attend at the hearing of any case. The sittings can be held in any part of England most convenient for the determination of the proceedings. The fees are to be arranged by the Secretary of State, as well as the salaries of such clerks, officers and servants as may be appointed. The members assigned for the purposes of each case are personally to visit the tenements of the appellants and the respondents, and can determine to what extent the proposed new buildings are to be amended or the dominant premises altered. They have power to hear the parties either in person or by counsel, and to require the production of any documents or books required. Subject to the approval of the Lord Chancellor, they can make regulations as to procedure. Any order of the Tribunal of Appeal may be enforced by the High Court as if it had been an order of that Court. Whenever an injunction is obtained either party may apply to a judge of the High Court.

There may be opposition on the part of lawyers to the contemplated arrangements. Practically what is proposed is the creation of a technical court, in which, as far as possible, the whole of the duties will be discharged by architects and surveyors. Everyone who has had to attend courts, whether in the Metropolis or at the assizes, in which actions for interference with light were tried, could hardly have failed to pity the judges. They have to deal with difficulties for which they must have felt that neither experience with cases nor the ordinary logic of law was of much avail. Optical and mathematical problems were introduced, depending on subjects which they had neglected since they left college. The irritation often caused scenes like those which were common in Vice-Chancellor MALINS'S Court, and which to an ordinary observer were not calculated to uphold the majesty of the British law. When two architects or surveyors have to fight out their case before a third as umpire, the stage play and eloquence permitted in civil courts will not count. The points at issue will appear in all their simplicity as bricks and stones and mortar. There will be no chance of concealing defects by verbiage. The majority of the cases will probably never have to go before the Tribunal of Appeal, for litigants are not likely to have the gratification of seeing their conflict described at length in the public journals, as the new tribunal will, we suppose, be as much neglected by reporters as that forming part of the machinery of the Metropolitan Building Act. But so revolutionary a change necessarily must meet with opposition, and for that reason, as we said before, we consider the Government should have assumed the authority for dealing with so intricate a subject.

Various changes in the procedure respecting claims for interference with light have been suggested by architects and surveyors from time to time. The principal features in the new Bill were indicated five and twenty years ago in an article in *The Architect* by the late Professor ROGER SMITH. One extract from it will be sufficient to prove that the authors of the Bill cannot claim much credit for novelty. He wrote:—

It should be enacted that by giving a certain amount of public notice, and giving, if necessary, a security sufficient to meet all claims for compensation lodged during a certain time, an owner of property should be entitled to carry out a definite plan of improvement, all his neighbours whose lights are affected being entitled to compensation (assessed by arbitration or a jury), and to the same additional amount which is customary in a case of compulsory sale. Perhaps the operation of such a scheme might be much as follows:—Let us suppose A to be the owner of property in London or Manchester, which he desires to rebuild. He may, if he pleases, proceed just as is customary now, namely, giving no more notice of his intentions than he can help, attempting to surprise his neighbours by running up his obstruction before they can make up their minds what to do, and taking the chance of their being bold enough or quick enough to take the legal steps necessary. In short, he may as now take his chance, but he may, if he pleases, put himself under the protection of the proposed new Act by advertising two or three months beforehand in the newspapers, posting a notice on the door of his premises, and depositing a copy of his plans in the official surveyor's office, or in that of the district surveyor. Before his notice has expired, any adjoining owner gives notice that his rights of light will be affected, and that his claim amounts to 1,000*l.*, the building must not be begun till satisfactory security to the amount of 1,000*l.* (or of such less sum as the Court by some quick process may order) has been given, and at the expiry of the notice the building may proceed, and after on its completion or earlier all claims are to be investigated by an arbitrator, if the parties can so agree, or otherwise before a jury or a vice-chancellor; but no claimant to have the power of moving the Court to stop further progress of any building with respect to which notice had been given, unless (1) it was begun before the notice had expired or withdrawn in due form, or (2) security for the amount of a claim lodged before the expiry of the notice had not been given, or (3) the deposited plan had been departed from. An embodying some such arrangement as this would probably be quite as much relief as it is necessary to afford, and would be open to the objections which might be urged against a sweeping measure.

In the new Bill the procedure is somewhat simplified, it has yet to be seen whether ROGER SMITH'S proposal will not be more acceptable to Parliament.

SAFEGUARDS AGAINST FIRES CAUSED BY LIGHTNING.*

THE number of buildings damaged by lightning in this country varies slightly from one year to another, but is so far constant that it is perfectly safe to say that in the course of any ten years between 3,000 and 4,000 suffer from this cause, of which about 200 are churches.

Statistics that have been published show that thunderstorms are gradually increasing over the whole of civilised Europe. Thus, in the course of sixty years the average number of such storms in London has increased from twelve to twenty-two per annum. Considering the number of lightning discharges in these storms, it appears evident that damage would be very much more frequent if it were not for the number of lightning conductors in use. Conductors, however, are not always successful. They sometimes fail when they appear to have been applied in accordance with the better known rules supposed to govern the subject. On the other hand, cases occur in which conductors that would be condemned as inefficient under those same rules answer perfectly when struck by lightning. This anomalous state of affairs shows that there is some important factor that is very frequently overlooked, and which must be the crux of the question.

I propose placing before you certain aspects of the matter which will demonstrate what I consider to be this overlooked factor, and which must be accorded their proper significance if efficient protection is to be secured.

Probably one of the causes that interfere with a clear conception of the methods necessary for protection is the view that is often taken as to what a discharge of lightning is. Although the idea of a thunderbolt accompanying a lightning flash is known by scientists, and probably by the majority of the public, to be illusory, there is still a tendency to regard lightning as something which leaves a cloud and damages a building or other object by striking it. The language used in connection with the subject unfortunately fosters this idea. Even the term "struck by lightning" is, I consider, scarcely correct, though for want of a better I shall have to use it frequently in the course of this paper.

At the best lightning is too often regarded as an electric current overcoming the resistance of the air, but this resistance has nothing in common with that which is the subject of Ohm's law, and to consider it merely as a momentary current is apt, I think, to give a somewhat misleading view of the matter. I want you, in the course of my remarks, to regard it as a breakdown of the dielectric—not as something leaving the sky to come to earth, or as being hurled from the clouds to strike a building, but to consider it—as it indeed is—as a fracture or cracking, both of the air and of any other resisting medium between the oppositely charged bodies, the clouds and the earth. As a mechanical analogue, one may liken the air under these conditions to a thick slab of glass, or other strong material, subjected to an enormous pressure from above and below, and which will crack when the pressure is greater than the material will bear; a building may be considered as a weaker object firmly embedded in the glass. We may, in fact, regard ourselves as living between the inner and outer coatings of an enormous Leyden jar or other condenser.

Now when the stress to which the air is subjected has reached the breaking point, which is about half a gramme weight per square centimetre, the line of the fracture becomes visible by the intense heat making the air particles momentarily incandescent, and this we call "lightning." The building which, being in the line of the strain, gets damaged, forms only a part of the fracture; the air is equally damaged, but is a self-repairing medium. Unfortunately, our buildings, trees and bodies, which are less resisting than the air, are not self-repairing, and so we get the deplorable losses of life and property that occur every year.

Let me say here that, even allowing for the effects of induction, lightning can no more be said to be attracted by a conductor than a crack across a sheet of glass can be said to be attracted by any weak part which would cause it to take other than a straight course, or than a brook winding through a meadow can be said to have been attracted by the softer ground through which it has carved its way. At the top the conductor would be provided with a point, or several points, so as to prevent the discharge occurring if possible, and, if not, to try and render it less violent. As regards the lower part, if it ended at the ground line the conductor would answer, provided there had been rain and the surface of the ground was wet, but if the flash occurred in dry weather there would be resistance to overcome between the conductor and the conducting stratum below causing heat, and the least that would happen would be that the ground at this point would be blown up. This might be considered not worth the expense of making a good earth connection to prevent, but one cannot

* From a paper by Alfred Hands, prepared for the International Fire Congress.

be certain that this would be the only effect. The explosive force in such a case is often equal to that of some pounds of gunpowder, and so there is danger of damage to the brickwork or foundations. A fairly good earth connection is therefore advisable, but it need not be a "perfect earth"; so long as the resistance is fairly low and the conductor is of such a size as not to be fused, we can feel confident that it will answer in this case.

It must not be supposed that I am stating that a good "earth" is never necessary; in very many cases it most certainly is. What I wish to imply is that a good "earth" is a matter of comparison. One cannot fix a limit of so many ohms and say beyond that a conductor "earth" is inefficient, for under certain conditions a conductor would not fail with an "earth" resistance of 100 ohms, or even hundreds of ohms, while under others two or three ohms would be too much. A discharge would not leave a conductor, even if there was a fairly high resistance, to go to earth by another route unless there was a rival one open to it. By a good "earth" I mean one that has a low resistance in comparison with any other possible "earth" in its neighbourhood.

Now, suppose that instead of the structure being composed of a solid mass of bricks or stone it was made hollow, with a stone staircase in the interior and a gas pipe carried up to afford light at intervals, the conditions would be entirely changed. There would then be a rival conductor in the interior with a perfect earth connection; for gas pipes, owing to the extent of the surface of the mains underground, have merely nominal "earth" resistances, and if the conductor had a higher one the discharge would either be entirely diverted to the gas pipe or be divided between the conductor proper on the exterior and the accidental one in the interior, according as the resistance of the former was great or small. It is not practicable to make the "earth" of the intended conductor appreciably lower than the gas main, but if we succeeded in getting it so to a fractional extent there would still be the dangerous rival inside, and there would be a side flash, or let us say a side fracture, between the two conductors if the brickwork or air between, as the case might be, was not sufficiently strong to resist the stress suddenly thrown upon it. It would be necessary then, besides having a perfect "earth," to place the conductor so that there should be a sufficiently strong buffer of resisting material between the two as to make it impossible for the discharge to break through. I do not mean by this the use of glass insulators or keeping the conductor a few inches away from the wall, but by a considerable space of resisting material.

We have to look the fact squarely in the face that side flash, or sparking, will occur between a struck conductor and other metals sufficiently near it. A perfect "earth" does not prevent side flash, it only reduces the sparking distance; a comparatively bad "earth" increases it. We must therefore see that the other metals are at a safe distance, or make connections across to act as a conductor for the spark. I have reasons for fixing the safe distance between two perfectly "earthed" conductors, in the most extreme cases, as 5 feet for ordinary building materials, while in some cases, depending on the course of the accidental conductor, it is considerably less.

We have been considering in these diagrams the most simple cases one could have to deal with. If all buildings were like these a schoolboy might, with half an hour's instruction or by means of a few set rules, learn to protect them perfectly. Unfortunately metals are introduced very largely into the construction of modern buildings. You will see metal-cowls on chimneys, lead flashing round chimney-bases, rain-water pipes and gutters, fire-grates, girders, gas and water supply pipes, &c., forming a most complicated problem. Is it any cause for wonder when lightning conductors are put up, as they generally are, absolutely regardless of these accidental conductors, that cases of failure occur? I consider that to put a single conductor on such a building, expecting it to attract lightning and carry it away, would be like putting a pipe under two or three of the holes in the bottom of a tin colander, and expecting the pipe to attract the water to the holes directly over it, ignoring all the other holes.

I have found that on an average about a dozen cases of failure of conductors occur in this country every year. The only wonder to my mind is that there are not more.

Cases of failure may be divided into five main classes or headings.

(1) Where the conductor is not touched, the discharge taking an entirely different course. Such cases are not very interesting, and ought scarcely to be called failures of conductors—they are merely failures of the sanguine expectations of those who put them up.

(2) Cases in which the conductor is struck and damage occurs owing to non-compliance with the more elementary rules appertaining to the subject. Such cases are not very serious as a rule. The ground may be blown up owing to a very high resistance; the conductor may be broken or fused at a bad joint; or it may be torn loose owing to a bad bend.

(3) Cases where a part or the whole of the discharge leaves the conductor and takes another course through accidental conductors to earth. Such cases are primarily due to there being alternative paths available for the discharge, and they often result in very serious damage. If inflammable materials happen to lie in the path the risk of destruction of the building by fire is very great. The most dangerous form of alternative path is a gas pipe, and soft metal pipes are especially so.

(4) Where sparks occur between lightning conductors and neighbouring metals not leading to earth. These cases do not usually result in very serious damage, unless fire is caused by something inflammable in the line of the spark.

(5) Where there is no side flash from the conductor, but sparks occur between two metals distinct from the conductor. These cases are very interesting, but fortunately are not very common. They are apt to cause fires, in fact, it is often the setting of the building on fire that shows such an effect has occurred.

The view that is often taken of a lightning conductor appears to me to be erroneous in one respect. It is regarded as a piece of apparatus intended for a certain purpose, and which should, therefore, perform its allotted function. Consequently too much thought is directed to trivial details, such as the particular form of conductor, its fastenings and accessories, and too little is extended to the fact that the question of its efficiency or non-efficiency depends on the way in which it is applied rather than on the conductor itself. A piece of apparatus might be depended upon, if a good one, to work in any place. A telephone, for instance, might answer equally well whether placed in one room or in another, but a lightning conductor is entirely different, because placed in one position it might be perfectly efficient, while the same conductor placed in another position would fail owing to the different conditions existing in its neighbourhood.

With due apologies to the medical profession for the comparison, I venture to say that a conductor is more nearly comparable to the drugs that a physician prescribes, as and when he considers advisable, than to a piece of apparatus turned out of a workshop, and only requiring putting together in accordance with a few set rules to produce certain results under an and every conceivable condition. For what is a lightning conductor after all? Merely a thread of metal among the many other threads of metal in a building. It is put up especially to afford a path for lightning because for various reasons it may not be advisable to use the other threads for the purpose. But if it is not properly applied it is no longer a safeguard; the other threads become unintended lightning conductors and, in sharing the discharge among them, damage may result—not the least serious of which would be the setting of the premises on fire.

There is a tendency to regard protection from lightning too much as being the mere putting up of lightning conductors. A century ago, when buildings were differently constructed, it was, no doubt, all that was necessary in most cases; but these days, when metals are so largely introduced into the construction, the conditions are altogether changed, and some most difficult problems are often presented even by what might at first glance be regarded as simple constructions. The protection from lightning often consists of a good deal more than the mere erection of conductors. The part that often makes the difference between efficiency and non-efficiency is the making of various connections to bridge over what I call sparking gaps, as well as keeping a safe distance away from metals that it would be dangerous to connect to.

It is difficult to set any rule as to the places where connections have to be made. They can only be judged on consideration of the conditions that would exist at the moment of discharge. I may however say that they would be the places where there would be great differences of potential. A spark is, of course, the outward and visible sign of a difference of potential. If this difference is not sufficiently great for the spark to bridge the gap between the two metals, the effect will occur.

It is said that side flash is due to self-induction. Not I attach very little importance to this. It exists, of course, but a conductor cannot take a sudden discharge like a flash of lightning without there being enormous self-induction, but for this very reason it may, for practical purposes, be disregarded. As it cannot be entirely done away with, it is difficult to say what would be the practical effect of a lightning conductor absolutely without self-induction.

Experiment shows that by increasing the self-induction increases the sparking distance, and conversely, that by reducing it one reduces the length of spark. Now, the way to reduce the self-induction in a lightning conductor is to give it a number of sharp bends, thus, to run it backwards and forwards across the face of a building instead of direct down to earth, but I do not suppose that anyone would seriously recommend such a method of procedure as conducive to efficiency. Then, again, looking at the matter from a practical point of view, if you were to

erect a lightning conductor in the centre of a field, with absolutely no other metals near it, you would still have self-induction, but there would be no side flash. Self-induction with no other metal near is of no moment; self-induction with other metals near is; therefore I consider that the point of practical interest centres in the "other metal," and not in self-induction.

I have already referred to the cases in which sparks occur between two metals quite distinct from the conductor. Such effects are, I think, far more common than might be supposed, and many mysterious fires, many so-called extraordinary freaks of lightning, may be explained by them. In considering a subject like this, one has to form a sort of mental picture. In a way one may liken the electric potential of the earth, or rather the part of it under consideration, to the water-level of a lake or sea. It may be higher at one time than another, but any deviation from that level, whatever it happens to be at the time, implies an unnatural state, and therefore, there will be a tendency for any displaced portion to return to the general level.

Now, consider the effect at the moment that a discharge of lightning takes place. There is an enormous difference in potential at one place. One may liken it almost to a water-spout forming on a lake and then suddenly collapsing. The effect in that case will not end just at that one spot; there would be disturbance and waves propagated along the water. So I think at the moment of a lightning discharge the effect cannot begin and end just at the one spot struck; there must be waves of potential, if I may use the term, set in motion, and the effect would be visible as a spark at places where one metal approached another, provided they happened to be set in just the right manner. These effects are not very serious as a rule, but they may cause fires if the conditions are suitable, and they therefore require guarding against by connections at the critical points. Looked at from the point of view I have indifferently tried to place before you, not only do many of the so-called vagaries of lightning become intelligible, but one can, I think, see where these peculiar effects would occur, and take means to guard against them.

It may be asked, Is there no way in which protection can be secured without the tedium of mastering the subject, or of having to depend on an expert? Yes, there is one way; but I do not think that it is one that will become general. It is to adopt what is called metal screening. If you were to cover a building completely with metal from the top of the chimneys down to the ground line, making earth connections on each side, you would have a sort of metal cage, inside which no electrical effects would occur. You might have metal ramifications of all kinds, but there would be no sparks within the structure. It would not even be necessary to have the structure entirely covered with metal. One might run a large number of wires over it, both vertically and horizontally, so as to make a metal cage, and obtain the same effect, provided that no metal was allowed to pass into the building from the outside without being connected to the cage; but the meshes formed by the wires would require to be comparatively small. It could not be sufficient to run just a few conductors over it, and get a sort of skeleton cage. There is a case on record which shows that this does not afford metal screening.

For very dangerous places, such as explosives magazines and factories, metal screening is generally the best, and often the only safe course to adopt; but for other buildings I think the enormous expense and unsightly appearance of the cage system of protection would render it impossible of general adoption. It may, however, be adopted partly in places where there is some dangerous alternative path which it is found possible to keep the conductor sufficiently far from. Such a cage would be represented by a flèche with clock faces illuminated by gas lights. If the flèche was lead-covered it would readily form a metal screen, and a very little addition would make it perfect; but if not small sized conductors should be lead over it to form a cage.

For general purposes, however, the system to be adopted is intelligent consideration of the conditions that may exist in a structure to be protected. Knowing the conditions and their effect, connections must be made between the lightning conductor and any metals so near to it that they would constitute weak spots where side flash would occur, and even between the metals and others, or between two independent metals, if they were so placed as to cause sparking.

Conductors must be kept sufficiently far away from other things that it would be dangerous to connect to, such as pipes; in other words a sufficient distance of resisting must be maintained. I would particularly say beware of alternative paths; they are the cause of the greatest amount of damage in failures of conductors.

In arranging a conductor system it must be borne in mind that there are certain parts of a building that are exposed to be struck, and therefore the system must comprise lines of connection from all those parts. To protect one and leave another unprotected is waste of money.

Earth connections are important, and it is necessary to get

the lowest resistance of any possible "earths." For this purpose a large extent of metal surface underground is a necessity. This may be obtained by means of earth-plates, or connections to gas and water mains, or by both, but in making these connections caution is necessary. Complications sometimes occur that would render them disastrous. Earth-plates should be proportionate to the moisture in the soil, never less than 3 feet square, or equivalent area, in a wet situation, while in dryer ones the plates must be increased in area proportionately. Within certain limits it may be said that doubling the area of surface contact reduces the resistance by half. Thickness of the earth plates makes practically no difference in this respect. In somewhat dry soils resistance may be reduced by bedding the earth plates in coke, but coke should not be used unless it is absolutely necessary.

As regards the best kind of conductor to use I consider that, taking into consideration durability and cheapness, copper is the most suitable metal, and as regards form, copper tape, band or ribbon, as it is indiscriminately called, is the best for similar reasons. Copper rope answers sufficiently well for a time, but it is not so lasting as tape.

In conclusion, I may say do not make the conductor system unnecessarily prominent. Buildings can be efficiently protected without disfiguring them with over obtrusive lightning conductors.

KENT ARCHÆOLOGICAL SOCIETY.

AT the annual meeting of the Society, which was held last week in the Guildhall, Rochester, Mr. George Payne, the hon. secretary, read the forty-sixth annual report of the Council of the Society, from which it appeared that the visit was the third to the ancient city of Rochester, the last having been in 1886. Since that time a flood of light had been thrown upon the history of the city by the researches of Mr. W. H. St. John Hope, the Rev. G. M. Livett, and the hon. secretary, and the visit was therefore expected to be much more instructive and interesting than heretofore. Since they had last met the Society had lost several valuable members by death and other causes, notably Mr. James Foster Wadmore, Canon F. H. Murray and Mr. T. F. Peacock, F.S.A. Eighteen new members had joined the Society during the year, and a member awaited election. The Council had appointed a finance committee, and the balance-sheet would henceforth be drawn up by a chartered accountant. A treasurer would also be appointed. During the year no important archaeological discoveries had been made. The Council viewed with much satisfaction the spirited action of the Corporation of Rochester in securing and restoring at great cost that fine example of Domestic architecture, Eastgate House, and converting it into a local museum. The Council had recently made a further grant of 25% towards the very important excavations still going on at St. Austin's Priory, Canterbury. The balance at the Society's bankers, together with the deposit account, was 619*l.* 14*s.* 11*d.*

The cathedral was visited under the guidance of the Rev. G. M. Livett, and the Norman castle under the guidance of the hon. secretary, who also conducted the members round the ancient mural defences of the city and over Eastgate Museum.

MANCHESTER SOCIETY OF ARCHITECTS.

ON Saturday, July 25, the members of this Society visited Bournville, near Birmingham, Messrs. Cadbury's model village. Mr. W. A. Harvey, the architect, kindly met the party, and showed them over a considerable part of this most interesting estate.

Several houses were examined throughout, and the nearly completed Ruskin Hall was much admired. It was thought that the great success, both social and architectural, of this experiment should do much to encourage similar schemes elsewhere.

The fine church of St. Agatha, Birmingham, was then visited, under the guidance of Mr. Bidlake, the architect, and also Messrs. Keep's warehouse, a refined piece of work by the same architect. The day was concluded by a visit to the Eagle Insurance Company's offices, Messrs. Lethaby & Ball, architects, where the interior, with its beautiful marble and plasterwork, was especially admired. Some of Mr. Edgar Wood's work at Middleton was visited on Tuesday evening, July 28, by twenty members. The Old Road chapel has been lately decorated by the architect and Mr. Jackson, the painter, and has a charming internal effect of rich colouring. The new Wesleyan chapel is an excellent piece of grouping, arranged picturesquely round a cloister or courtyard. Mr. Wood's own house is full of interest, and the formal garden he is developing shows what good results can be got on a very small scale.

NOTES AND COMMENTS.

THERE is a standing grievance among officials of the India Public Works Department with respect to the value of the rupee. Appointments are accepted in England at certain salaries to be paid in that coin. But when the engineer or other technical officer receives his first payment in India he is astonished to find that the value of a rupee is different in England and in the East. Mr. BURT, a civil engineer who has held an appointment since 1878, tested the regulations in a case which was brought by Mr. ASQUITH, K.C., before Mr. Justice JOYCE in the Chancery Division on Tuesday. He entered the service through Coopers Hill College. He was attracted by a prospectus he obtained at the end of 1874, and which professed to relate to the year 1875. His salary was to be 1,300 or 1,400 rupees per month, but he had to submit to the diminished value. There was one opportunity of receiving the full sterling amount. In the regulations it was stated that if payment be taken at the Home Treasury the rupees are to be converted into sterling at the rate of exchange fixed for the time being for the adjustment of financial transactions between the Imperial and the Indian Treasuries. When in 1897 and in 1899 the plaintiff had taken his holidays and came to England, he found that at the Home Treasury he was still paid at the rate of 1s. 6d. per rupee instead of the 2s. mentioned in his prospectus. He therefore sought to recover 310l. 7s. 1d. On behalf of the Secretary of State for India it was contended that the prospectus was superseded by another, of which the plaintiff had never received a copy. Mr. Justice JOYCE dismissed the action. His Lordship pointed out that there was no evidence that plaintiff had been misled. All that could be said was that in the prospectus there was an incomplete series of extracts from the Code with regard to payment. The Government were entitled to alter their arrangements from time to time, and those issued after 1875 must have been accepted by the plaintiff. The issue will be disappointing to many officials, for what adds to their hardship is that while the civil engineers engaged on one work are paid at the rate of 1s. 6d. per rupee, the Royal Engineers receive 2s. Mr. BURT's case would be considered by ordinary employers as requiring a different solution. When a man is appointed at a certain salary it is understood he will be paid the amount so long as he performs his duties. If at a subsequent time men come in at a lesser amount, that does not affect the employes previously engaged, unless they agree to accept a deduction of their salary. We suppose the real reason is that it is difficult to make ends meet in India, and officials are treated differently from those in the Civil Service of Great Britain.

THERE is one aspect of Papal conclaves which does not receive much attention from the majority of people. They hear about the closing of the Vatican Palace, and conclude that what is done bears some resemblance to what would be needed in securing isolation if an infectious illness broke out in a large building in England. Tradition counts for much in Rome, and it is remembered that repeatedly the arrangements for securing an election without disturbance from exterior forces resembled those which would have to be carried out if the palace of the Popes was about to undergo a siege. At the election of GREGORY XVI. in 1831 the preparations involved an expenditure of 723,631 francs, or nearly 30,000l. That was a large sum for a temporary purpose, for the protection is generally needed for no more than a few days, and has to be again removed. On the death of PIUS IX. it was resolved that economy should be respected, and a sum of 150,000 francs was set down as the utmost limit. Under the direction of Signor MARTINUCCI, the architect, the closing cost only 57,871 francs. The largest items were carpentry and joinery, 22,394 francs; masons, 10,237 francs; locksmiths, 5,300 francs; painters, 6,100 francs; stonecutters, 910 francs; stuccoists, 2,827 francs; glaziers and plumbers, 3,900 francs. Signor VESPIGNANI was entrusted with the alteration of the Sistine Chapel into a hall for the conclave, and the cost of the work was 19,961 francs. The occasion is usually taken by the humbler classes of officials and servants to make demands for requirements which are costly. But in most parts of the world deaths generally lead to waste of money.

ILLUSTRATIONS.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.—
ENTRANCE, BOARL ROOM.

CATHEDRAL SERIES: EXETER.—WINDOW TRACERY, NORTH AND
SOUTH SIDE OF CHOIR.

ACCORDING to some investigators of the history of Exeter Cathedral, the credit for the most characteristic work should be given to Bishop PETER QUIVIL, who was elected in October 1280. The conclusion confirms the statement in the fifteenth-century chronicle, viz., "Fundata est hæc nova Ecclesia a venerabili patre PETRO, hujus Ecclesiæ Episcopo." He was a native of Exeter, but as his mother's name was HELOISA, it is supposed that on one side at least he was of French descent. His arms were "azure, a cross argent, between two roses in chief, and two fleur-de-lys in base or," or a combination of the roses of England with the golden lilies of France. Archdeacon FREEMAN, whose excellent history should be studied by every visitor to the cathedral, endeavours to trace a connection between the arms and the tracery of the windows. He writes as follows:—"There was probably a further and deeper meaning in his assumption of this cognisance. The rose is by ancient usage the symbol of OUR LORD'S divine royalty, the lily of His human nature: so that the coat, uniting these to an azure field and a pure white cross, is largely symbolical of the mystery of our salvation. And the aim of QUIVIL'S life, it may well seem, was to carry out this beautiful symbolism in the goodly church over which he was set to preside. He it was who first imparted to its interior the cruciform shape, and who provided that each arm of the cross should be enriched with the most lovely window tracery, exhibiting almost to the exclusion of every other form, those of the lily and the rose. The pattern in each case is of a large rose, set round with lilies or roses, or both, and resting, as it were, on 'two heaps of lilies,' one on either side. This for the extremities of the cross, while throughout the whole church, with the rarest exceptions, every window-light head is a trefoil or fleur-de-lis. The nave windows below (except the two western bays) are of the lily pattern throughout, while in the nave clerestory there is a regular alternation in the heads of circles or roses with curved triangle or lily forms. And all through the church the triforium arcade, with the balustrade resting upon it, exhibits once more, in boundless profusion, the golden lilies below the argent roses above." Expositors of the mysteries of Gothic architecture are usually enthusiasts for symbolism. If Exeter Cathedral were unique in affording examples of combinations of Perpendicular mullions and trefoil heads with circular tracery above them there would be some plausibility in the Archdeacon's conclusions. But throughout England there are many examples of similar treatment it is hardly fair to assign to Bishop QUIVIL the whole credit for a system which was generally applied.

SHOPS, 20 TO 24 CAMBERWELL GREEN, S.E.

THE shops illustrated in this week's number are on the south side of Camberwell Green, and cover a site which was formerly occupied by several small wooden, tumble-down buildings which had existed there for probably over 100 years, until pulled down and replaced by the shops now erected. The situation is one of the best in the south of London, being at the junction of Camberwell Road, at the corner of Camberwell New Road and Denmark Hill and Peckham Road, four of the main thoroughfares in the south of London. Two of the shops were erected by Mr. PHILLIPS, and the other two were erected by Mr. REASON, of Rosebery Avenue, Clerkenwell—all under the superintendence of Mr. LEWIS SOLOMON, F.R.I.B.A., architect, 55 New Broad Street, City, at a total cost of a little over 7,000l. The fronts are of Ibstock (red Leicestershire pressed facings) bricks with terra-cotta dressings, and are an example of simple shopwork of good description.

HOUSE AT WIMBLEDON.

LANELEDGED RECTORY.

BERKS ARCHÆOLOGICAL SOCIETY.

THE Berks Archæological Society made their second summer excursion on Thursday, July 23, and, says the *Reading Mercury*, visited the beautiful Abbey of Malmesbury and, by the kind invitation of the Countess of Suffolk and Berkshire, the historic mansion of Charlton.

The Rev. P. H. Ditchfield described the historical associations of the abbey. He said that Malmesbury occupied a position of strategic importance and had great natural strength. It stood on a peninsula formed by the confluence of the Bristol Avon and Newton Water, while the third side of the triangular space was protected by a rampart which ran along a neck of land between the two streams. The name "Westport" preserves the memory of a fortified gateway. The mythical origin of Malmesbury was attributed to Malmud, king of Britain, father of Brennus, famous in Roman history, who was said to have founded the town B.C. 400, and called it Bladon. No Roman remains had been found there, and therefore it could not have been an important place in Roman times. The Saxons called it Ingleburne, and as it stood on the borders of Wessex and Mercia it was occupied by both kingdoms at different times. Tradition states that there was a nunnery here, and Leland mentions it, adding that the nuns were not quite so good as they should be, and were turned out by a Saxon archbishop. The real history begins with Maddulf, an Irish hermit, who lived in the seventh century, and obtained leave to have a cell here. He attracted many people by his pious life, and founded a monastic school to which hundreds flocked. Amongst them came Aldhelm, a relation of Ina, king of Wessex, first bishop of Sherborne, who founded the abbey. He was a man of great piety and virtue, worked several miracles, and sang beautiful songs to the wayfarers, and thus attracted them to listen to his teaching. He founded the beautiful gem of Saxon architecture at Bradford-on-Avon. Eleutherius, bishop of Wessex (672-76 A.D.), gave him a grant of land for an abbey and appointed him first abbot. He raised a church dedicated to the Holy Saviour, SS. Peter and Paul, and within the precincts another church dedicated to St. Mary, and a chapel to St. Michael, in which he was buried. King Alfred wished to make Malmesbury a seat of learning, and sent a learned Scot, named John, to teach them, but his pupils liked him not, and murdered him, stabbing him to death with their steel pencils. Athelstan was a great benefactor of the town. When he was fighting against the Danes he men of Malmesbury fought well and bravely, so he rewarded them with a grant of land which is still held by the burgesses, and divided into allotments varying from two to ten acres. When a burgess is admitted the steward gives him a turf and strikes him three times with a twig, saying—

Turf and twig I give to thee,
Same as King Athelstan gave to me.

Athelstan and his two sons, slain by the Danes, were buried here, and the tomb of the former erected in the fourteenth century remains. Abbot Alfric, appointed by King Edgar, rebuilt and restored the church of St. Mary and made it the principal one. The church of SS Peter and Paul was a smaller building, and stood on the south side of the south transept, wherein in Leland's time weavers had their looms. The church had two organs, one presented by St. Aldhelm, which was a mighty instrument with innumerable notes, blown with bellows, and had a gilded case. The other was made by St. Dunstan and had metal pipes. The Danes came to Malmesbury with the intention of plundering it, but one of them tempted to take a stone from the shrine of St. Aldhelm, and fell back as if he had been shot. So they left the abbey alone and fled away. William the Conqueror was a benefactor of this monastery, and gave to it the head of St. Owen, which he brought from Rouen, and Queen Matilda endowed the church with several manors. William of Malmesbury, born in 1075, the great historian, lived and worked here, and formed the library; he refused the office of abbot, preferring to devote his life to study. Bishop Roger of Salisbury built a castle here, which was destroyed in John's time. The present church was built in the twelfth century. In the thirteenth the monastic buildings were erected when William de Colerne (1265) was abbot, and included two halls, kitchen, bakehouse, dormitory, chapter-house, vineyard and church garden. In the same century the hospital of the Order of St. John of Jerusalem was built in the lower part of the town, of which a single arch remains. The abbey was dissolved in 1539, when Abbot Selwyn and twenty monks were imprisoned. The monastic buildings were gradually pulled down and carried away. The Tudor house near the church was built on the foundations of the infirmary. William Stump, a clothier, bought the abbey buildings from Henry VIII. for 1,500*l.*, and set up looms for his weavers in the chapel. His son or grandson gave the nave to the town for a parish church. The valuable monastic library was dispersed, and the MSS. were used to stop bung-holes in beer-barrels, to cover books, to wrap gloves and scour gun-barrels, for which they were

found especially serviceable. Malmesbury was the scene of many fights in the Civil War, and was occupied by both Royalists and Roundheads, and the marks of bullets can be plainly seen on the walls. It is a matter of regret that time has dealt so hardly with this majestic pile, but in spite of all the destruction that has taken place, it remains one of the most interesting buildings in the country, not only on account of its architectural beauties, but also for its most important historical associations.

Mr. Keyser described the architectural features of the abbey. He said that it was a matter of regret that so small a part of the building remained. Originally the plan consisted of a nave with aisles, a central tower with transepts and chancel. The large central tower and spire were higher than Salisbury, which was usually considered to have been the highest in England, but it was surpassed by the lofty spire of old St. Paul's Cathedral, London. The principal building belonged to the latter part of the twelfth century, and he considered that Malmesbury showed the earliest example of the pointed arch. The arches of the nave were all obtusely pointed, whereas the doorways were semicircular. The south doorway was one of the finest in England. He pointed out the elaborate ornamentation, which was very similar in style to the carved work seen in the Forbury Gardens, Reading, and in the garden of St. Lawrence's Vicarage. The Abbey Church at Reading and that at Malmesbury were built at the same time, though the Reading church must have been much larger. Mr. Keyser pointed out the prismatic billet ornament and the sunk lozenge on the arches, the fifteenth-century screen, the fourteenth-century roof, part of which here had been destroyed by the fall of the west tower, and the fifteenth-century "watching loft," which he conjectured might have been the abbot's pew.

The party afterwards drove to Charlton Park, where they were received by the agent, Mr. Bates, in the absence of the Countess.

Charlton Park.

The Rev. P. H. Ditchfield briefly described the house and the history of the family. He said that this house is especially interesting to Berkshire people as it is the home of the noble and illustrious family who take part of their title from our royal county. In ancient times this manor belonged to the abbots of the monastery, as Bere Court belonged to the Abbot of Reading. After the Dissolution it was granted to the Knivet family. Thomas Howard, the fourth Duke of Norfolk, married as his second wife Margaret, only daughter and heiress of Lord Audley of Walden. This nobleman was unjustly convicted of conspiracy in the matter of Mary Queen of Scots, and was beheaded in 1572. His son, Thomas Howard (born 1561), was a great naval officer in the time of Queen Elizabeth, was heir to his mother's estates, and was restored to his paternal estates in 1585. In 1603 he was created Earl of Suffolk and Knight of the Garter, and married as his second wife the eldest daughter of Sir Henry Knivet of Charlton, and widow of the Hon. Richard Rich, eldest son of Lord Rich. (The earldom of Suffolk was an old title revived. They would remember the unfortunate Earl of Suffolk who was butchered by the sailors when he was leaving England in the time of Henry VI.) He built Audley End, one of the most magnificent mansions in England. He performed great services to his country, suppressing the rebellion of the Earl of Essex, who had married one of his daughters, whose character was none of the best. He became Lord High Treasurer, and discovered the Gunpowder Plot. Finally he was accused of accepting bribes and dismissed the king's service. The elder son of this first earl (Theophilus Howard) inherited the title, became Privy Councillor and Lord Warden of the Cinque Ports. The younger son (Thomas) inherited his mother's estates here at Charlton, was Master of the Horse to Charles, Prince of Wales, afterwards Charles I., raised to the peerage as Lord Howard of Charlton and Viscount Andover, and created Earl of Berkshire in 1625. He would often be at Windsor with the young prince, hunting in Windsor Forest, and when he became an earl chose his title from the name of the royal county wherein so many happy days had been spent. He was devoted to his royal master, and was a great Royalist and fought in the Civil War. After the execution of Charles I. he lived here in retirement, and at the Restoration, as a reward for his fidelity, he obtained a grant of the farms of the revenues of post-fines for forty-eight years, amounting to the comfortable income of 2,276*l.* a year. Without mentioning the numerous members of this family he would only allude to the union of the titles. Owing to Henry, tenth Earl of Suffolk (d. 1706), dying childless, the earldom came to Henry Bowes, who was descended from Thomas, the first Earl of Berkshire and second son of Thomas, first Earl of Suffolk. Thus the titles were joined, and Henry became the eleventh Earl of Suffolk and the fourth Earl of Berks. This house was commenced by Thomas Howard, the first Earl of Suffolk, in the time of James I., and the parts erected by him are con-

sidered an excellent example of the Jacobean style of architecture. The west front was designed by Inigo Jones, and it is said to have been built by him before he had studied the works of Palladio and become deeply imbued with the influences of the Italian school. A great gallery extends the whole length of this front. The general plan of the mansion consists of a square with four fronts with towers at the angles, finished with cupolas and vanes. It is all built of stone, and measures 128 feet by 180 feet. Formerly there was a large quadrangle in the centre. This (as in the case of many other mansions) has been covered by a roof and a dome and converted into an immense hall. The south or principal front has a central porch adjoining square towers and wings at each extremity. In the basement of the porch is an arcade in the Doric style, an innovation on the buildings of Elizabethan age. The windows are mullioned with square heads, but in the upper storeys retain the Tudor labels. The parapets are enriched to an extreme with scrollwork, perforated, which ornament is continued up the gable ends and crowned with pedestals, orbs and obelisks. The north and east fronts were erected by Bretingham under the direction of Henry, twelfth Earl of Suffolk and fifth Earl of Berks, who was principal Secretary of State for the Northern Department in the time of George III. (d. 1779). The house contains a fine collection of pictures, which they would now have the pleasure of seeing. Mr. Ditchfield concluded by expressing their gratitude to the Countess of Suffolk and Berkshire for her great kindness in allowing them to visit her beautiful home, and to Mr. Bates for kindly making arrangements for their reception.

ROYAL ARCHÆOLOGICAL INSTITUTE.

THE programme for July 25 included visits to Conisborough Castle, Roche Abbey and Tickhill Castle, which are all found in a picturesque district.

Conisborough Castle.

This castle is described in one of the last chapters of "Ivanhoe," when it was visited by Richard I., Ivanhoe, Gurth and Wamba. Scott, like all men of genius, had realised the principle of evolution, and that archaeology was one of its expositors. In his remarks on the building he said:—"I have always thought that one of the most curious and valuable objects of antiquaries has been to trace the progress of society, by the efforts made in early ages to improve the rudeness of their first expedients until they either approach excellence or, as is most frequently the case, are supplanted by new and fundamental discoveries, which supersede both the earlier and ruder system and the improvements which have been engrafted upon it." The Saxon part of Conisborough he regarded as a step in advance of the early architecture of the Northmen. At the visit of the Institute Mr. St. John Hope explained how William de Warrene was presented with estates, including that site, by the Conqueror, and how the mound was partly, if not wholly, of made ground. The earlier outer fortifications would be of wood until the hill had consolidated, and then would be put up the stonework, followed by the tower. The castle was erected to control the main road and the passage of the Don at the bottom of the hill, and the hill occupied a considerable space, giving room for a considerable number of people. The precise date of the castle they did not know, for being a private possession (not of the Crown), there were no records, but if they compared it with the tower at Orford, they would find a very great resemblance. The date of Orford, as it was a royal castle, could be fixed, and it was 1165-70, so that the work at Conisborough pointed very clearly to its being a tower of the same date. As at Middleham, there had existed a pigeon-house, and high in the walls were to be seen the holes through which they passed. Mr. St. John Hope subsequently conducted the archaeologists over the interior of the keep. Some made the ascent to the top, and the day being beautifully fine and clear, they enjoyed the extensive woodland views. The chapel was regarded with interest, as it was the room in which the monks and maidens were singing requiems for the soul of the Saxon Athelstane at the very moment of the hero himself reappearing in body to the astonished company in the adjoining room, to preside at his own funeral feast, and to "do his guests reason in a cup of wine," and a morsel of savoury ham.

Sir Henry Howorth remarked that Sir Walter Scott's description of that particular castle was the finest account in the English language of how such a castle would have appeared. Geoffrey of Monmouth, the father of English romance, had an extraordinary story of that site, that one of the mounds was the grave of the Jutish chief Hengist.

Roche Abbey.

A pleasant drive of five or six miles transferred the party to the sylvan vicinity of Roche Abbey, past the extensive park, with its fine timber and herds of deer, Sandbeck, the residence

of the Earl of Scarborough, to whom all archaeologists and antiquaries are indebted for the care which is taken of the noble ruins, and for the excavations which, commenced some years ago, are still being made, and whereby much has been revealed that was before hidden under rubbish heaps. The beautiful situation of the abbey, nestling in the base of a wooded dell at the confluence of two streams, was as solitary as even the rigorous Cistercians could desire, and the general scene reminded one of Fountains. The precincts of the abbey are approached by a vaulted gateway of two aisles, with a room above it, but besides the ground plan and the bases of the walls and pillars of the nave there remain only the entrance gate and the nave of the church, Early English, and the piers of the tower. Mr. Harold Brakspear, F.S.A., in a short address, said the abbey was one of the finest examples of the period. It was founded in 1147, twelve monks from Durham, after wandering about, settling down in that rocky place, they getting the ear of the lord of the manor of Maltby that whosoever land it was built upon they should be still joint founders. In 1343 the Earl of Surrey, admiring the beauty of the structure, gave them one of the churches in the neighbourhood. Matilda, Countess of Cambridge, in 1440, who had her principal residence at Conisborough, wished to be buried in the Abbey of Roche "in the chapel of the Blessed Mary, before her image in the south part of the church of the monastery, and I will that a stone of alabaster may lie above my grave, raised up like a tomb, with an image, the fashion of which I leave to my executors." Of that tomb nothing had been found. The abbey was suppressed in 1539, and was allowed to go to ruin in the usual way, being used as a quarry for the neighbourhood, and then "Capability Brown" came into those parts and promptly levelled down the abbey, leaving only those masses of ruins. It was hoped to complete the excavations as far as the main buildings were concerned before long. It was a very good example of a Cistercian church, consisting of a presbytery, transept, two chapels and a nave with eight bays. The block of the high altar still remained. The north wall of the presbytery was magnificent fourteenth-century work, and in the nave were tombstones of a late date. In the floor was a very fine example of a floor drain. Its purpose was not clear, but it had been suggested that it was to take away holy water.

Sir Henry Howorth quoted a passage from Horace Walpole's memoirs, in which he referred to a visit he paid to Roche Abbey in 1772. Walpole said, "This heap is in such a venerable chasm that it might be concealed even from a squire parson. Lord Scarborough neglects it as much as if he was afraid of ghosts."

M. Camille-Eulart, director of the Museum of Comparative Sculpture at the Trocadéro, Paris, spoke of the universal character of Cistercian abbeys wherever they were found, in Germany, Italy, France, or Great Britain, and he had been specially struck by the resemblance of the photographs of that abbey to certain Cistercian abbeys in the Alps. He referred to the mode of life and the habits of the Cistercians who generally built in a valley near a stream, and engaged in agriculture and worked their mill by the stream. The provided an infirmary for old or sick monks, which was always an important part of a Cistercian abbey, but was always apart from it.

Mr. Brakspear pointed out the wall bases, and showed where the fireplaces had been, and said the infirmary was on the other side of the stream.

Tickhill Castle.

Situate on a mound now enclosed by the gardens of an old residence also owned by Lord Scarborough, access to Tickhill Castle is gained by an ancient gateway, fourteenth century, forming the entrance on the western side, which is the most curious part of the ruins. Little now remains of the castle except the lofty mound on which the keep stood, with the ditch and part of the wall surrounding the fortress. Such as the castle then was, it was held for Prince John during his treacherous revolt in 1194 against the absent Cœur de Lion. John in his reign often made it his headquarters.

Mr. W. H. St. John Hope, in describing the castle, said the gateway was of earlier date than the curtain wall and date from the other side of 1100, and the only similar gate he knew was that at Exeter, which was of the time of the Conqueror. The castle was encircled by a large ditch, which was one of those rare examples of a moat that was more or less filled with water. He mentioned some old accounts for such sums as 60 (then a large amount) for stonework in the twelfth century. The gateway was noteworthy for a curious design outside, and there was a large chamber above, with a fourteenth-century fireplace. The large window there was of the time of Elizabeth. Leland had described the castle as "well ditched, the donjon being the fairest part."

Sir Henry Howorth gave expression of the obligation the party were under to the Earl of Scarborough, and all the returned to York.

A Carthusian Monastery.

The excursion on Monday, July 27, was to the Carthusian Monastery of Mount Grace. This property a year or two ago passed into the hands of Sir Isaac Lowthian Bell, and he is now having part of it restored. The work is being executed with great regard to historical accuracy, and in this connection he is having the expert assistance of Mr. St. John Hope. Sir Lowthian has deservedly received the thanks of the archaeologists of the country for his public spirited enterprise. A portion of the Priory was restored in 1901, and is now occupied by his son-in-law and daughter, Mr. and Mrs. Lyulph Stanley. Mr. Micklethwaite, who prepared a paper some time ago for the Yorkshire Archaeological Society, read it before the company immediately on arrival. He prefaced it with a few remarks, and, according to these, the Charterhouse which was founded in 1396 by John de Holland, half-brother to Richard II., is about the finest example in England, if not in Europe, of a Carthusian house. The monks who inhabited it were different from what he termed the ordinary monks, whose houses they had already visited. These monks lived almost entirely for worship, having apparently a belief that they must give their whole lives up to religion if they intended saving their own souls. They each had a cell to themselves, and lived entirely apart from one another. The cells or houses were divided into four rooms, one a work-room in which the occupant could take some kind of bodily exercise which was necessary. Then there was a room with a fireplace, which was used as a dwelling-room, and in this they received their visitors. Another room was a private one, and no one entered it except the occupant himself, and this was a chapel where the monk, when not at the services in the church, could make his own devotional exercises. A fourth place consisted of a study or oratory. A strange feature about the cells was the arrangement by which the food was passed into the monks through an aperture in the wall, and this was so constructed that the person who brought the food could not see the occupant, and *vice versa*.

Mr. Micklethwaite, after these opening remarks, proceeded to read his paper, which dealt with the various tests and stages a candidate must pass before being admitted to the order. The dress of a Carthusian monk consisted of a frock or tunic made of white wool, with a belt of white leather, from which hung beads. Besides the monks of the choir, there are two other classes in the order, the "Conversi" and the "Donati." The former had existed from the first. Two of the six who were with St. Bruno when he entered the wilderness of Chartreux were not lettered men, and so could not take their part in the services by which the others strove to serve God. But they could contribute to the same end by undertaking the secular work of the community, thereby leaving the monks free to devote themselves to spiritual exercises without the distraction of worldly cares. The Donati engaged themselves to remain in the monastery only for a time, and their dress distinguished them. It took a man eleven years from his first entering a monastery before he became a permanent member. Every charterhouse was a kingdom to itself, and the prior was the head, but the affairs of the whole order were regulated by a general chapter, at which every prior had a seat. The prior had nothing to distinguish him from the others, and as far as possible led the same life as they did. He had a deputy called the vicar, and the secular business of the house was in the hands of an officer called the procurator. The life of the Carthusian monk lived was not so unvaried as some might think. The paper went on to describe the daily routine of the life of a monk. For the greater part of the year they took only one meal a day, and in the evening a morsel of bread with little wine. On Feast days they dined together, but silence was always observed. There was no flesh meat eaten, it being forbidden by the General Chapter in 1244. In order that the Carthusian monks might not lose the advantage of mutual intercourse, a time was set apart on Sundays and chapter days, when they might meet for conversation, and once each week the fathers took a walk out together. That lasted about three hours, and during that time all conversed freely. Mr. Micklethwaite told a story in this connection which is worth repeating. Once a pope wished to relax the Carthusian rule because of its hardness, and the monks sent to him a deputation of twenty-seven of their own body, the youngest of whom was eighty-eight and the others from that up to ninety-five, and thus convinced him that the rule did not shorten life.

Mr. St. John Hope took the company round the ruins and explained the plan on which the priory was laid out. There is a large cloister or court, with the priory church in the centre and with the cells of the monks pointing into it. A chapter-house had been subsequently added, and also two very small in-septs and a lady chapel. He also described the cells of the monks. In the gardens attached to these they used to exercise by the cultivation of flowers, fruit and vegetables, and occasionally some of the monks would go into the fields to work, but it was difficult for them to do that and preserve the solitary life which was a feature of the Carthusian monk.

Sir Henry Howorth presided over the business meeting. The question of where next year's gathering should be held came up for discussion. Amongst the places suggested were Bath, Bristol, Worcester, Ireland and Normandy. It was decided to submit these suggestions to the Council. Votes of thanks were then passed to Sir George Armytage for his services as president of the meeting, and also to the Lord Mayor and Lady Mayoress of York, the local committee and secretaries, and to all who had in any way contributed to the success of the meeting. The Chairman also referred to the presence of the French delegates, and in according to them a very hearty welcome, said the English archaeologist possessed an advantage over their French brethren in the continuity of history.

Mr. Micklethwaite seconded, and said that archaeology was tending to widen the study of arts and especially that of architecture. It was a movement which took in the whole civilised world, and in architecture the civilised world meant the old Roman Empire. It was not local or national, but a much wider and complete study of archaeology than could be confined to that country. He recognised with gratification the growing interest which the French and Italian archaeologists were displaying in English architecture and antiquities.

The President remarked that the presence of the French delegates made them realise what an awful catastrophe the Tower of Babel was.

The report is derived from the *Yorkshire Herald*.

BUILDING CONSTRUCTION FROM A FIRE BRIGADE OFFICER'S POINT OF VIEW.*

IN taking up as my subject "Building Construction from a Fire-Brigade Officer's Point of View," I have clearly before me the fact that most architects and builders are fully alive to the necessity of fire-resisting construction, and that legislative and local enactments make stipulations and recommendations with the view of preventing destruction by fire. Such efforts are worthy of praise; but my experience in combating fire leads me to the conclusion that what is intended as a safeguard too often becomes a danger, and what is theoretically meant for strength is found in the hour of need a source of weakness.

I do not presume to dictate, but I feel it my duty to sound a note of warning regarding certain widely spread and much cherished convictions as to fire-resisting materials employed in public buildings.

Speaking as I do under the auspices of the Fire Prevention Committee, I address myself more particularly to those who are responsible for the construction of buildings, but I appeal also to those of my colleagues who are responsible for dealing with buildings after the fire has begun its work. The question of the general arrangement or architectural planning of buildings does not enter into my argument; what I propose to deal with is the type of building usually described as being constructed entirely "fireproof," and to offer from my practical everyday experience suggestions which may perhaps induce building constructors to reconsider certain accepted theories in connection with so-called "fireproof" materials.

From the fireman's point of view these "fireproof" buildings have an element of danger added because of their construction, both in the way of increased risk to the fire brigade and the destruction of property. If such buildings were to remain unoccupied and to be subject to no risk beyond the combustibility of their own non-inflammable construction, then certainly they could with propriety be described as "fireproof." But when (as is universally the case) such buildings are stored with goods readily inflammable, the buildings cease to be "fireproof," for the action of the fire plays havoc with that portion of the material which is theoretically "fireproof."

Sufficient attention has not been paid to the bearing these so-called "fireproof" materials have in relation to the calorific effects of the burning materials stored in the buildings, for, after all, it is the contents rather than the structure which in a large majority of cases commence to burn, and which will continue to burn, no matter in what kind of building they are stored. Sufficient attention has also not been paid to the effect of water applied to building materials after they have been subjected to extreme heat.

How do these "fireproof" materials assist the salvage of either the buildings or their contents? Do they assist entrance with safety to those combating the fire?

On each of these points I shall endeavour to prove a negative from my own personal experience, which I feel confident is not singular but is common to the fire profession.

Materials principally considered to be "fireproof" and which are so styled by the legislative acts are iron, concrete and stone. The latter is particularly mentioned in most acts

* A paper prepared for the International Fire Prevention Congress by Mr. Arthur Fordage, firemaster of Edinburgh.

as "stone or other fireproof material." We have to ask ourselves whether these materials are "fireproof"? When employed in the internal fittings of a building we may unquestionably give a decided negative to that question. My decided opinion is that the materials which meet the requirements are those which are not subject to the laws of expansion and contraction when suddenly exposed to the effects of heat. What are such materials? If we may take for our guidance the results of the tests of time we find them principally in timber, bricks, mortar and good plaster.

Floors and Ceilings.

It is the common experience of every fireman that an ordinary wood floor with a thin plaster ceiling underneath has stood the effects of a fire for probably an hour, and though burned through in places still remained in position and with sufficient stability left in the joisting to admit of the fireman passing over it in the course of his operations in extinguishing the fire. If such a floor survives the effects of fire with its slender remains still in position, how much better would a well-constructed wood floor resist the effects of fire under similar conditions. No extraordinary precautions are necessary to construct such a floor, but I suggest that the ends of the joists should be well bedded in the walls, flooring boards of not less than 1 inch thick be well tongued together, the spaces between the joisting be filled with pugging or other deafening, the underside or ceiling coated with 1 inch of good plaster on wire laths. Such a floor will resist a fire either from the top or underside sufficiently long to enable any ordinary fire brigade plenty of time to complete their toilet before turning out and arrive in time to do some good work and prevent the floors from collapsing. Where supports are required, owing to the large superficial area of floor space, built timber supports or columns have been known to remain in position and to serve the purpose a second time after having resisted the effects of a severe fire. If these wood posts or columns are wire lathed and coated with good plaster and treated in a manner similar to that often adopted with iron columns they would come out practically unscathed. It will perhaps be argued that this method by no means gets rid of the difficulty with large spans, where iron must of necessity be introduced, but in such cases wrought-iron columns and girders (well protected) should be used to carry wood flooring and joisting, which latter, being impervious to the effects of heat and cold, remain in position, whereas the concrete floor falls in sections and often wrecks the lower floors which would otherwise not have been affected by the fire. I have known it to be argued that the burning of a wood floor gives off so much smoke that the inmates of a building would be suffocated before being reached. To properly understand this point it is necessary to compare the results of fire on both classes of flooring. We must remember that a partly burnt but intact wood floor always affords a means of reaching the inmates, and that before the floor surface commences to burn the fire must have been very severe and the contents of the apartment would almost certainly have been involved. It frequently happens that the flooring in "fireproof" buildings begins to break away at the early stages of a fire, preventing the fireman entering to attack it, with the result that the operations must necessarily be conducted from the outside, thus giving the fire a chance to make some headway. On the other hand, when the water can be got on to the wood floor and supports, there is the possibility of keeping the floor intact.

I will specify a few instances in support of my contentions. The first instance is that of a fire on a carriage-builder's premises of five floors, which were built upon fireproof principles, the floors consisting of transverse 24-inch plated girders and floors of 9 inches of concrete, without protection on either side. The fire commenced in the paint-shop on the ground floor (a chamber built expressly for the purpose and having no communication with the upper floors). Upon the arrival of the brigade it was possible to see that one end each of the first and second floors was gone, and that the vehicles on the third floor were alight. The upper windows were blown out, and immediately the cold air and water got on to the third floor, the whole of this floor went down by the run, carrying everything through the building to the basement. As a result only a portion of the top floor remained; the iron girders were somewhat twisted, though not displaced, but the concrete collapsed and fell, leaving nothing but the bare walls. The firemen could not be sent into this building. Had the upper floors been of wood they would undoubtedly have been saved.

The second instance is that of a fire on the second floor of a five-storey warehouse built on a similar principle, wherein the third-floor sections of concrete fell whilst the firemen were directing the hose upon the second floor, with the result that its weight carried the second and first floors through into the basement. This fire would have been stopped on the second floor but for the collapse of the floors above.

The third instance is an illustration in favour of timber floors. At a riverside warehouse in the City of London I

attended three fires on the same premises in three successive years. The first two were serious outbreaks, but I noticed on the last two occasions that the same wooden uprights still supported the floors, and many of the exposed wood joists bore evidence of their reliability on their charred surfaces.

Partitions.

I now come to the question of partitions. The reliability of partitions between the different sections and rooms of a building, whether dwelling-house or warehouse, to resist fire, is of the utmost importance, and often determines the fate of the building. The progress of a fire is often regulated by the area of the compartment in which it originates and the internal partitions; therefore much depends upon the time during which the latter remains intact. The wooden lath-and-plaster partition may be immediately thrown off court, the light laths with rough edges and the space between being a ready conductor of fire from one part of the building to the other. Internal partitions should be solid, preferably of brick, and continued right through the building, the joisting at the different floors running through them, so that they practically form an internal wall from the basement to the roof. The advantages of such a partition would be many, apart from being a factor in fire prevention.

Stairs.

Great stress is laid upon the idea of employing stone for staircases as a safe and reliable exit for a large number of persons from a building on fire. This is a very good principle under certain conditions, and these are that a stone stair should be built in a well, apart from the general building and in such a manner that fire or heat cannot possibly get at the underside of the stair. Where a staircase must necessarily run through a building, stone or concrete should be avoided in its construction, but good solid wood (hard wood by preference) is the most reliable under all circumstances. If the underside of the treads be filled in with "deafening" and coated with good plaster, such a stair will remain in position during the progress of a fire long after it has been impossible for an human being to traverse it. If the stair should actually get alight, and the fire fed by an open door should even cause it to burn fiercely, so soon as the hose is applied by the fire brigade the fire will be almost immediately extinguished because the actual burning is only superficial and there will remain sufficient substance to admit of persons passing over the stair.

It may be argued that a stone stair would not take fire at all, and therefore would always remain passable, but every fireman knows that when there is sufficient heat and flame to ignite the wooden structure of a hard-wood staircase it is quite impossible for anyone to pass either up or down a stone stair under similar circumstances.

In my preference for wood in the construction of stairs specially exclude light and flimsy wooden flights of stairs which are so very frequently found in some dwelling-houses, warehouses, &c., and the wooden step ladder almost invariably found in factories. I speak of a well-built staircase with hard wood treads and facings, the underside filled in with deafening and coated with plaster.

Stone, as employed in stairs in ordinary buildings, cannot in any sense of the word be considered to be "fireproof" because it succumbs to the effects of heat and fire more readily than any other material employed in the construction of buildings. That portion of the stone tread which is exposed to the fire readily expands under its influence, whilst the ends, which are embedded in the wall, remain normal, the natural consequence being a fracture near the wall, and the collapse of the projecting portion.

I am continually told in Scotland that the reason so many lives are lost at fires in London is on account of wooden staircases and that there is less loss of life in Scotland owing to the almost universal practice of putting in stone stairs.

Having had considerable experience at fires in both countries I am in a position to say that the idea is entirely erroneous. Most of the lives lost at London fires are at small fires in small dwellings, and in the majority of cases in dwelling-houses situated over shops, where the access to the house is through the shop, thence by a very frail, unprotected and flimsy wooden staircase. When the shop takes fire the exit from the house is immediately cut off by the fire and smoke rushing up the staircase. The same conditions apply to the ordinary London dwelling-house, which is let out to a large number of families: the open staircase runs from the street door through the interior of the house, and every room opens on to it, and escape by this stair is cut off by the first rush of smoke or flame. The system which is almost universal throughout Scotland is very different.

Take a block of buildings consisting of shops with flats above: there is no communication between the shops and the houses. The proprietor of the shop does not necessarily live above it; in the majority of cases he lives in another part of the town. What are the circumstances when a fire takes place in one of the shops? It may be burned out, but given the

the ceiling is fairly good and the fire brigade receives a good all, the fire will rarely pass the boards which support the 4 or inches of deafening which is universal in Scottish buildings, and forms a splendid barrier to the fire.

The approach to the houses above being by a stair-well, quite apart from any connection with the business portion of the block, does not allow the fire to be communicated to the dwellings by the stair-well, for in order to do so it must first pass through the wall dividing the stair from the shop. It rarely happens that a shop fire in tenement blocks spreads to the house immediately above, and when it does, the inmates of the house have had time to escape by the independent staircase.

By way of justifying these contentions in relation to stone stairs, I recall a few instances observed at buildings after fires:—

At a fire in a large suite of offices with a spacious stone staircase some 6 feet wide, waste paper stored in the cupboard space under the stair leading from the ground to the first floor caught fire and was destroyed; a bucket of water was capsized over the stairs, and the whole flight immediately collapsed, scarcely leaving a fragment in the wall to indicate where the stone had been, whilst the thin wooden panelled door enclosing the cupboard remained intact, with the exception of the charring on the inside.

At a fire in a large music warehouse an unprotected and hastily constructed wooden stair led from the basement to the ground floor, terminating on a stone slab 5 feet square and 4 inches thick, from which a handsome wooden stair led up to the first floor show-rooms. The fire originated in the basement, and flowed up over the stairs to the first floor. When the fire was extinguished, both wooden stairs, which had been exposed to the full effects of the fire, were found much damaged, but sufficiently substantial to admit of the passage of the firemen; the stone landing had collapsed into a thousand fragments.

Still another instance of the unreliability of stone for a staircase. At a fire in a fine old mansion-house which was partially destroyed, the stairs in the end wings were of stone from the basement to the second floor, whilst those from the second to the third floor and from the latter to the roof were of white wood with wooden hand-rails. Practically no actual flame got to the staircase, but the heat passed up the stair-well, with the result that the whole of the stone stair collapsed, leaving heavy jagged ends projecting from the masonry, while the wooden stairs, where by far the greatest temperature must have been, were merely blistered and scorched.

Iron Stairs.

It has been equally demonstrated that iron, and especially cast-iron, is utterly unreliable under the influences of fire; whilst wrought-iron will buckle and twist itself out of position, and cast-iron will collapse entirely. I give an instance which very recently came under my notice at a fire in a manufacturing iron-works warehouse. The offices were situated on the first floor, to which a cast-iron spiral staircase had been erected in a specially constructed well as a safety exit for the office staff. The fire originated on the ground floor. At the first alarm several of the office staff made for the iron stair, but only a few were able to get down this stair, the others were cut off by the very first flow of flame and were rescued from the flames below. The fire was speedily extinguished near this point, but the whole stair collapsed within ten minutes of the outbreak.

Roofs.

The matter of the general arrangement of roofs deserves to receive more serious attention than is usually given to this most important part of the modern building. Unfortunately a fire preventive roof does not appeal to the artistic eye, especially in the modern country-houses, where the old English style of architecture with its long sloping gables has found so much favour of recent years. These high roofs admit of the fire running all over the building, and their construction prevents a fire being attacked from the outside until a hole has been burned through the roof. In all buildings where fire prevention is aimed at the division walls should be carried at least 4 or 5 feet through the roof, with a ledging of at least 6 inches round the edge, which would admit of men working on it in case of fire. Such a ledging affords a ready means of saving life and attacking a fire.

The roof is one portion of a building where iron may be employed with advantage by reason of the light weight which it has and the necessarily exposed condition of its construction. A lightly constructed trussed iron roof reduces the risk of fire originating and spreading in the roof to a minimum. The opinions I have expressed in this paper are facts well known to the fire service and recognised by some architects, and are worthy of most serious attention by the building profession generally. There are many points in building construction which are continually presenting themselves to the architect, but which the architect rarely sees, and has therefore no opportunity of studying, and these points when advocated,

being so foreign to accepted ideas, are naturally very adversely received and criticised by the building profession.

As a case in point, some time ago whilst in conversation with the authorities responsible for an important historical building, I suggested that certain additional precautions should be taken from a fire-prevention point of view, and as a precautionary measure in dealing with a possible outbreak. I knew there were very bad risks, especially in the roof, which I pointed out, but was told that the building was perfectly safe, the roof was not an old one, it had been renewed not more than forty years ago, and that iron doors had been put in to divide the different sections of the building. Now every fireman knows that a long continuous roof which exposes a forest of unprotected and rough-edged and dried timber is a very dangerous risk; also that iron doors have long proved a failure as a protection against the spread of fire, and that they are inferior to a solid heavy wooden door which remains in position long after the iron door has buckled out of its frame and ceased to fill up the opening.

Whether or not I have made my meaning clear or overstated my views, I think you will at least agree that the subject is one of more than passing importance, and that an exchange of views and experience is most desirable. To prevent possible misunderstanding I desire to say in conclusion that while advocating the more general employment of timber in buildings, I do not include in this category the light pine and deal stairways, thin wooden doors and matchboard-lining partitions, but the employment of substantial timber well protected where possible, and of course the avoidance of all exposed edges.

The conclusion I have arrived at after much observation during a long experience of fires in London and Edinburgh is that "fireproof" construction as generally understood is a source of danger; that wherever possible good timber flooring, supports and stairways should be employed together with brick partitions; a liberal application of plaster and an avoidance of air spaces would result in a lesser destruction of buildings by fire, insure easier manipulation of fire appliances and a more effective use of the same, and result in a greater salvage of property during the progress of fires.

In a word, I advocate the study and use of fire-retarding, rather than non-combustible, materials as the direction in which safety and fire protection may more certainly be found; whilst where the more modern forms of planning necessitate provision for big spans and very heavy loads, the systems of construction now erroneously termed "fireproof" must be so protected as to become fire-resisting.

SCULPTURE AT ST. GEORGE'S HALL.

THE finance committee have recommended the City Council of Liverpool to engage Mr T. Stirling Lee to execute twelve figures above the panels on the front side of St George's Hall. Mr. Lee has written to Alderman Oakshott, explaining the need for the work and the exact nature of his proposals. He expresses the opinion that the time has arrived when the committee should consider the subject of the completion, or at any rate the continuation of the whole scheme of the sculpture. How few public buildings in England, he asks, are complete? Nearly all cities seem alike unconscious or indifferent to the vacant places left by the architect for decoration. This is particularly so on seeing St. George's Hall from Lime Street, the vacant pedestals, the bases waiting for their figures, and the uncarved stone all crying out for their enrichment before Elmes's grand hall can be called complete. An artist will at once ask, Why are not the figures placed over the carved panels? Why are not those essential figures of light placed to break up the deep shadow of the screen formed by the pilasters? The figures, he points out, form part of the original scheme already twice sanctioned by the whole Council. The first series of panels was devoted to the subject of the "Growth of Justice," and the figures above were connected with them both by subject and design, the panels forming bases for the figures above. The second series represented the growth of Liverpool from a fishing village to a city. The material to be used for these figures should, in Mr. Lee's opinion, be that in which the panels are carved—Istrian marble—some of which have now been placed nearly twenty years, and show no sign of weathering, but have, on examination, got a polish on the stone. These figures should be 8 feet 6 inches high, and are so important that they should be personal work, so that a sculptor will have to work continuously, and do little else, to finish two in one year. The whole twelve figures will take six years, or nearly so, to finish. The cost of these twelve figures would be 500*l*. each, or total 6,000*l*.; but the work taking six years to execute, the cost would be spread over that period of time, so that the annual cost to the Corporation would only be 1,000*l*. a year. This, he considers, would be the best method to finish St. George's Hall according to Elmes's design, when Liverpool will have the grandest modern building in Europe.

MANCHESTER REFERENCE LIBRARY.

THE deputy town clerk of the Manchester City Council has reported to the public free libraries committee that the terms of the proposed agreement for sale of the reference library building have been arranged with the solicitor of the purchaser—Lloyds Bank, Limited. The purchase money is ascertained to be 161,415*l*. The building area is 1,494½ square yards, which will be subject to adjustment, if necessary, when the buildings are removed. The amount of the purchase money is arrived at by taking the stated area at 110*l*. per square yard, and deducting the chief rent of 110*l*. 7*s*. 6*d*. at twenty-seven years' purchase. The purchaser agrees to pay 25,000*l*. by way of deposit on the execution of the contract. Possession is to be delivered and conveyance executed at the expiration of six calendar months after written notice to that effect given by the Corporation to the purchaser, such notice not to be given before September 25, 1908, and not later than September 25, 1912. If no such notice be given possession is to be delivered and completion is to take place on March 25, 1913. Notwithstanding the last-mentioned provision, the purchaser is to have the option of taking possession of the vacant land fronting Cross Street, on terms as to payment of a proportionate amount of the purchase money, and otherwise, to be agreed on between the parties. The Corporation are to pay interest at 3*l*. 7*s*. 6*d*. per cent. per annum upon the deposit of 25,000*l*., such interest to be paid half-yearly on September 29 and March 25 in each year. The sale includes all buildings and erections, but the Corporation will have the right to remove all statuary (whether within or outside the buildings), lamps, ornaments, medallions, book-cases, pictures, books, furniture, fixtures and fittings generally, whether fixed to the freehold or not. The sale is subject to the yearly chief rent of 110*l*. 7*s*. 6*d*., and to the covenants and conditions contained in certain deeds dated March 24, 1804, and November 26, 1897. The Corporation, if required by the purchaser, are to execute one or more conveyances of the property when the completion of the sale takes place and the whole of the purchase money is paid. The agreement contains a provision for enabling the purchaser within twelve months after completion of the sale to remove and appropriate the buildings and erections upon the strips of land lying between the land sold and the streets, with power to the Corporation to themselves remove at the cost of the purchaser on the purchaser's neglect to do so.

The committee are requested to authorise the affixing of the corporate seal to the agreement, and also to the necessary memorial to the Local Government Board for their sanction to the sale.

THE SURVEYORS' INSTITUTION.

THE thirty-fifth annual report of the Surveyors' Institution shows that the members of that thriving organisation now number 3,443, representing an increase of 131 on the year. The total comprises 1,897 Fellows, 1,025 professional associates, 86 associates, 396 students, 22 colonial Fellows and 17 honorary members. Ten years ago the membership numbered 2,269 and twenty years ago it was only 887. The finances continue in a satisfactory condition, the revenue of the year having admitted of the investment of 2,000*l*. and the assets now stand at over 26,000*l*. The number of candidates who sat for the professional examinations was 424; the examinations were held in London, Manchester, Glasgow and Dublin. The Council acknowledge a munificent act on the part of one of their colleagues, Mr. F. T. Galsworthy, who has transferred to the Institution 500*l*. of 3½ per cent. debenture stock, calculated to yield 17*l*. 10*s*. per annum, the interest to be awarded annually as a prize in connection with the Fellowship examination in a form to be hereafter determined. Considerable additions have been made to the library of the Institution and a loan library has been established for the benefit of country members who may wish to borrow professional text-books and works of reference. Three years having elapsed since the completion of the new house of the Institution in Great George Street, Westminster, the more permanent decoration of the principal rooms has now been carried out. The Irish members of the Institution, whose vocation is threatened with extinction under the operation of the new Land Purchase Bill should it become law, appealed to the Council to assist them in safeguarding their interests by every means in their power. The Council, with this object, endeavoured to induce the Chief Secretary to receive a deputation from their body in the hope of prevailing upon him to introduce protective provisions into the draft Bill. Failing this they have done their best by the exercise of influence in Parliament and in other ways to secure something like justice to a class who have contributed so largely in past years to the maintenance of law and order in Ireland, and whose vital interests are menaced by the direct intervention of the State. During the year steps have been taken by the Institution, in

conjunction with nearly all the other chartered societies, for the protection of their respective designatory letters and descriptions against infringement by unscrupulous persons. Happily the evil is not very widespread, but it is extremely desirable to devise a means whereby these practices may be stopped or greatly discouraged, and a deputation, selected from a committee representative of all the chartered societies, has approached the authorities with a view to such repressive measures as may prove to be practicable. Finally, it is stated that the Institution continues on a course of unabated prosperity, and that the auguries as regards the future seem to give every promise of its increasing usefulness to the profession.

TESSERÆ.

"Values" in Painting.

A COLOUR note, or tone, may be considered from two points of view; from that of its intensity or tint, or from its affinity to white light or value. This is one of the most delicate points in the management of light and shade. It is easy enough to see, for instance, that bright yellow has more value than violet; but such discernment becomes infinitely more difficult when we have to deal with the broken and subdued colours more commonly employed by painters. Complications sometimes arise which baffle the most subtle analysis. Can it be considered waste of time to take so much trouble to understand distinctions which are, in truth, almost imperceptible? Of course, the inquiry would have but slight importance for the general public; yet any violation of these subtle and almost indemonstrable laws is sufficient to deprive a picture of part of its charm and to distress the delicate eye of a true connoisseur. The connoisseur, probably, might not be able to lay his finger upon the exact cause of his discomfiture, but it would be not the less real. The eye, like the ear, is the seat of the most strangely delicate refinements. When we reflect that to give pain to a practised ear it is enough to deprive a note of a very few of the many million vibrations a second which go to make up its proper sound, we can feel no surprise that the eye should be an equal sufferer by a very small mistake in the value of a colour note. It is obvious, however, that the ear of the musician does not count the 4,200 vibrations of which the high *re* of the piccolo is composed. Nevertheless, when the total is not correct the result is suffering sufficient to destroy the pleasure of a whole performance. The same thing exactly takes place in painting, although we do not understand its laws with equal accuracy. But in scientific ignorance does not affect the sensibility of our organs, although it may embarrass the critic when he endeavours to give reasons for the shortcomings of which he is conscious.

Circular Exhibition Galleries.

The Colosseum in Regent's Park, which used to be one of the sights of London, contained among its novelties a circular gallery for the exhibition of sculpture which was known as the Glyptotheca. There was a peristyle of twenty columns of the Ionic order, and as many recesses within the colonnade answering to the number of intercolumns, except that in those spaces, one on the east, the other on the west side, were made use of for entrances. The whole was lighted from above through the compartments (filled in with cut-glass) between the ribs of the roof, which last, instead of expanding itself into a dome, became merely a cove in consequence of the cylindrical mass in the centre of the plan, and which might be considered the core of the structure, rising up through what would otherwise be a dome covering the entire space. In like manner, were provided for that cylinder within it, this interior would be merely a rotunda of the usual kind, whereas now it was converted into one of altogether different character, though no doubt not without any view at all in the first instance to architectural character or effect of any kind, but solely in consequence of the indispensable necessity of carrying up a staircase in the very centre of the building to the platform which the panorama was viewed from. It was accordingly sheer necessity which originally compelled the architect to adopt a peculiarity of plan that was admirably turned to account. Besides being unusually attractive for its architectural beauty, this gallery was excellently well contrived for the exhibition of either sculpture or pictures; because, though the peristyle was circular, the wall behind it might be a polygon of as many planes as there were intercolumns, in this instance twenty, and by being so divided into separate compartments or groups pictures could be arranged better with regard to some sort of classification than when hung upon the side of a long wall without distinction of any kind from end to end. The convex part of such a double cylindrical plan might in like manner be rendered available for hanging pictures—were such the purpose of the gallery—by making that also a circle of columns, the centre being in this case engaged or attached to the wall, which would consist of as many separate planes or flat surfaces

intercolumns, and in order to keep up perfect symmetry in regard to intercolumniation the two circles might be so proportioned to each other that the larger or outer circle would have twice the number of the columns on the circumference of the smaller circle or cylinder, the intercolumns being of the same width in both circles. This would, of course, very greatly increase the diameter of the cylinder, to somewhat more than half that of the larger circle; consequently, supposing the breadth of the gallery or space between the two concentric circles of the plan to be the same as in the Cryptotheca of the Colosseum, the whole plan would be greatly enlarged, and there might be a rotunda 50 feet in diameter in the centre of it; so that in a gallery thus planned the ring or outer portion could be appropriated to pictures and the inner one form a circular hall for sculpture. Thus the arrangement of plan being just the same as at the Colosseum, the architectural character of the structure would become different, inasmuch as by being increased in circumference the ring would acquire more of the appearance of a gallery, and in some degree lose that of a rotunda with another structure put up in the centre of it. The same general disposition of plan—and it is one that plainly enough shows itself in the concentric circles of Druidical pillars in such monuments as Avebury and Stonehenge—is applicable to a very great variety of cases.

Imagination in Science and Art.

The imagination plays an important part in the fine arts, in mechanical contrivances and in the more concrete branches of physical science. In the creation of works of art the fancy of the poet, painter, sculptor or musician is employed in grouping and combining his materials so as to awaken admiration and satisfaction in the mind. At times his aim will be to hold the mirror up to nature in order to delight by the exquisite skill and fidelity with which he reproduces an actual experience recalled by the memory. At other times he assumes a nobler part and seeks to give expression to some thought embodying an ideal type of beauty or excellence which is never met with in the commonplace world of real life, but is dimly shadowed forth in rare moments by our own imagination. This faculty is said to be rich, fertile or luxuriant when images of great variety issue forth in spontaneous abundance. Taste, on the other hand, implies judicious or refined rather than luxuriant fancy. Great genius in any of the branches of art presupposes fertile imagination, but true excellence is attained only when the power is controlled and directed by good judgment. The importance of imagination in mechanical contrivance and invention is obvious. The power of holding firmly before the mind a clear and distinct representation of the object to be produced is one of the most necessary qualifications of constructive ability. The relations between imagination and science have been the subject of much dispute, some writers holding that a rich and powerful imagination is adverse rather than favourable to scientific excellence, while others consider this to be "as indispensable in the abstract sciences as in the poetical and plastic arts" and that "it may accordingly be reasonably doubted whether Aristotle or Homer were possessed of the more powerful imagination."

The Kaaba, Mecca.

The mosque called Beitullah, or El Haram, is only remarkable for the Kaaba, which it encloses. The Kaaba stands in a long square, surrounded by colonnades; on the east there are four rows of pillars and on the other sides only three. They are united by pointed arches, every four of which support a dome, plastered and whitened on the outside. The number of these domes is 152, and that of the pillars is variously stated at 450 and 500. The columns are from 1½ foot in diameter, and above 20 feet in height, but otherwise there is little regularity in them. No two capitals or shafts are exactly alike. The capitals are of coarse Saracenic workmanship, and some, which had served for other buildings, were by the ignorance of the workmen, been placed upside down upon the shafts. Seven paved causeways lead from the colonnades towards the Kaaba, or Holy House, in the centre. The whole area of the mosque is upon a lower level than any of the streets surrounding it. There is a descent of eight or ten steps from the gates on the north side into the platform of the colonnade, and of three or four steps from the gates on the east side. Towards the middle of this area stands the Kaaba, according to the belief of the Mahomedans, was erected in heaven 2,000 years before the creation of the world, and Adam, the first believer, erected the Kaaba upon its present site, which is exactly below the spot it occupied in heaven. It is an oblong massive structure, 27 feet in length, 14 in breadth and from 35 to 40 feet in height. It is constructed of the grey Mecca stone, in large blocks of different sizes, joined together in a rough manner and with bad cement. It stands upon a base 2 feet in height, which presents a sharp vertical plane. As the roof is flat, it has at a distance the

appearance of a perfect cube. The only door which leads into it is opened only two or three times in the year; this door is on the north side, and about 7 feet above the ground; it is entered by wooden steps. At the north-eastern corner of the Kaaba, near the door, is the famous Black Stone; it forms a part of the sharp angle of the building, and is 4 or 5 feet above the ground. It is an irregular oval about 7 inches in diameter, with an undulating surface, composed of about a dozen smaller stones of different sizes and shapes, well joined together with a small quantity of cement and perfectly smoothed. Every pilgrim kisses this stone. As its surface has been much worn by the kisses and touches of the pious, it is difficult to determine the nature of the stone. It appeared to Burckhardt to be a lava, containing several small extraneous particles of a whitish or of a yellowish substance. The colour is now a deep reddish brown approaching to black. The four sides of the Kaaba are covered with a black silk stuff, hanging down and leaving the roof bare. This covering is renewed annually at the time of the hadj. An opening is left for the black stone. The Kaaba remains without a cover for fifteen days before the new one is put on. The black colour of the covering spread over a large cube in the midst of a vast square gives to the Kaaba, at first sight, a very singular and imposing appearance. As it is fastened slightly, the least breeze causes it to move with a slow undulation which is hailed by the assembled congregation as a sign of the presence of the guardian angels, whose wings by their motion are supposed to produce the waving of the covering. Seventy thousand angels have the Kaaba in their holy care, and are ordered to transport it to Paradise when the trumpet of the last judgment shall be sounded.

"Harrison of Chester."

In his evidence before the Select Committee on the marbles of the Parthenon, Lord Elgin said the idea to obtain the sculpture was suggested to him in 1799, at the period of his nomination to the Embassy at Constantinople, by Mr. Harrison, an architect who was working for him in Scotland, and who had passed the greater part of his life in Rome. His observation was that though the public were in possession of everything required to give them a general knowledge of the remains of Athens, yet they had nothing to convey to artists, particularly to students, that which the actual representation by cast would more effectually give them. Lord Elgin went beyond the suggestion, for instead of casts he brought the originals to England. Thomas Harrison, generally called "Harrison of Chester," to whom Lord Elgin referred, was born at Wakefield in Yorkshire in 1744. While yet little more than a mere lad he was sent to Italy, then considered almost the only efficient school for architectural study; and during his stay at Rome, where he remained for several years, he made designs for improving and embellishing the Piazza del Popolo, which obtained for him both a gold and silver medal from Pope Ganganelli; and he was also complimented by being elected a member of the Academy of St. Luke. On his return one of his first works was a bridge of five arches over the Lune at Lancaster, which was the first level bridge constructed in England, at which place he was subsequently employed upon various alterations and improvements in the castle. At Chester he erected the gaol on the panopticon plan, and the county courts, which last was considered at the time a very fine and correct specimen of the Grecian Doric style, and the portico certainly produced more effect than ordinary in regard to columniation, for though only hexastyle it had twelve columns, there being a second row of six columns behind those in front. He also designed a bridge over the Dee having an arch of 200 feet span. He executed several works at both Liverpool and Manchester; in the former place the Athenæum and the tower of St. Nicholas's Church, in the latter the Exchange buildings (since greatly enlarged and altered), the theatre (burnt down in 1843), and the library and reading-room called the Portico. The Hill column at Shrewsbury, the triumphal arch at Holyhead, and the jubilee tower erected on Moel Famma in commemoration of the fiftieth year of the reign of George III., are all by Harrison. He also built for the Earl of Elgin his new mansion of Broome Hall, in Scotland in the Grecian Doric style, which seems to have been equally the favourite one of his noble employer and himself. Harrison died in Chester in 1829.

The Pasquin Group.

In Venice there was a lion's mouth in which anonymous charges against individuals could be thrown and investigation followed. In Rome there was an ancient but mutilated group of sculpture to which satirical writings of all kinds could be attached. It is believed the group originally represented Menelaus with the body of Patroclus, looking for aid as described at the close of Book XVII. of the "Iliad." There was no apparent connection between such a group and lampoons. But near it was the shop of a tailor named Pasquino, which was a place of meeting for the people of the district, who came there to tell or hear the news of the day.

The tailor was a facetious man, and his witty sayings were styled "Pasquinate," which afterwards became a common appellation for humorous epigrams and sarcastic lampoons, a kind of composition for which the Romans are noted. These lampoons, which often attacked people in high stations and the government itself, were fixed in the night on or near the statue. At one time they were placed on a post, and thus the statue itself came to be called Pasquino, as being the representative of the witty tailor of that name. According to Misson, the statue was found under the pavement of the tailor's shop. Collections of these epigrams have been made, and some of them are very witty, though often scurrilous and coarse. Copies of the group exist in Florence and elsewhere. The humour was increased by employing another statue which was supposed to be one of Mars, and which was called "Marforio." While one was near the Palazzo Braschi, the other stood opposite the Mamertine Prison. As soon as a libel or a jeer was attached to Pasquin, people ran to Marforio, and were disappointed if a reply as witty and probably more libellous was not awaiting them. Sometimes Pasquin was supposed to defend Marforio and *vice versa*. The statue of Marforio is now in the court of the Capitoline Museum, and is taken to be a river god.

GENERAL.

Messrs. William Ravenscroft & Charles Smith are preparing plans for the rebuilding of University College, Reading. Towards the outlay Lady Wantage has given 10,000*l.*, Mr. G. W. Palmer, M.P., 10,000*l.*, and a similar donation has been promised by three gentlemen. The outlay will be at least 80,000*l.*

The Competition for the best scheme for the water supply of Flamborough has resulted in the plans of Messrs. Elliott & Brown, of Nottingham, being adopted. Fourteen schemes were submitted.

In Consequence of the recent fire at Eton, Mr. A. W. Sclater, A.M.I.C.E., 182 Oxford Street, W., has been called in to report as to the safety, from the fire point of view, of the electric-light installations in the different houses in the college.

Mr. W. D. Caröe, M.A., F.S.A., architect to the Ecclesiastical Commissioners, has been admitted to the freedom of the City of London on the presentation of the Plumbers' Company.

Professor Ewing has resigned the Chair of Applied Mechanics at Cambridge University, in view of the important appointment recently conferred on him by the Admiralty.

The Bridge House Estates Committee on Friday last signed a report in favour of a scheme for rebuilding Southwark Bridge at a cost of nearly 350,000*l.* It is proposed to lower the crown of the structure by 7 feet, a work which will in no way impede the navigation on the river, while it will greatly reduce the excessive gradient on the City side.

The Westminster City Council last week resolved "That the City Council do contribute one-fifth of the net cost of carrying out the Piccadilly improvement in accordance with the terms of the letter from His Majesty's Office of Woods, such contribution not to exceed the sum of 40,000*l.*, subject to the same being paid in instalments on the completion of each section of the improvement, each instalment being one-fifth of the cost of acquiring the section to which it refers."

A Detached Building is to be erected at the rear of the County Hall in Lewes, which is to contain committee-rooms, offices and store-rooms, at a cost of 3,200*l.*

A Report is to be prepared about the cost of erecting buildings for an international exhibition to be held in Dublin in 1906. If Lord Pembroke consents the site will be within the Pembroke district, in which the Dublin Society's exhibitions are now held.

Mr. Labouchere's House, No. 5 Old Palace Yard, Westminster, is to be purchased by the Government at a cost of 40,000*l.* under the Public Buildings Bill.

The Ecclesiastical Commissioners propose to demolish the old residential quarter immediately south of Westminster Abbey and Deanery Garden, with a view to selling the sites for important commercial buildings.

Addington Park, the former residence of the Archbishops of Canterbury, was sold for 45,000*l.* With the addition of the amount (2,371*l.* 7*s.*) paid over by the Archbishop in respect of dilapidations accrued before the sale, the total proceeds coming into the hands of the Ecclesiastical Commissioners was 47,371*l.* 7*s.*, which was reduced to 46,026*l.* 18*s.* 11*d.* by the discharge of a small mortgage created in respect of certain improvements at Addington. The cost of the site for the new archiepiscopal palace at Canterbury and the erection of the building has been 29,176*l.* 11*s.* 1*d.*

The Marble Statue of Von Moltke will be placed in the course of next year opposite to the Reichstag, and direct facing the Bismarck statue in Berlin. It will be the work of Professor Uphues.

The P. and R. Syndicate completed last week the purchase of the St. James's Hall Company's properties on the northern side of Piccadilly. The interests acquired are those of St. James's Hall, the Restaurant, Carswell's and the Society Architects' premises, and Nos. 21 and 23 Piccadilly, and portion of 1 Air Street. The purchase is in connection with the approved scheme for the widening of Piccadilly.

Mr. F. Carruthers Gould was last week presented with the honorary freedom of the borough of Barnstaple, where was born, and where his father was borough surveyor. Mr. Gould is the first to receive the honorary freedom, which was conferred on him in recognition of his eminent success as artist and journalist.

The Buller Memorial at Exeter is to take the form of equestrian statue in bronze. Mr. Adrian Jones has been commissioned to carry out the work, for which 1,500*l.* has been collected. Another 500*l.* is required for the pedestal. The Exeter City Council will be asked to provide a suitable site.

The Young Men's Christian Association in Birmingham have decided to erect new premises at a cost of 35,000*l.* A good central site has been given and 24,000*l.* has been promised, besides a conditional promise of 2,500*l.*

The Newcastle Town Council, Staffordshire, has appointed Mr. A. S. Langley, architect, Manchester, consulting architect for the new baths at a remuneration of 40*l.*, and was resolved to erect the baths at a cost not exceeding 11,000*l.* A proposal to offer prizes for the best plans was defeated by the committee.

The Builders' Exchange League, of Pittsburg, has ordered a lock-out affecting 25,000 men. The League refuses to come to terms with the Building Trades Council until the hoisting engineers, now on strike, resume work at the Home Building, where a trouble started.

The Aberdeen Art Gallery Council have received a sum of 7,000*l.* for the purpose of extending the premises and erecting a sculpture hall.

The Architectural Association held their annual excursion this year at Worcester. It is eighteen years since a similar visit was made. The week's itinerary included visits to the following:—Huddington Court; Mere Hall; Westwell; Eastington Hall; Birtsmorton Manor; Priory Church, Grafton; Malvern; Hampton Lovett, with its memorial to the original Sir Roger de Coverley; Harvington Hall, with its seat of hiding-places; Chaddesley Corbett; Grafton Manor, Bredon; and Overbury villages; Woollas Hall; the Littletons and the charming manor-houses, and Evesham.

"The Rookery," a house at Clapham which was held on lease at a rental of 120*l.* per annum, being required by the London County Council, the subject was brought before a special jury. Mr. Bousfield, of the firm of Fox & Bousfield, for the claimant, estimated the site rental for the purpose of flats at 6*d.* per foot super, arriving at a total of 5,664*l.*, as 10 per cent. for compulsory sale, as the gross value. He is supported in that view by Mr. Burnett and Mr. Simpson, surveyors. For the Council, Mr. Green, of the firm of Wethill & Green, valued the property at 2,740*l.*, and a local agent, Mr. Henry, at a much lower figure. The jury awarded the claimant 5,100*l.* as compensation.

The New Kew Bridge has cost 172,585*l.* 14*s.* 2*d.* A further sum of 20,000*l.* is required for extras. A model and drawings of the bridge are to be sent to the St. Louis Exhibition.

The Medical Officer of Health for Stepney says that the last census of his district revealed an increase in the population of 13,308 during the ten years, and during the same period the number of inhabited houses decreased from 33,865 to 31,212. The result is that the increased population has been crowded on a diminished area and in a smaller number of houses.

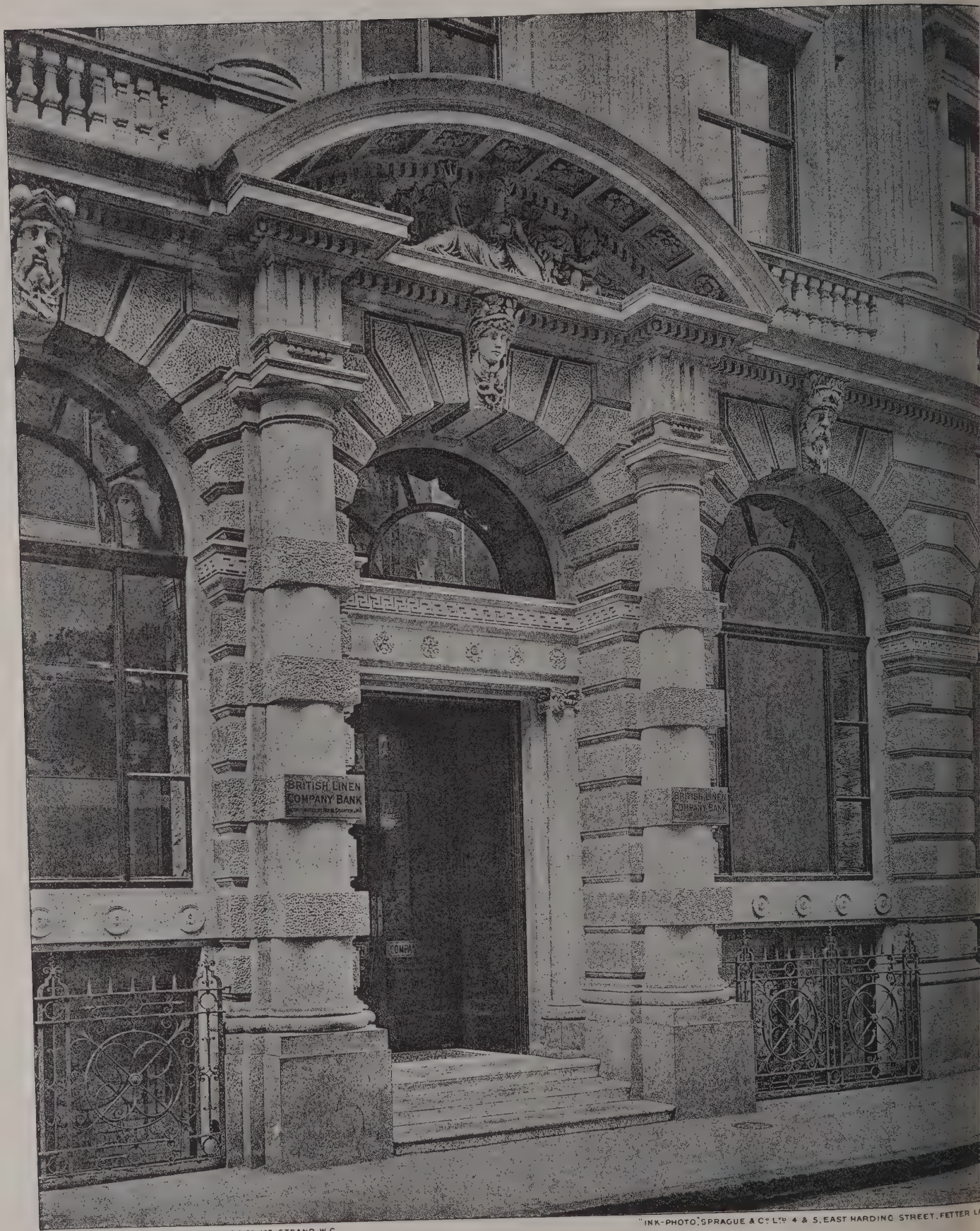
Mr. Bumpus's book entitled "Holiday Rambles among the Cathedrals and Churches of Northern Germany" is now ready for publication.

Mr. Phil May, the black-and-white artist, died on Wednesday in his thirty-ninth year. There could be no question of his cleverness in realising character by a few strokes of pen or pencil, and more especially he was successful in representing the humblest classes of the Metropolis.

Mr. Andrew Carnegie has offered to his native town, Dunfermline, half a million sterling in Steel Trust bonds, to be employed in maintaining as a pleasure-ground the estate of Pittencreeff, near Dunfermline, which Mr. Carnegie acquired some time since, in the maintenance of a theatre for the production of first-class plays, the encouragement of horticulture among the working classes, and the advancement of technical education in the district.

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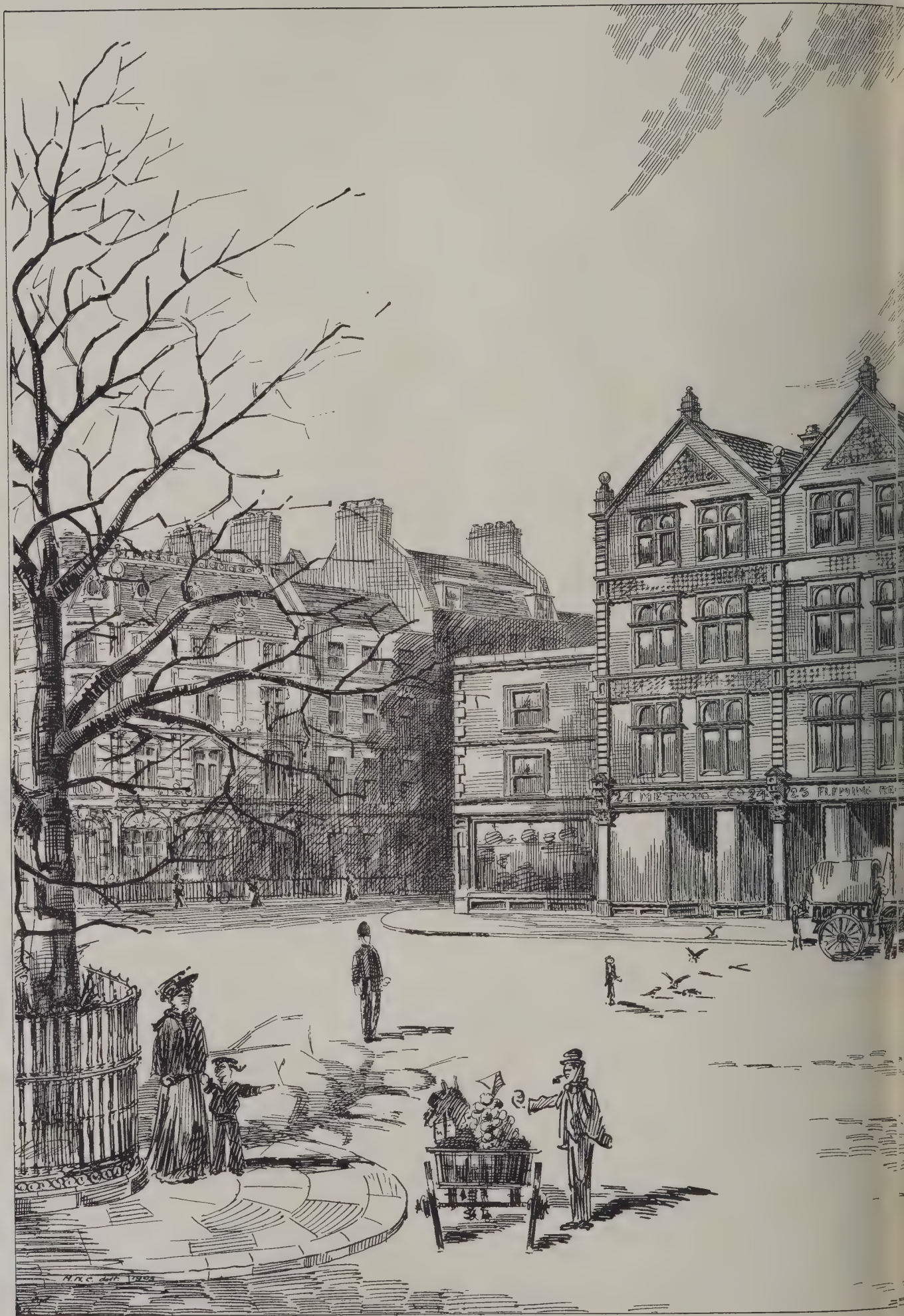
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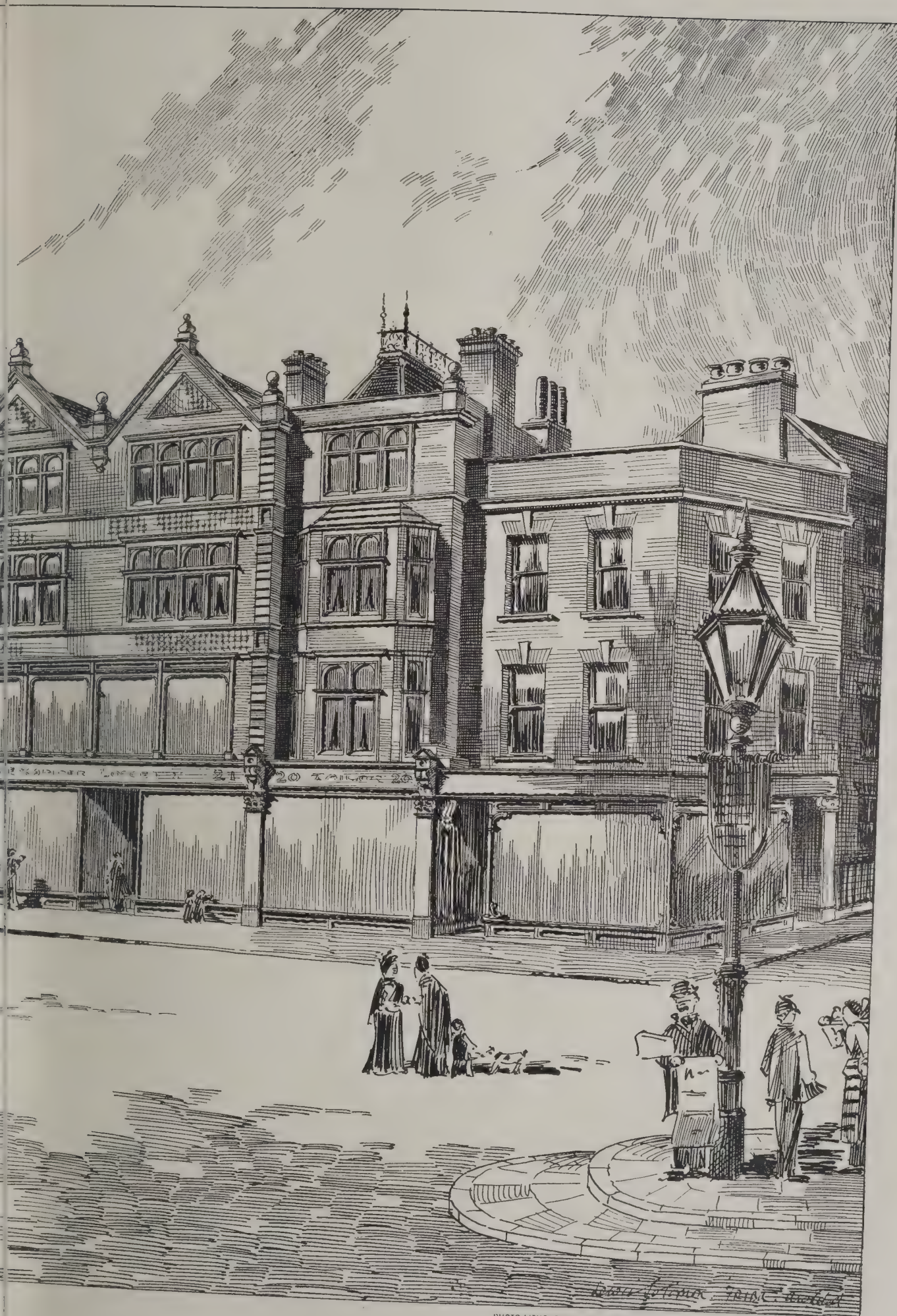
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7th 1903.



GREEN, S.E.

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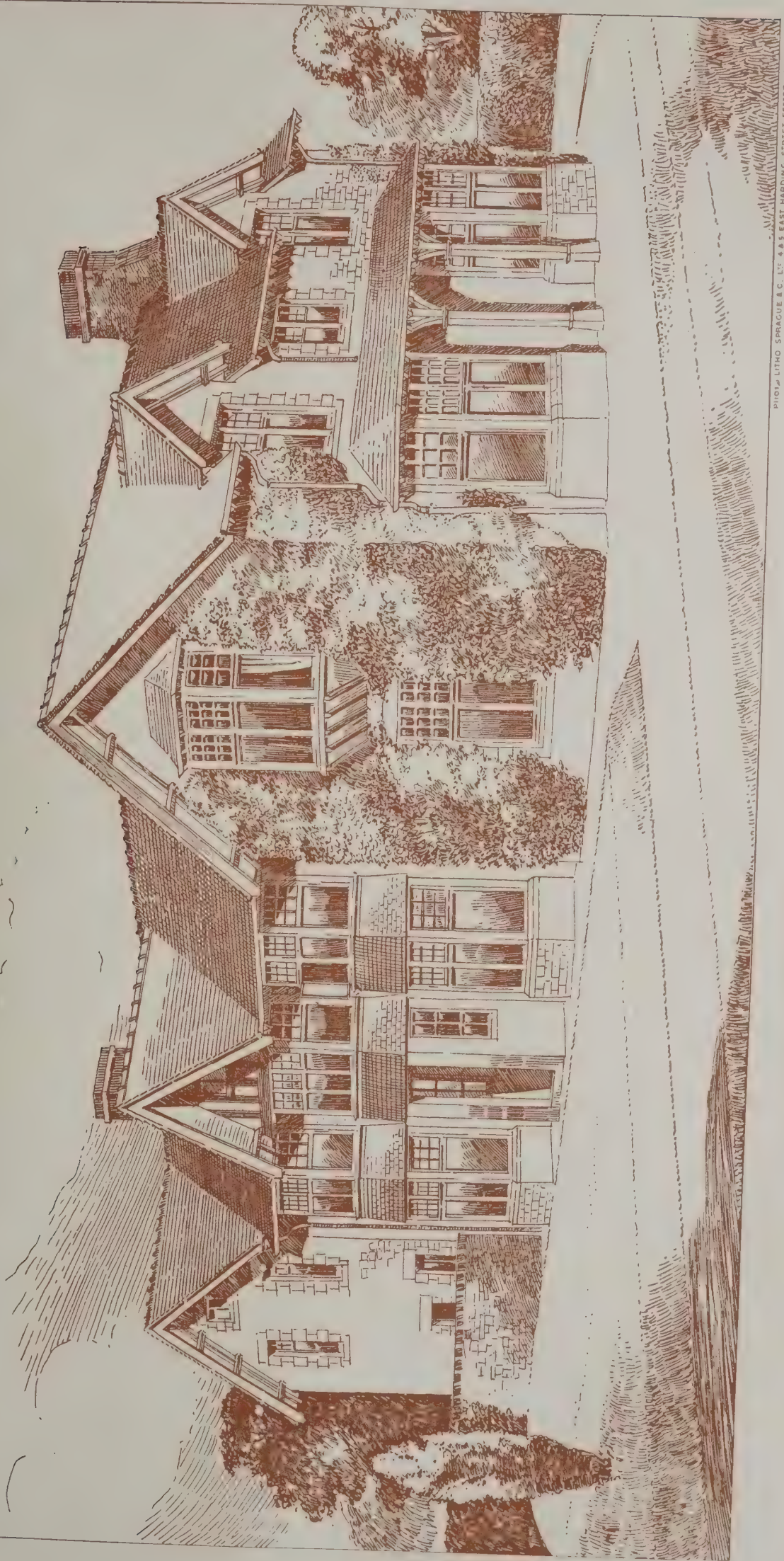


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Architect J. J. J. J.



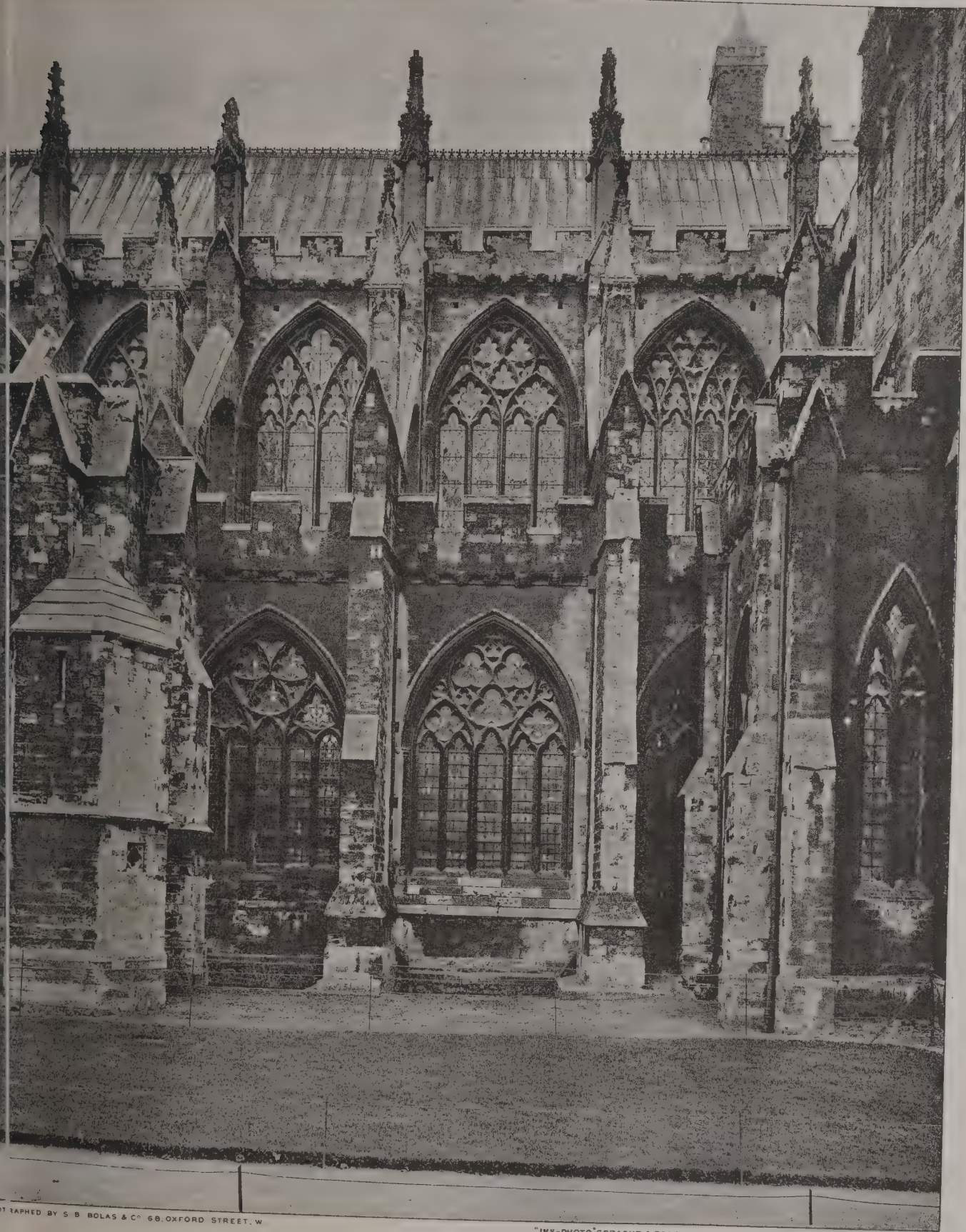
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BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.: BOARD ROOM.

J. MACVICAR ANDERSON, Architect.

The Architect, Augst 7th 1903.



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CATHEDRAL SERIES, No. 459.—EXETER: WINDOW TRACERY, NORTH SIDE OF CHOIR.

THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER" Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

BLACKPOOL.—Aug. 31.—Competitive drawings are invited for new offices to be erected at the corner of Sefton Street and Dixon Street, Blackpool. The architect whose design is selected will be appointed to carry out the work. The competition is limited to architects having offices and practising within the water area of the Fylde Water Board. Mr. C. Arthur, 34 Victoria Street, Blackpool.

HOWDEN.—Sept. 12.—Plans and estimates are invited for improving and extending the sewerage of the contributory place of Howden. The successful competitor will be awarded a sum of 15*l.* and the usual commission for superintending the execution of the works. Mr. Henry Green, clerk.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75*l.* for design placed first, and one of 25*l.* for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100*l.*, 50*l.* and 30*l.* respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

CONTRACTS OPEN.

AYLESBURY.—Aug. 11.—For repairs at the union workhouse. Mr. Frederick B. Parrott, clerk, 16 Bourbon Street, Aylesbury.

BACUP.—Aug. 12.—For the erection of an infants' school in Lanehead Lane, Bacup. Messrs. Smith & Cross, architects, Town Hall Chambers, Rochdale.

BIRMINGHAM.—Aug. 10.—For the erection of tramcar sheds, &c. Particulars will be forwarded by the City Surveyor.

BOLTON-UPON-DEARNE.—Aug. 10.—For the erection of a wall at Blacksmith Shop Corner, Goldthorpe. Mr. J. Ledger Hawksworth, clerk, Bolton-upon-Deane.

BRAMPTON.—For the erection of a teacher's residence at Lees Hill school, Cumberland. Rev. T. W. Willis, Lanercost Vicarage, Brampton.

BRISTOL.—Aug. 31.—For the erection of one or two warehouses at Cumberland Basin. Mr. W. W. Squire, engineer, Engineer's Office, Underfall Yard, Cumberland Road, Bristol.

CAMBORNE.—Aug. 10.—For rebuilding the business premises at Camborne, Cornwall, abutting on Commercial Square and Fore Street. Mr. Sampson Hill, architect, Green Lane, Redruth.

CHESTER.—Aug. 10.—For alterations and additions to the wash-house at the workhouse, Hoole. Messrs. John H. Davies & Sons, architects, 14 Newgate Street, Chester.

COLCHESTER.—For the erection of a Wesleyan church and school on the Wimpole estate, Colchester. Messrs. Goodey & Cressall, architects, Victoria Chambers, Colchester.

COLWYN BAY.—Aug. 24.—For the erection of isolation hospital, including pavilion and ward blocks, administrative building, laundry and outbuildings. Mr. Jos. H. Roberts, clerk, Council Offices, Station Road, Colwyn Bay.

DURHAM.—Aug. 11.—For the erection of club buildings, Langley Moor. Mr. F. Smith, architect, Brancepeth.

EPSOM.—Aug. 15.—For the erection of a dépôt, comprising cart-sheds, stables, horsekeeper's quarters, lofts and storehouses, and for a post-mortem room in Church Street, and stables and barn at the sewage farm in Hook Road. Mr. Edward R. Capon, surveyor, Council Offices, Bromley Hurst, Epsom.

EPSOM.—Aug. 20.—For putting-in foundations of the Tenth County Lunatic Asylum (Long Grove), near Epsom, Surrey. Mr. G. T. Hine, architect, 35 Parliament Street, S.W.

EXETER.—Aug. 10.—For the erection of building, &c., at the City Bank, Exeter. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

FARNHAM.—Aug. 12.—For repairs to Waverley bridge. Mr. Arthur J. Stedman, surveyor, South Street Chambers, Farnham.

GILLINGHAM (KENT).—Aug. 19.—For the erection of a brick wall round a plot of land on Gillingham Pier and Wharf. Mr. F. C. Boucher, clerk, New Brompton.

GOLDTHORPE.—Aug. 10.—For building wall at Blacksmith Shop Corner, Goldthorpe, Bolton-upon-Deane. Mr. J. Ledger Hawksworth, clerk, Urban District Council, Bolton-upon-Deane.

GUILDFORD.—Aug. 18.—For the erection of a porter's lodge, &c., at the Woodbridge hospital, Guildford, and additions to the small-pox hospital at Whitmoor Common, near Guildford. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

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GWINEAR.—Aug. 8.—For the erection of farm buildings and repairs to farmhouse at Gwinear, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

HALIFAX.—Aug. 27.—For the erection of official administrative block, comprising board-room, section-rooms and appurtenances, at union workhouse, Gibbet Street, Halifax. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

HASLAND.—Aug. 18.—For the erection of mixed school, fence walls and conveniences at Grassmoor, and mixed school, fence walls and conveniences at Hasland, in the county of Derby. Messrs. Rollinson & Son, architects, 13 Corporation Street, Chesterfield.

HEATON.—Aug. 14.—For the erection of a pair of semi-detached houses in Heaton. Mr. Jas. Ledingham, architect, District Bank Chambers, Bradford, Yorkshire.

ILFORD.—Aug. 18.—For the erection of a post office at Ilford, for the Commissioners of H.M. Works and Public Buildings. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

IRELAND.—Aug. 10.—For the erection of a teacher's residence at Knockanevin, co. Cork. Plans and specifications can be seen at the Presbytery, Kildorrery.

IRELAND.—Aug. 14.—For improvements to Rooskey Church, Gortin. Mr. Edward J. Toye, architect, 20 Great James Street, Londonderry.

IRELAND.—Aug. 14.—For the erection of a dwelling-house at Wesleyan Street, Rathmullan. Mr. J. P. McGrath, architect, Commercial Buildings, Foyle Street, Londonderry.

LEICESTER.—Aug. 26.—For the enlargement of the head post office at Leicester. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—Aug. 12.—For the erection of a scullery adjoining the dining-hall at the workhouse, Sidney Road, Homerton, N.E. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONDON.—Aug. 21.—For the erection of out-relief stores at the rear of the Union offices, Tooley Street, S.E. Messrs. Newman & Newman, architects, 31 Tooley Street, S.E.

MANCHESTER.—Aug. 10.—For the erection of boundary wall, fencing, &c., at Bank Street, Phillips Park, Manchester. Particulars may be obtained on application at the City Surveyor's Office, Town Hall, Manchester.

NEW MALDEN.—Aug. 31.—For the erection of new public offices, fire station, stabling, &c., at New Malden, Surrey. Mr. William Hope, architect, Seymour Road, Hampton Wick.

NEWLYN.—Aug. 11.—For the erection of mission church at Newlyn, Cornwall. Mr. Henry White, architect, Penzance.

NORTH SHIELDS.—Aug. 18.—For the erection of an accumulator house at the electrical power station, North Shields. Mr. John F. Smillie, surveyor, Tynemouth.

NORWICH.—Aug. 10.—For the erection in the grounds of the Norwich workhouse of a nurses' home. Messrs. Morgan & Buckingham, architects, Norwich.

NOTTINGHAM.—Aug. 10.—For the erection of a cricket pavilion on Bulwell Forest. Mr. Frank B. Lewis, city architect, Guildhall, Nottingham.

PRESTON.—Aug. 10.—For the rebuilding of New in-Pendle bridge, which carries the district road from Burnley to Newchurch-in-Pendle over the Pendle water. Mr. W. Compton Hall, county bridgemaister, County Offices, Preston.

RASTRICK.—Aug. 13.—For the erection of stabling, &c., at the George inn, Rastrick. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

SALFORD.—For erection of a school in Liverpool Street, Seedley, Salford. Mr. L. C. Evans, town clerk, Town Hall, Salford.

SCOTLAND.—Aug. 7.—For repairs, &c., to retort-house, chimney at Inchgreen gasworks, Greenock. Mr. Wm. Ewing, manager, Gasworks, Greenock.

SCOTLAND.—Aug. 11.—For the extension of the workshops and offices connected with the gas department in Walls Street Glasgow. Messrs. Sinclair & Ballantyne, architects, 95 Bath Street, Glasgow.

SCOTLAND.—Aug. 12.—For the erection of tenements in Bridgegate and St Margaret's Place. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

SCOTLAND.—Aug. 12.—For alterations and additions to the municipal buildings, Aberdeen. Mr. John Rust, city architect, 224 Union Street, Aberdeen.

SCOTLAND.—Aug. 13.—For additions and alterations to Cummertrees school, Annan. Mr. A. Sinclair Nicol, clerk to the School Board, Manse of Cummertrees, Annan.

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SCOTLAND.—Aug. 17.—For the erection of Crosshill and Govanhill district library, Glasgow. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

SELY OAK.—Aug. 24.—For the erection of a boiler-house at the workhouse, Selly Oak. Messrs. C. Whitwell & Son, architects, Temple Row, Birmingham.

STOURBRIDGE.—Aug. 17.—For the erection of a free library and technical institute in Hagley Road and Church Street. Mr. Frederick Woodward, Town Hall, Stourbridge.

SUNDERLAND.—Aug. 10.—For the erection of St. Mary's new vicarage, Tyne Dock. Messrs. Joseph Potts & Son, architects, 57 John Street, Sunderland.

WALES.—Aug. 10.—For the erection of a vestry at Edwardsville, near Treharris. Mr. W. Dowdeswell, architect, Bryntaff, Treharris, R.S.O.

WALES.—Aug. 10.—For the erection of forty houses at Pontnewynydd. Messrs. Fisher & Sons, architects, Club Chambers, Pontypool.

WALES.—Aug. 10.—For the erection of seventeen cottages at Ystrad Rhondda. Mr. James Jenkins, surveyor, Ystrad Rhondda.

WALES.—Aug. 11.—For alterations and additions to Tenby station, Pembrokeshire, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

WALES.—Aug. 13.—For the erection of a boys' school, and for additions to and alterations of the existing schools in Pill Street, Cogan, Penarth. Mr. G. A. Birkenhead, architect, Caledonian Chambers, Cardiff.

WALES.—Aug. 14.—For the erection of nine houses at Ala Road, Pwllheli. Mr. Henry Thomas, architect, 7 Castle Ditch, Carnarven.

WALES.—Sept. 14.—For the erection of two new departments for boys and girls at Penygraig, Ystrayfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

WALES.—Aug. 15.—For erection of a vestry in connection with Zoar Baptist church, Pontllynn. Mr. William Powell, secretary, 25 Merchant Street, Pontllynn.

WALES.—Aug. 15.—For alterations and additions to the chapel for the trustees of Kidwelly Calvinistic Methodist chapel, Kidwelly. Messrs. John Anthony & Sons, Anchor House, Kidwelly.

WALES.—Aug. 18.—For the provision of a new electrical department for lupus treatment, &c., at the Cardiff infirmary. Mr. Edward Seward, architect, Queen's Chambers, Queen Street, Cardiff.

WALES.—Aug. 19.—For the erection of an organ chamber and altering, repairing and renovating Llandilofawr parish church. Mr. David Jenkins, architect, Llandilo.

WALES.—Aug. 24.—For the erection of about 146 roods of dry stone wall between Little Salkeld and the village of Winkskill, Penrith. Mr. Thomas Watson, surveyor, Kirkoswald.

WALES.—Aug. 26.—For the erection of a school at Troedryhiw for 400 boys. Mr. J. Llewellyn Smith, architect, Aberdare.

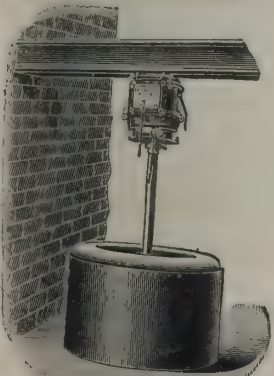
WARRINGTON.—Aug. 17.—For rebuilding Newchurch Church. Messrs. Travers & Ramsden, architects, 44 Church Street, Leigh, Lancs.

WARRINGTON.—Aug. 17.—For rebuilding of church at Newchurch. Messrs. Travers & Ramsden, architects, &c., 44 Church Street, Leigh, Lancs.

WOMBWELL.—Aug. 20.—For the erection of six houses, Hough Lane, Wombwell, Yorks. Mr. A. B. Linford, architect, Carlton Villa, Wombwell.

IN January last the 'Bishop of Carlisle' appointed a commission to consider the need for the extension of spiritual provision in Barrow, to make suggestions as to the most eligible sites for additional churches, as to the necessity of new mission buildings and as to the necessity of any rearrangement of parochial boundaries. This commission has now reported and suggests the building of a new church to accommodate 600 worshippers on Walney Island, on a site given by Messrs. Vickers, Sons & Maxim, adjoining the present church and burial-ground; that the site of a new central church to accommodate 1,600 be secured in Abbey Road at a cost of 4,000*l.*, with a view ultimately of transferring the living of St. Mark's to it, and also with a view to the removal of St. Mark's Church to some other part of the parish and its rebuilding as a separate church; and the securing of the site for a new church on Barrow Island, with a view of building a large church and a convenient mission-room.

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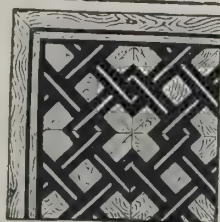
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F. MARLAND, Ashton-under-Lyne (*accepted*).

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For rebuilding two business premises in the main street, Aspatria, Cumberland. Mr. J. S. MOFFAT, architect, 53 Church Street, Whitehaven.

J. DAVIDSON, Aspatria (*accepted*).

ASTON MANOR.

For street works in Avenue Road, Aston Manor. Mr. G. H. JACK, surveyor.

J. Mackay	£787	0	0
J. White, jun.	706	0	0
Curral, Lewis & Martin	637	0	0
R. W. Fitzmaurice	578	0	0
G. TRENTHAM, Birmingham (<i>accepted</i>)	570	0	0

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G. Ellis	£197	0	0
F. & E. FOX, Balby (<i>accepted</i>)	160	17	0

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For the erection of four blocks of dwellings upon the Fulford Street and Braddon Street site. Mr. A. F. WRIGHTSON, quantity surveyor.

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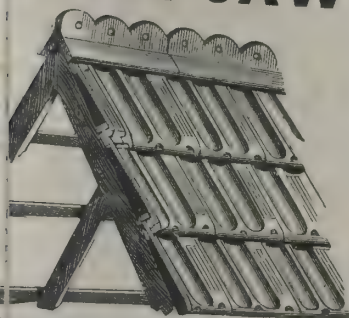
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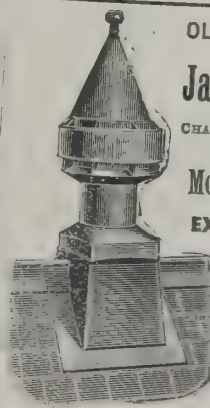
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GATESHEAD.

For rebuilding the Causey House, Sheriff Hill, Gateshead. Mr. L. H. ARMOUR, architect, 16 West Street, Gateshead.

R. Veitch & Sons	£1,561	19	5
W. C. Tyrie	1,557	15	3
T. & J. White	1,550	0	0
J. Hymers & Co.	1,550	0	0
D. D. Hall	1,498	7	0
J. Craven	1,457	13	9
Raven & Hitcham	1,452	13	2
J. Ross & Son	1,434	12	2
J. Milne	1,429	9	6
H. & B. Arkless	1,417	0	0
G. BAIN, Dunstone (accepted)	1,367	11	0

HACKNEY.

For street works in Ashenden Road (eastward from Daubeney Road). Mr. NORMAN SCORGIE, borough surveyor.

Grounds & Newton	£630	18	1
G. Porter	608	4	10
W. GRIFFITHS & Co, Ltd., 35-39 Hamilton House, Bishopsgate Street Without, E.C. (accepted)	602	12	6

IRELAND.

For lining a well in the townland of Drinaghan, Sligo, and for capping the well and supplying and erecting a flywheel pump thereon.

Lining well.

F. CARROLL, Siberia (accepted)	£35	0	0
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Capping well, supplying, &c., pump.

O'Hara & Co.	25	17	0
J. GALLOWAY & SONS, Sligo (accepted)	19	17	6

For the erection of main entrance to Victoria Market, including carving of city arms on stone, Londonderry.

R. Colhoun	£128	0	0
Smyth Bros.	123	2	6
Shannon & Routledge	115	0	0
J. E. MAULTSAID, Foyle Street (accepted)	115	0	0

For additions and alterations at the workhouse infirmary. Mr. M. A. ROBINSON, architect, Richmond Street, Londonderry.

F. P. Selfridge	£43	0	0
W. M. Daw & Co.	37	15	0
R. COLHOUN, Londonderry (accepted)	37	10	0

LEWISHAM.

For street works in Brightside Road and Mallett Road, Hither Green.
W. PEARCE, Forest Hill (accepted)—Mallett Road, £280; Brightside Road, £954.

LONDON.

For the conversion of 262 Brockley Road into business premises. Mr. J. HALSTED WATERWORTH, architect and surveyor, 281A Queen's Road, New Cross Gate, and Welling, Kent.
S. R. BEST, Brockley (accepted) £210 0 0

LONDON SCHOOL BOARD.

The work at the following schools will be done during the summer holidays—July 25 to August 22. Where exterior as well as interior work has to be done, an additional week will be allowed for the former.

For painting exterior, Alma and Southwark (pupil-teachers' school).

W. Downs	£323	0	0
H. J. Williams	289	10	0
W. Sayer & Son	278	0	0
J. C. Chalkley	267	0	0
JOHNSON & Co (accepted)	256	0	0
Belcher & Co, Ltd.	248	0	0

For painting exterior, Cayley Street.

T. Cruwys	£296	10	0
F. & H. F. Higgs	273	0	0
J. F. Holliday	249	0	0
Vigor & Co.	191	10	0
A. W. Derby	188	0	0
D. GIBB & Co. (accepted)	185	0	0

For painting exterior (boys, girls, infants' and P.T.), Essex Street.

A. J. Sheffield	£363	0	0
J. F. Holliday	358	0	0
Johnson & Co.	322	0	0
Corfield & Co.	310	10	0
A. W. Derby	273	0	0
Vigor & Co.	244	10	0
J. HAYDON & SONS (accepted)	234	0	0

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For Index of Advertisers, see page x.



LONDON SCHOOL BOARD—continued.

For painting interior and exterior, Malmesbury Road.

D. Gibb & Co.	£215	0	0
A. E. Symes	165	0	0
G. Barker	154	0	0
J. F. Holliday	140	0	0
R. Woollaston & Co.	126	10	0
Vigor & Co.	123	0	0
A. W. DERBY (accepted)	121	0	0

For painting interior of four iron buildings, Vallance Road.

Parrott & Isom	£175	0	0
Johnson & Co.	160	0	0
G. Barker	132	10	0
Vigor & Co.	119	0	0
J. F. HOLLIDAY (accepted)	100	0	0

For painting exterior, Charing Cross Road.

T. Cruwys	£242	0	0
J. R. Sims	183	0	0
Belcher & Co., Ltd.	177	0	0
W. Chappell	158	0	0
F. T. CHINCHEN & Co. (accepted)	149	0	0

For painting exterior, Victory Place.

J. R. Sims	£199	0	0
F. & H. F. Higgs	178	0	0
Rice & Sons	173	0	0
G. Brittain	167	0	0
Johnson & Co.	156	0	0
W. Sayer & Son	153	10	0
H. J. Williams	148	0	0
J. F. FORD (accepted)	139	0	0

For painting interior, Cubitt Town.

Parrott & Isom	£285	0	0
A. J. Sheffield	266	0	0
Vigor & Co.	242	0	0
D. Gibb & Co.	222	0	0
R. WOOLLASTON & Co. (accepted)	188	0	0

For painting exterior, Betts Street.

A. J. Sheffield	£180	0	0
J. F. Holliday	174	15	0
Vigor & Co.	166	0	0
D. Gibb & Co.	165	0	0
G. BARKER (accepted)	146	0	0

LONDON SCHOOL BOARD—continued.

For painting exterior and cleaning interior (iron buildings), Bonnevill Road.

W. King & Son	£146	0	0
M. E. Allen	137	0	0
R. S. Ronald	110	0	0
W. J. Coleman & Co.	106	1	0
W. Read	104	0	0
C. GURLING (accepted)	75	0	0

For painting exterior and cleaning interior (iron buildings), Hitherfield Road.

M. E. Allen	£146	10	0
Maxwell Bros., Ltd.	140	0	0
J. & C. Bowyer	130	0	0
R. S. Ronald	110	0	0
DOWSETT & JENKINS (accepted)	88	10	0

For painting interior, Oban Street.

Parrott & Isom	£589	0	0
G. Wales	479	0	0
A. E. Symes	468	0	0
A. W. Derby	434	0	0
D. Gibb & Co.	415	0	0
Vigor & Co.	360	10	0
G. Barker	340	0	0
A. J. SHEFFIELD (accepted)	333	0	0

For painting interior of whole school, Plough Road.

E. Flood	£465	0	0
C. Gurling	385	0	0
Martin, Wells & Co., Ltd.	376	0	0
Holloway Bros. (London), Ltd.	369	0	0
E. Triggs	348	0	0
W. Chappell	295	0	0
H. LENEY & SON (accepted)	230	0	0

For painting interior, Carlton Road.

Viney & Stone	£233	0	0
T. Cruwys	223	0	0
H. Wall & Co.	215	0	0
Marchant & Hirst	198	0	0
A. Balfour & Co.	196	0	0
Graham & Graham	173	0	0
F. W. Harris	165	0	0
F. T. CHINCHEN & Co. (accepted)	139	10	0

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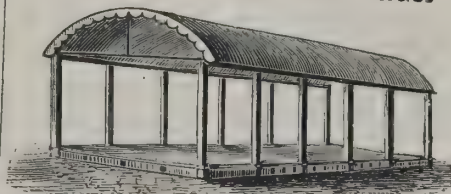
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5 FENCHURCH STREET, E.C.

LONDON SCHOOL BOARD—continued.

For cleaning interior (J.M.), South Lambeth Road.

J. R. Sims	£139 10 0
W. Read	139 0 0
G. Brittain	113 0 0
Maxwell Bros., Ltd.	113 0 0
Rice & Son	112 0 0
W. Sayer & Son	84 10 0
R. S. RONALD (accepted)	80 0 0

For cleaning interior (J.M. and P.T. centre), Burghley Road.

F. T. Chinchin & Co.	£237 0 0
T. Cruwys	227 0 0
Viney & Stone	211 0 0
H. Wall & Co.	208 0 0
McCormick & Sons	199 0 0
Stevens Bros.	196 0 0
MARCHANT & HIRST (accepted)	189 0 0

For painting interior and exterior, Cable Street.

A. E. Symes	£495 0 0
Johnson & Co.	369 0 0
F. & H. F. Higgs	355 0 0
Vigor & Co.	348 15 0
G. Baker	328 0 0
J. F. HOLLIDAY (accepted)	251 0 0

For painting interior and exterior, Albion Street.

Lathey Bros.	£816 0 0
Johnson & Co.	638 0 0
J. Garrett & Son	629 0 0
H. J. Williams	620 0 0
W. Sayer & Son	607 0 0
W. DOWNS (accepted)	558 0 0

For painting exterior, Neckinger Road.

F. & H. F. Higgs	£236 0 0
Johnson & Co.	222 0 0
J. Garrett & Son	219 0 0
John Greenwood, Ltd.	197 15 0
W. Sayer & Son	188 0 0
H. J. WILLIAMS (accepted)	172 0 0

For painting exterior, Elizabeth Street.

W. Harris	£150 0 0
Holliday & Greenwood, Ltd	119 0 0
E. PROCTOR & SON (accepted)	92 0 0

LONDON SCHOOL BOARD—continued.

For cleaning interior of old portion and painting interior of enlargement, painting exterior of all buildings, The Snowfields.

J. R. Sims	£707 0 0
W. Hornett	507 13 0
W. V. Goad	463 0 0
H. J. Williams	444 0 0
John Greenwood, Ltd.	439 18 6
E. TRIGGS (accepted)	424 0 0

For painting exterior (old buildings), Marlborough Road.

C. Gurling	£426 0 0
J. & M. Patrick	356 0 0
C. Kearley	342 0 0
W. Hammond	326 0 0
MACEY & SONS (accepted)	249 0 0

For painting interior, Hugh Myddelton.

G. Kirby	£790 18 0
G. Barker	753 0 0
C. & W. Hunnings	720 10 0
Stevens Bros.	696 0 0
Marchant & Hirst	657 0 0
Bristow & Eatwell	579 0 0
JOHNSON & CO. (accepted)	553 0 0

For painting exterior and cleaning interior of Clyde Street and painting exterior of Edward Street.

T. D. Leng	£733 0 0
H. Groves	651 0 0
W. J. Howie	629 0 0
Holliday & Greenwood, Ltd.	577 0 0
J. & C. Bowyer	555 0 0
John Greenwood, Ltd.	532 17 6
E. Proctor & Son	530 0 0
M. E. Allen	528 6 6
G. KEMP (accepted)	524 0 0

For painting exterior, Oldridge Road.

W. Johnson & Co., Ltd.	£199 0 0
R. S. Ronald	185 0 0
Martin, Wells & Co., Ltd.	175 0 0
A. Acworth	168 0 0
Rice & Son	159 0 0
J. GARRETT & SON (accepted)	153 0 0

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LONDON SCHOOL BOARD—continued.

For painting exterior, Rolls Road.		
W. Hornett	£214	0 0
E. B. Tucker	199	10 0
Johnson & Co.	198	5 0
W. Read	197	0 0
Lathey Bros.	192	0 0
H. J. Williams	170	0 0
W. Sayer & Son	146	0 0
W. HOOPER (accepted)	93	0 0
For painting interior, The All Hallows.		
A. E. Symes	£135	0 0
Gibb & Co.	120	0 0
VIGOR & CO. (accepted)	95	0 0
For painting interior and exterior of housewifery centre, and exterior of main school building, Morden Terrace.		
M. E. Allen	£285	17 6
W. J. Howie	270	0 0
E. B. Tucker	268	11 0
W. BANKS (accepted)	244	19 6
E. Proctor & Son	232	0 0
H. Groves	219	0 0
G. Kemp	186	0 0
For painting interior and exterior, Culloden Street.		
Parrott & Isom	£721	0 0
Vigor & Co.	540	0 0
Turnbull & Sons	498	0 0
GIBB & CO. (accepted)	459	0 0
J. F. Holliday	458	10 0
For interior painting, Sandford Row.		
W. V. Goad	£400	0 0
Bargman, Son & Co.	395	0 0
Rice & Son	385	0 0
Maxwell Bros., Ltd.	378	0 0
E. Triggs	361	0 0
W. SAYER & SON (accepted)	296	10 0
For painting interior, Smith Street.		
G. Barker	£470	0 0
Barrett & Power	456	0 0
Vigor & Co.	409	10 0
G. F. Holliday	383	0 0
G. Wales	377	0 0
WOOLLASTON BROS. (accepted)	364	0 0

MAIDENHEAD.

For street and sewerage works in Cromwell Road, Hargreave Road and certain private roads adjoining Norfolk Park cottages. Mr. PERCY JOHNS, borough surveyor.		
<i>Cromwell Road.</i>		
Free & Sons	£358	11 0
Mott & Son	351	15 11
S. GIBBONS, Maidenhead (accepted)	339	4 9
<i>Road, Norfolk Park.</i>		
S. Gibbons	169	5 0
Mott & Son	168	5 0
FREE & SONS, Maidenhead (accepted)	165	11 10
<i>Hargreave Road sewer.</i>		
S. Gibbons	91	13 0
Free & Sons	73	8 6
G. Woodbridge	58	5 0
MOTT & SON, Staines (accepted)	53	5 3

MANNINGTREE.

For alterations and additions to the Wesleyan day schools, Manningtree, Essex. Mr. J. W. START, architect, Cups Chambers, Colchester.		
Smith & Beaumont	£682	11 0
Dupont & Co.	655	0 0
J. McKay	610	0 0
Runnacles	608	0 0
W. C. Theobald	584	0 0
Parsons & Sons	577	0 0
W. T. Wheeler	570	0 0
W. E. Capon	553	0 0
SAGE & CUTTING, Wix (accepted)	452	0 0
For alterations and additions to the Wesleyan Sunday schools, Manningtree, Essex. Mr. J. W. START, architect, Cups Chambers, Colchester.		
Smith & Beaumont	£383	0 0
Runnacles	376	0 0
W. T. Wheeler	372	0 0
W. E. Capon	363	0 0
Dupont & Co.	353	0 0
W. C. Theobald	340	0 0
J. McKay	339	0 0
Parsons & Sons	332	18 0
SAGE & CUTTING, Wix (accepted)	298	10 0

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MILLWALL.

For certain pile-driving and underpinning work at the Cyclops ironworks, for Messrs. Edward Le Bas & Co. Mr. CHAS. E. GRITTON, engineer, The Briars, Selhurst.
F. & T. THORNE (*accepted*) £205 0 0

MIRFIELD.

For outside painting at the fever hospital in Crossley Lane, Mirfield, Yorks. Mr. E. GILL, surveyor.
S. H. Servent £68 10 0
J. Taylor 51 17 0
J. Ilett 39 18 0
J. BROSCOMBE, Mirfield (*accepted*) 30 10 0

NORWICH.

For the erection and fitting-up of a strong-room at the Guardians' offices, St. Andrew's Street. Messrs. MORGAN & BUCKINGHAM, architects, Norwich.

W. J. Hannant £169 0 0
Downing Bros. 166 0 0
J. W. Utting 164 15 0
J. J. Howes 149 10 0
W. LINCOLN, Carnarvon Road (*accepted*) 145 0 0

For the supply of 7-inch cast-iron pipes. Mr. A. E. COLLINS, engineer.

Catlin £236 18 11
Stanton Ironworks 215 5 0
Clay Cross Co. 213 19 6
Lister 197 15 0
COCHRANE & CO., Woodside Ironworks, Dudley (*accepted*) 191 6 2
J. & R. Ritchie (part only) 123 2 0

NORWOOD.

For repairs to latrines at the new schools.

Harvie, Conie & Co. £95 17 0
W. Young 79 0 0
Castle Bros. 71 0 0
Hammond & Son 60 0 0
T. Brown 56 8 6
W. Hooper 56 0 0
W. Coates 39 10 0
Hall & Son 35 13 0
H. & G. MALLETT, 233 Clapham Road (*accepted*) 15 15 0

OADBY.

For sewerage works for the parish of Oadby, Leics. Messrs. DRAPER & WALTERS, Friar Lane, Leicester, and J. TURNER, Glen Parva, near Leicester, surveyors

A Jewell £3,245 0 0
H. H. Barry 2,875 0 0
Hutchinson & Son 2,558 0 0
Chamberlain 2,550 0 0
T. Philbrick 2,521 0 0
King & Ridley 2,275 0 0
J. Holme 1,683 3 0
H. Mason & Son 1,668 17 2
C. W. Mattock 1,635 0 0
STIMPSON & ROLLSTON, Leicester (*accepted*) 1,609 0 0

PARKSTONE.

For street works on High Croft estate, Parkstone, Dorset. Mr. A. G. WARE, surveyor.

M. Loader £733 0 0
Grounds & Newton 727 14 5
H. C. Brixey 717 9 10
W. P. Saunders 580 15 8
G. MAIDMENT, Newtown (*accepted*) 473 12 4

For street works in Parkstone Avenue, Penn Hill Estate, Parkstone, Dorset. Mr. A. SMITH, surveyor, Parkstone.

M. Loader £1,375 0 0
Grounds & Newton 1,372 0 0
G. T. BUDDEN, Newtown (*accepted*) 1,294 0 0

PERSHORE.

For the construction of a storm-water drain and other works in the town of Pershore. Mr. J. H. GARRETT, county road surveyor.

Nicholas Bros. £249 8 0
D. Panter & Sons 216 15 2
T. Walker 208 0 0
J. W. Smith 204 11 6
W. Nicholas 198 15 0
J. COOMBE, Pershore (*accepted*) 197 10 0

ROCHDALE.

For the supply of creosoted beech paving blocks. Mr. S. S. PLATT, borough surveyor.

ARMSTRONG, ADDISON & Co, North Dock, Sunderland (*accepted*).

The ROMAN CATHOLIC CATHEDRAL
WESTMINSTER, London, S.W.

The NEW BARRACKS and MILITARY
HOSPITAL at MILLBANK, London, S.W.

The BRITANNIA NAVAL COLLEGE,
DARTMOUTH, Devonshire

The TOOTING BEC ASYLUM, TOOTING
London, S.W.

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Bricks were used for the above impor-
tant public works.

THOMAS LAWRENCE & SONS, BRACKNELL, BERKS.

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SOUTH SIDE OF CHOIR.

SHOPS, 20 TO 24 CAMBERWELL GREEN, S.E.

HOUSE AT WIMBLEDON.

LLANELWEDD RECTORY.

ST. MARYLEBONE.

For the erection of a block of tenement dwellings in John
Street, Edgware Road, St. Marylebone.

J. CHESSUM & SONS, Crown Wharf, Monier
Road, Bow, E. (accepted) £11,591 0 0

SCOTLAND.

For setting-back fronts and reconstructing two tenements in
West Port, Edinburgh.

Accepted tenders.

Scott & Brown, Lever Street, mason	£1,381	3	6
G. Gilmour & Co., Dalmeny Street, Leith, joiner	925	0	0
Stuart & Co., Duff Street, plasterer	412	6	4
D. Blake & Co., Beaverhall Road, plumber	319	0	0
C. Robertson, 93 Pleasance, smith	203	19	0
P. & J. Gordon, Middlefield, painter	50	6	6
R. Kidd, Barclay Place, slater	22	0	6
Cunningham & Co., 18 Leith Street, glazier	19	15	0

For the reconstruction of properties in Greenside End, Edin-
burgh.

Accepted tenders.

Scott & Brown, Lever Street, mason	£228	0	0
A. Calder, Barclay Place, joiner	225	0	0
J. Baird & Son, East London Street, plasterer	102	0	0
D. Blake & Co., Beaverhall Road, plumber	88	0	0
P. Bell & Son, Pitt Street, smith	42	17	6
P. & J. Gordon, Middlefield, painter	24	16	1

SMALLBURGH.

For alterations and additions to the laundry and the erection
of new receiving wards and a disinfectant at the workhouse
at Smallburgh, Norfolk. Mr. JOHN T. LEE, architect,
26 Great James Street, Bedford Row, W.C.

T. H. Blyth	£1,620	0	0
Carter & Wright	1,609	0	0
G. Riches	1,572	0	0
W. Porter	1,570	0	0
H. C. Greengrass	1,527	0	0
W. Laycock	1,498	10	0
W. & F. Appleton	1,489	8	9
H. Skuffham	1,479	4	1
G. E. Hawes	1,440	0	0
A. D. Boddy & Son	1,399	0	0
R. C. Watts	1,396	0	0
W. J. Hannant	1,357	0	0
Batchelor & Son	1,198	10	0

STOCKPORT.

For street works in Ellen Street and Passage No. 1 off
Churchill Street. Mr. JOHN ATKINSON, borough sur-
veyor.

V. D. Hayes	£216	19	7
W. H. EVA, 288 Stockport Road, Cheadle Heath (accepted)	20	15	7

STRETTFORD.

For alterations and additions to the Stretford town hall. Mr.
ERNEST WORRAL, surveyor.

R. Holland	£1,359	0	0
W. Thorpe	1,323	0	0
S. Warburton	1,317	0	0
Young, Tinker & Young	1,256	0	0
R. Neill & Sons	1,237	0	0
R. CARLYLE, Old Trafford (accepted)	1,228	0	0
Burgess & Galt	1,105	0	0

TROWBRIDGE.

For the erection of a warehouse in Church Street. Mr.
WALTER W. SNAILUM, architect, Church Street, Trow-
bridge.

J. Long & Sons	£1,239	0	0
E. Linzey	975	0	0
G. MOORE, Trowbridge (accepted)	944	0	0

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WALES.

For the erection of a boys' department and for extending and improving the infants' department at Cwmpark, Ystrad-y-fodwg. Mr. JACOB REES, architect, Hillside Cottage, Pentre.

E JONES, Cwmpark, Treorky, Glam (accepted) £6,431 9 1
For erecting a chapel at Miskin, Mountain Ash. Mr. T. W. MILLAR, architect, Mountain Ash.

T. W. Davis £2,400 0 0
Jones Bros. 2,350 0 0
F. MILLS, Mountain Ash (accepted) 2,310 7 7

For extensions and renovations to Tabernacle chapel, Pontardawe. Mr. CHARLES S. THOMAS, 63 Wind Street, architect.

T. Richards £1,450 0 0
Bennett Bros. 1,420 0 0
D. Jenkins 1,370 0 0
Jones, Price, Rees & Davies 1,298 0 0
WALTERS & JOHNS, Morriston, near Swansea (accepted) 1,230 0 0

For the conversion of the three departments at Ynyshir into one for boys for the Ystrad-y-fodwg School Board. Mr. JACOB REES, architect, Hillside Cottage, Pentre.

W. H. COOKSLEY, Miskin, Llantrissant (accepted) £2,400 0 0

WEMBLEY.

For street works as follows:—(a) Kerbing and preparing foot-paths for paving (Contract No. 1); (b) paving with Croft adamant slabs (Contract No. 2).

Contract No. 1.

T. Adams £733 9 8
H. Haynes 705 9 6
R. Ballard, Ltd. 702 13 10
J. Meston 664 0 0
T. FREE & SONS, Maidenhead (accepted) 599 15 2
A. B. Champniss 590 18 6

Contract No. 2.

J. Meston 837 0 0
H. Haynes 781 15 4
A. B. Champniss 731 6 8
CROFT GRANITE BRICK AND CONCRETE CO., LTD., Croft, near Leicester (accepted) 700 0 0
Preston Granite Co., Ltd. 625 0 0

WALSALL.

For the erection of new buildings at the workhouse, Pleck Road, Walsall. Mr. H. E. LAVENDER, architect, Bridge Street, Walsall.

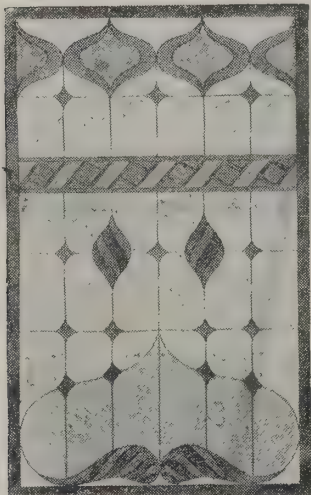
L. Jones £9,225 0 0
J. Dallow & Sons 8,750 0 0
W. Wistance 8,739 0 0
T. Hardy 8,580 0 0
J. Mallin 8,579 0 0
D. Roberts 8,550 0 0
T. Hughes 8,410 0 0
J. Guest & Son 8,400 0 0
W. Kendrick & Sons 8,310 0 0
G. H. Marshall 8,261 0 0
T. Tildesley 8,249 0 0
H. Wilcock & Co. 8,120 0 0
W. Hopkins 7,990 0 0
R. Harris 7,930 0 0
W. H. GIBBS, King's Heath, Birmingham (accepted) 7,979 0 0

WIBSEY.

For the decoration of the Wesleyan Reform chapel at Wibsey, Bradford. Mr. WILLIAM H. SHARP, architect, 239 Rooley Lane, Bradford.

S. Kendall £177 13 6
H. Taylor 154 18 0
J. H. Sharp 145 0 0
J. Lynn 131 0 0
J. Gurnell 122 11 0
J. H. Townsend 111 10 0
J. Hankins 108 15 0
T. H. Hewitt 101 0 0
G. J. Walton 99 5 0
J. Noble & Son 98 10 0
J. Wallace 97 15 0
J. C. Calvert 88 13 0
E. Harland & Sons 85 0 0
E. Wilkinson 83 0 0
W. Jagger 77 0 0
C. Jagger 73 10 0
R. HOLBROOK & SON, 6 Legrams Lane, Bradford (accepted) 58 19 0

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carrying-out sewage works at Cottimore and Eastonville, Surrey. Mr. RADFORD, engineer.

General contract.

J. & G. Binns, Croydon £5,736 0 0

Pipes and machinery.

Staveley Coal and Iron Co. 1,729 0 0

PAIGNTON.

alterations and additions to the Curledge Street Board school. Mr. FREDERICK WM. VANSTONE, architect, Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, of Paignton.

H. Webber & Sons £1,968 0 0

Maunder & Mudge 1,950 0 0

N. Drew 1,920 0 0

E. Westlake * 1,885 10 0

* Accepted with modifications.

WALSALL.

erection of new buildings for the Walsall Board of Guardians.

HARVEY GIBBS (accepted) £7,979 0 0

COMPETITION OPEN.

HEYWOOD.—Sept. 14.—Competitive designs are invited for library building to be erected in Church Street at a cost of £10,000. Premiums of 30%, 20% and 10% will be awarded for designs adjudged of sufficient merit and placed first, second and third in order respectively. Mr. J. Ainsworth Settle, Municipal Buildings, Heywood, Lancs.

VARIETIES.

Tuesday the King paid a visit to Osborne in order to open the new Naval College, of which Mr. Hawks, of H.M. Office of Works, was the architect, and Mr. McManus, of Messrs Smith, the contractor.

THE Jewish community in Manchester having decided to erect a hospital of their own, the foundation-stone was laid at Cheetham on the 23rd ult. The site of the new hospital, which will be called the Victoria Memorial Jewish Hospital, is in Elizabeth Street, a short distance from the main thorough-

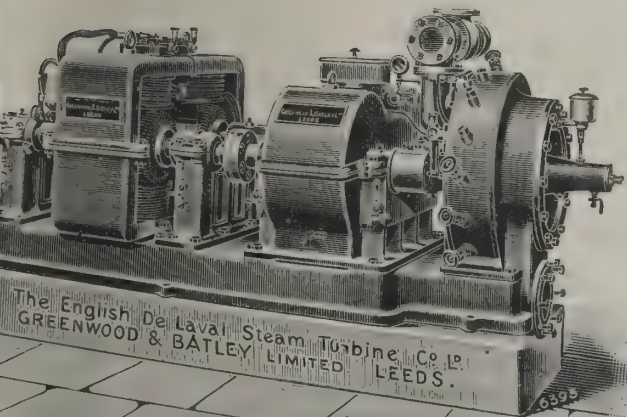
fare, Cheetham Hill Road, and the cost of the building when completed (a portion only is to be erected now) is estimated at 10,000l. to 12,000l.

MR. W. A. DUCAT held an inquiry on Wednesday at the Widnes town hall, on behalf of the Local Government Board, into the application of the Town Council for sanction to borrow 800l. for the reconstruction of the river wall on the southern boundary of the accident hospital. Mr. Craik, deputy town clerk, stated that 250l. out of the 800l. had already been expended, and it was pointed out in a letter to the Local Government Board on June 18 that the matter was urgent, as the adjoining property was in danger. The damage to the wall appeared to have been caused by the action of the tide in gradually undermining the foundations of the wall. On July 3 the borough surveyor reported that the remaining portion of the wall was in a defective condition. The committee made an inspection of it, and they had decided to have it reconstructed. The contractor's tender was 550l. Evidence bearing out the above having been given, the inquiry terminated.

NEW and commodious tramway offices, erected from the designs of Mr. C. Brownridge, borough engineer, were opened recently in Birkenhead. The building, which has cost about 3,300l., is two storeys in height, having a frontage of 76 feet to Laird Street, where the main entrance is situated. On the ground floor is the general office, 30 feet by 22 feet, a fireproof strong room, and timekeepers and inspectors' rooms. On the upper floor are the manager's room, store rooms and lavatories. The building is fitted throughout with electric light. The main façade is relieved by two oriel bay windows on the upper floor, these of the main entrance having been built entirely of dressed Bryntey stone from the Wrexham quarries. The remainder of the building has been constructed of common machine-made brick with red pressed brick facings, string-courses and stone dressings.

THE Bridge House Estates committee recently took a census of the vehicular traffic over the City bridges, for the purpose, primarily, of ascertaining the extent to which Southwark Bridge is used. A record of all vehicles passing north and south over the four bridges was kept for a week. It was found that during that period 125,373 vehicles passed over London Bridge, 62,644 going northward, and 62,729 southward; 24,432 over Southwark Bridge—12,148 northward, and 12,284 southward; 112,305 over Blackfriars Bridge—56,618 northward, and 55,687 southward; and 85,353 over the Tower Bridge—43,497 northward, and 41,856 southward. It

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SEND FOR CATALOGUES.

will be seen that Southwark Bridge is the least used, and it is in a great measure due to the steep gradient on the City side, which is avoided as much as possible by the drivers of heavy vehicles. It is for the purpose of remedying this defect that the Bridge House Estates Committee have approved of a scheme in favour of the practical rebuilding of Southwark Bridge, at an outlay of nearly 350,000/.

ELECTRIC NOTES.

At the monthly meeting of the Chorley (Lancs) Town Council the special general purposes committee recommended that "the Chorley Electric Lighting Order, 1898, be disposed of to the best advantage." Councillor Stone moved an amendment to refer the subject back to the committee. Councillor Gideon Jackson thought the Corporation should do all in its power to keep the order alive if the Board of Trade would sanction a further extension. It would hardly be right to let it lapse after spending 800/., but under no consideration should they let the order lapse without fighting for it. The amendment was carried.

MR. G. H. COTTAM, Hampstead borough electrical engineer, submitted a statement to the Hampstead Council, showing that their electric-lighting works were extremely prosperous during 1902-03. The cost of the works was 17,390/., as against 16,785/., in the previous year. Including interest, sinking fund and all charges, each unit sold cost the Council 3/92d., as against 4/66d. in the previous year, and produced in revenue 4/33d., as against 4/34d., so that the profits per unit sold show an increase, although the charges are slightly less.

THE tenth half-yearly meeting of the Great Northern and City Railway Company was held on Tuesday at the Westminster Palace Hotel, Sir Charles Scotter presiding. The chairman said the line was practically completed between Moorgate Street and Drayton Park. The generating station was complete and the whole of the machinery ready for work. A great part of the rolling-stock had been delivered and the remainder was practically completed. He thought he was justified in stating that before their next half-yearly meeting the line would practically be open for traffic between Finsbury Park and Moorgate Street. They looked upon the extension of the line to the Bank as being a very important part of the system of the railway, and although it would not be ready when the

other part was completed, they did not intend to delay the opening of the line to Finsbury Park. They had every reason to believe the line would be opened with success. They were strongly of opinion that the Finsbury Park extension and the extension to the Bank were most important factors in connection with the success of the railway, and although they anticipated a very heavy traffic even to Moorgate Street, they were quite certain that the traffic would be considerably increased when they were able to announce that they could carry passengers from Finsbury Park to the Bank. The directors, in the report, state that the main line from Moorgate Street, through Old Street and Essex Road, to Drayton Park is now almost completed. The extension from Drayton Park to Finsbury Park is in a forward state, and the whole of the tunnels are expected to be completed by the end of August. The Statute at Highbury authorised by the company's Acts, 1902 and 1903 is in course of construction. It is not intended to fill up the vacancy on the board created by the death of Sir Allen Sarle.

TRADE NOTES.

MESSRS. E. H. SHORLAND & BROTHER, of Manchester have just supplied their patent warm-air ventilating Manchester grates to the Clifton Street school, Swindon.

MR. T. A. HARRIS, Phoenix Works, Collingwood Street, Blackfriars Road, has prepared a neat and businesslike price list of sanitary fittings and appliances, all of which are fully illustrated and priced.

THE triumphal arches at Cork on the occasion of the King's visit were designed and erected by Messrs. Defries. The decoration and illumination of the premises of the Bank of Ireland, the Munster and Leinster Bank, the City Club, County Club, and of the leading business firms were all executed by them.

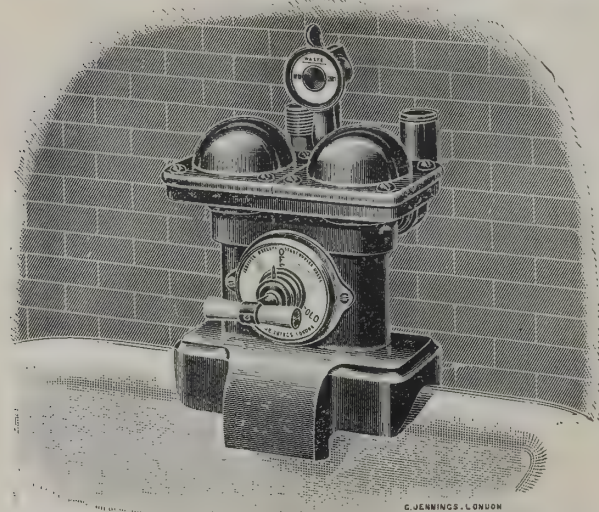
MESSRS. CHAMBERS, SCOTT & CO, engineers, crane builders and machine-tool makers, Motherwell, announce that they have taken as partner Mr. John Chambers, Wh. Sch. late chief engineering draughtsman with Messrs. Wigham Richardson & Co, Ltd., Newcastle-on-Tyne.

THE inhabitants of Ropley, near Alresford, Hants, are going to erect as a memorial to the late Queen Victoria a new clock in their parish church, to strike the hours, and with two large external dials, from the designs of Lord Grimthorpe. Messrs. Wm Potts & Sons, clock manufacturers, Leeds, have the work in hand.

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BUILDING AND BUILDERS.

MESSRS. MORRISON & SONS, of Wavertree, Liverpool, have obtained the contract for the erection of the new hospital at Bakerley, which will cost 121,475 $\frac{1}{2}$ l, or about 500 $\frac{1}{2}$ l. per bed.

THE foundation-stone of new county buildings at Northerton, which are estimated to cost altogether over 40,000 $\frac{1}{2}$ l, has been laid. The new buildings are ornate, and will provide accommodation for all the departments of the Council.

A BOARDING SCHOOL is in course of erection at Harborne in connection with the General Institution for the Blind, Edgbaston, Birmingham, which will be the first building in England specially constructed for teaching blind children by the kindergarten method. The object which the committee have in view is to train the unfortunate little ones under their parents to earn their living, and thus prevent them becoming a burden to themselves, to their friends or to the poor law. The foundation school, the foundation-stone of which has just been laid, will accommodate forty children, and will cost about 15,000 $\frac{1}{2}$ l. An excellent site has been secured on the Court Oak Road, with a frontage to Woodville Road. The building will be of brown brick, with red brick bands and white Grinshill stone dressings, and the roof will be tiled. The elevations will be of a very simple character. The main entrance faces Woodville Road, in a slightly projecting bay, with plain columns and pilasters. The windows will be plain, with rubbed, gauged, and red-brick arches, varied about half-way down by the projecting bay window of the dining-room. The Court Oak Road front will have a gable end with quoins. This part of the building will contain two dormitories, and the other two dormitories will be lighted by one wide dormer window in the centre. On the ground floor there will be three classrooms, two play-rooms, four music-rooms, dining-room, kitchen, scullery, pantry and larder, rooms for mistresses and matron, small dispensary, cloak-rooms, boot-rooms, airing-room and the usual offices. There will be a couple of porches leading from the play-rooms to the spacious play-grounds on the Court Oak Road side. The upper storey will be divided into four dormitories, mistresses and servants' bedrooms, linen, wardrobe and sewing-rooms, bath-rooms and lavatories. There will also be an isolated wing for sick children, a room for convalescents and a nurses' room, with separate staircase and entrance. The architects are Messrs. J. A. Chatwin & Son, Birmingham, and Messrs. Collins & Godfrey, of Tewkesbury, are the builders.

WROUGHT-IRON WINE BINS AND STRONG-ROOM FITTINGS.

THE Universal Wine Bin Company, of Alfred Road, South Norwood, S.E. (Mr J. Stevens, manager), are manufacturers of wrought-iron wine bins, cellar and strong-room fittings, in which class of work they have had, we understand, large and varied experience, while among the facilities that they possess for executing orders with despatch are some up-to-date machines and a number of ingenious tools, as well as labour-saving appliances of the newest pattern. Due regard is paid by the firm in question to the importance of having wine bins and cellar fittings efficiently designed and carried out, both with the view of properly economising space and insuring freedom from risk of breakage. Strong-rooms, moreover, fitted up by them with their improved wrought-iron fittings for banks, insurance offices and solicitors' offices, &c., combine, we are assured, not only great strength with lightness, but economise space and allow of a free circulation of air, besides possessing the advantage of being easily removed when necessary. In this connection it may be mentioned that among other orders recently executed by the company in question was one from the Bank of Adelaide for extensive strong-room fittings, which gave much satisfaction.

NEW CATALOGUE.

THE new edition of the catalogue of Builders' Ironmongery (No 7), issued by Messrs. Hart, Son, Peard & Co, Ltd., shows the advantages of an organisation which is well directed, and has gained power by long experience. As every architect knows, the history of the establishment goes back to "the brave days of old," when Gothic prevailed, and the production of a piece of metalwork was so regulated as to come within the province of ecclesiasticism rather than of commercialism. But there could be no better safeguard against careless work than the aspirations of the time. That the old spirit still prevails the catalogue is evidence. The objects in it are as diverse as is possible with builders' ironmongery, but the least of them shows a regard for excellence. If manufactured by the firm the forms are suitable, and if they are ornamented there is fitness, as in the Gothic days. If produced by patentees there is care exercised in the selection. The consequence is that the pages can be examined without finding anything which will show indifference to good taste. That is saying much when we know

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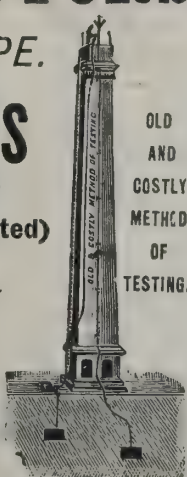
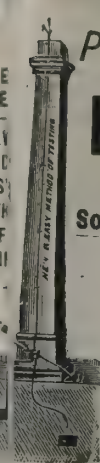
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how far vulgarity is supposed to be attractive to the multitude, and the jerry-builder makes showy door furniture serve to mislead by diverting attention from defects in construction. In other catalogues will be seen what can be done by Messrs. Hart, Son, Peard & Co. in art metalwork and ornamental work on a large scale, but the strict supervision which characterises the firm is no less demonstrated with the varied stock of ironmongery which can meet all requirements of ordinary buildings and, we may add, at low prices.

HENNEBIQUE'S SYSTEM OF FERRO-CONCRETE CONSTRUCTION.

A NUMEROUS party of architects, engineers and others interested in constructional works accepted the invitation of Messrs. W. Cubitt & Co. to witness on the 29th instant at Messrs. Whitbread's Brewery, Tottenham, what turned out to be a remarkably interesting and successful demonstration of the strength and weight-sustaining capabilities of ferro-concrete construction on the Hennebique system.

The building which Messrs. Cubitt & Co., who are licensees under the patents, have erected from the designs of Mr. Arthur Dixon, will be used by Messrs. Whitbread as a store, a purpose for which the Hennebique system is of the greatest value, as it provides the maximum clear floor space combined with the greatest strength, as was triumphantly demonstrated on this occasion. For a description of the test itself we cannot do better than give the official report as follows, adding that the ferro-concrete cement was supplied by Messrs. Martin, Earle & Co., of Queen Victoria Street, E.C.:

"The floor has a clear span of 25 feet 7 inches between the walls; the thickness of the floor is 5 inches, finished on top with cement paving $1\frac{1}{2}$ inch thick; the floor is supported on main beams 14 inches wide, 22 inches deep and 11 feet 3 inches from centre to centre, with secondary beams 5 inches wide and 9 inches deep. One complete bay was tested, so the total surface under the load was 25 feet 7 inches \times 11 feet 3 inches = 288 feet superficial. The floor was calculated for a superimposed load of 4 cwt. per foot superficial, therefore the normal test load was $288 \times 4 = 57$ tons 12 cwt. The load was composed of bags of ballast; 864 bags were filled with ballast, so that each bag with its contents weighed exactly 2 cwt., giving a total load of 86 tons 8 cwt., being the normal load plus 50 per cent, the agreed test to which the floor was to be subjected. The instruments used for the tests

enabled the deflection to be ascertained to the twentieth part of a millimetre or the five-hundredth part of an inch. Three of these instruments were used, one in the centre of the beam and one at each end, 1 foot away from the wall. They were placed in position and adjusted to zero by Mr. W. Dunn. At 11.45 the load was commenced to be put on; the instruments were noted by Mr. Dunn for each 10 tons of load up to 50 tons, and again when the load equal to 4 cwt. per foot had been reached.

The total deflection for the normal load measured in millimetres is 29 millimetres in centre, the average of the deflection of the piers 0.85 millimetre, giving a real deflection of the beam of 2.05 millimetres, or $\frac{1}{3800}$ of the span. The additional load of 50 per cent. equal to 6 cwt. per foot superficial was then put on, and records taken as shown on diagram, sheet two. The total deflection for this load of 86.7 tons was 4.8 millimetres, the average of the deflections of the piers 1 millimetre giving a real deflection of the beam of 3.8 millimetres, equal to $\frac{1}{2052}$ of the span. The total load of 86.7 tons was completed at 3 o'clock, and its removal was begun at 4 o'clock and finished at twenty-five minutes past five. The deflection was then .35 millimetre in the centre, .65 millimetre on north pier, and .05 millimetre on south pier, or an average of .35 millimetre of the piers, so that at that moment there was no permanent deflection. At twenty-five minutes past seven (two hours after the removal of the load) the instruments read as follows:—Centre, 0.3 millimetre; south side, 0.0 millimetre; north side, 0.6 millimetre, showing that the beam had completely recovered itself. During the whole of the experiment there was no trace of a crack or fissure. The total deflection under the 6 cwt. per foot load is represented by the space between these two lines.

= 3.8 millimetres.

TRAMCARS AS HOUSES.

THE Liverpool Corporation having substituted electricity for horse-power on the tramways, the old cars have been sold to various purchasers. They have settled down, so to speak, says the *Liverpool Courier*, to a comfortable old age in rural byways, in the gardens of villadom, on the playing fields of the "flannelled fool and the muddled oaf," and on the beach and amidst the sandhills of the wave-washed coasts of West Lancashire and the Wirral peninsula. They were no longer of

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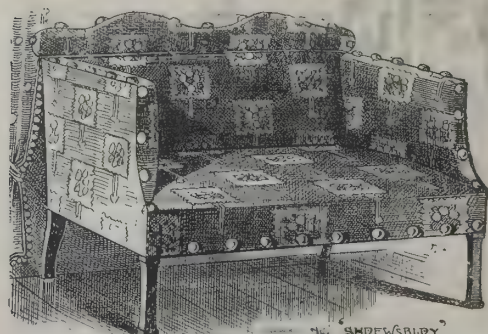
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use in the tramway service, not even as trailers; and they went to the highest bidder. In the early days of the clearance they were in great demand. The best cars found a ready market, and are now doing duty as snug summer-houses and studios in many a suburban garden, while others may be seen in various places between Liverpool and Ainsdale and Leasoweth and Hoylake serving their purpose admirably as shelters, for fishing vans, hen-cotes, workmen's huts, &c. Numerous cricket and football clubs of the minor class aspired to the dignity of possessing a tent by purchasing Mr. Bellamy's surplus stock, and various volunteer corps have also been good customers, judging from the trams and omnibuses so conspicuous in the vicinity of Altcar Rifle Range. The prices have varied from 7*l.* 10*s.* to 30*s.*, five trams at year realising 6*l.* 12*s.* each, and fifty-four omnibuses 8*s.* 11*d.* each. In almost every case the routes along which the old cars formerly rattled are still indicated by their painted signs—a reminder of their past glory. Thereby hangs a tale. Some time ago complaints were made about a wooden structure which had been dumped down near the end of New Brighton pier. It was one of the old horse cars. The proprietor of the shanty did a roaring trade in the sale of ginger beer, Eccles cakes, mint rock and such like luxuries. Whether the Klondike possibilities of the establishment excited the jealousy of rivals or not is a matter of little moment; suffice it that an objection was raised against it and against Mr. C. R. Bellamy, general manager." Mr. Bellamy is certainly one of the ablest and most successful general managers of tramways in the country, but as yet he has not had an opportunity of displaying his enterprise in the ginger beer and mint rock line, his connection with the business in question being limited to a few unobliterated letters in paint.

UNDERGROUND BAKEHOUSES.*

THE most progressive part of the Factory and Workshops Act 1901 is undoubtedly the section relating to underground bakehouses. The real value of this section is at the present time difficult to estimate, but we can safely say that it will be in direct ratio to its practical application.

* From a paper read by Mr. T. Foley Cass at the Congress of the Sanitary Institute.

The general method of construction, or what appears to be nearer the mark, of the conversion of underground rooms into bakehouses, will be sufficiently well known to you without any description here. Many of these places are low, damp, dark, miserable hovels, which ought to be condemned without the least hesitation; but, on the other hand, there may be many other places which are suitable, or can be made suitable for use.

I believe some attempt is being made to set up a standard of suitability upon which a certificate for the continuation of any underground bakehouse may be granted. This may or may not be a wise course to take, for no doubt each case will have to be considered on its merits; however I should like to state what appears to me should be required before any certificate is given.

Construction, &c.—All the requirements of the Factory and Workshops Act and the Public Health Acts relating to water-supply, sanitary conveniences, drains, ash-pits and sleeping apartments should be strictly complied with.

The floors and tops should be free from dampness and constructed of, or lined with, a smooth impervious material (preferably the floors of cement concrete, walls lined with glazed brick or tiles, and the tops of cement concrete on steel joists). No wooden casements or matchboard linings should be allowed.

The floor-space of any workroom should not be less than 150 superficial feet, the depth of the floor below the highest ground level adjoining or nearest to the bakehouse should not be more than 7 feet, the height from the floor to the ceiling should in no case be less than 8 feet 6 inches, and the ceiling should not be less than 3 feet above the highest ground level, which will be found to be quite little enough for the purposes of lighting and ventilation.

If this arrangement was put into practice the height from floor to ceiling would work out somewhat as follows:—

Where the depth of the floor below the ground level is	The height from floor to ceiling would be
7 feet	10 feet
6 " 6 inches	9 " 6 inches
6 " 0 "	9 " 0 "
5 " 6 "	8 " 6 "

Windows should be provided in all workrooms equal to not less than one-tenth of the floor space, made to open directly to the open air close to the ceiling, and to half the extent of the window area. No window should extend below the

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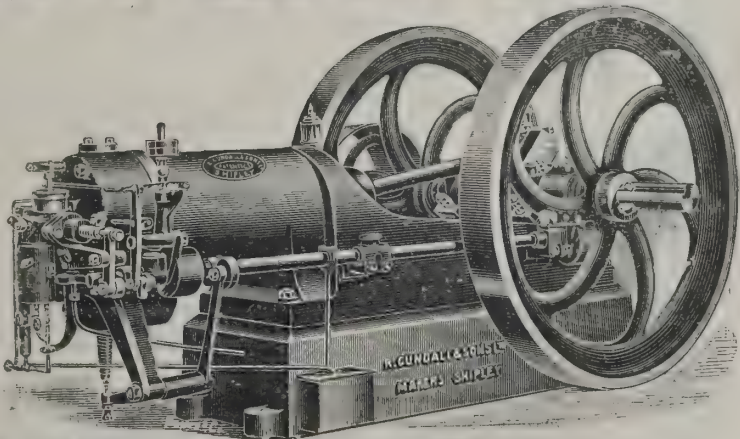
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ground level except in the case of windows looking into an open area not less than 3 feet in width and free from any obstruction of light; also in addition such other natural means of lighting should be enforced as will adequately light any part of any workroom by ordinary diffused daylight.

No underground bakehouse should be considered suitable in which it is necessary to use artificial light during any period of ordinary daylight.

In addition to the windows, adequate and suitable means of permanent ventilation should be provided, also means for carrying away any vapours or fumes directly from all ovens and gas-stoves into the open air or chimney-flue should be provided.

No system of ventilation should be considered by which there is any probability of dust, dirt or obnoxious effluvia entering the building, and what is known as through ventilation should be insisted upon.

Protection from Sewage.—No drain should be allowed to pass immediately over any part of the bakehouse or oven, and there should be a free space of about 2 feet between the walls of the oven and any wall of the bakehouse which is backed by the earth above the level of the bakehouse floor, and all area gullies should be provided with suitable valves to prevent flood waters from the sewers entering the building.

Approaches—The approaches to an underground bakehouse should be by means of properly constructed and efficiently lighted stairs, furnished with proper hand-rails, and, if internal, with proper screen and door above ground level. No step-ladders should be accepted, and no trap-doors or hatchways should be allowed in the ceiling of the bakehouse for any purpose whatever.

Storage-rooms—Sufficient storage-rooms for materials used in baking, and proper coal or coke bunkers, should be provided, which should be entirely separated from any baking-room by means of walls and doors, and should be separately lighted and ventilated.

In other respects all the furniture (troughs, benches, &c.) should be easily movable, and there should be no fixed bins, proof-closets or other fixtures in any baking-room. No part of the bakehouse should be used for any laundry, dwelling or other domestic or business purpose which is not in or incidental to the process of baking. It would therefore be necessary, where dwellings or shops are attached to the premises, to see that they are separately provided with adequate accommodation. The bakehouse, as regards its situation in respect to proximity

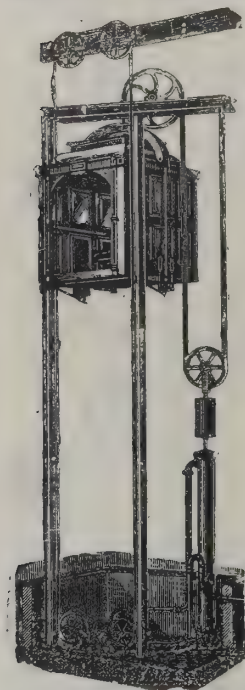
of insanitary areas, obnoxious premises, sewers or other objectionable contaminations, should be fully considered before granting any certificate.

VENTILATION OF THE HOUSE OF COMMONS.

THE report of the select committee of the House of Commons on the subject of the ventilation of the Chamber has been issued. The committee were first appointed in April of last year, and reappointed in June of the present Session. Seven teen witnesses were examined, and the recommendations which the committee make are summarised as follows:—"1. The substitution of electric fans for the present exhaust furnaces one fan to discharge into the shaft over the Commons lobby the other into the shaft above the ladies' gallery. 2. Simplification, so far as is possible, of the inlet passage and arrangements for its more thorough cleaning. 3. Use of water screens in place of the present water spray. 4. Adoption of the new improved more powerful intake fan. 5. Tentative introduction of air beneath members' seats. 6. More frequent removal for purposes of cleaning of the matting on the floor and elsewhere. 7. Placing the whole of the cleaning arrangements under one authority. 8. The appointment of a sanitary officer, under the Office of Works, to direct and superintend the ventilation of the House. 9. The institution of the inquiry into problems of ventilation still unsolved, with the view of introducing further improvements in the present system."

The evidence placed before the committee at some of its earlier meetings showed, the report says, that the condition of the committee-rooms, corridors and some other parts of the House was far less satisfactory than that of the Chamber itself. Since the committee began its labours, however, considerable improvement has been effected by the introduction of fans into the committee-rooms, and the worst of the evils previously complained of have been remedied. The inquiry recommended will, it is hoped, throw much light not only on the ventilation of the Chamber itself, but also on that of the committee-rooms and other parts of the House. Pending the results of that inquiry, the committee are not prepared to make any recommendations in respect to the latter, except so far as to advise that the introduction of fans, which they say should be, if possible, noiseless fans, should be extended. They add that no system of ventilation of the Chamber and its adjuncts can

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duce satisfactory results unless the working of the system is accompanied and supported by a thorough, systematic frequent cleaning of all parts of the Chamber and its contents. It is also obvious that no such cleaning can be thorough and effective unless it is carried out under the direction and superintendence of one responsible authority. In view of the health and comfort of the members, no expense should be spared in making that cleaning as effective as possible, and in repeating the necessary operations as frequently as is desirable. The day's dirt ought to be removed every day, and more complete purification ought to be carried out when the House is not sitting. Every system of ventilation, however apparently good, needs constant watching, in order that its efficiency may be measured and its shortcomings detected. Moreover, the knowledge of ventilation, though distinctly progressing, is far from being perfect, and the experience which might be gained by the careful and continuous observation of what takes place in attempting to ventilate a building as the House may confidently be expected to furnish further improvements in the future. The committee, therefore, while recognising the valuable services rendered by the present staff from an engineering point of view, recommend that there should be also a sanitary officer of recognised scientific knowledge and experience. It would be the duty of such an officer to watch over the ventilation of the House, to make such observations, and even experiments, as may seem desirable to ascertain how far the system is working satisfactorily, to make such recommendations as may seem to him necessary or desirable, and to advise generally on the ventilation of the House.

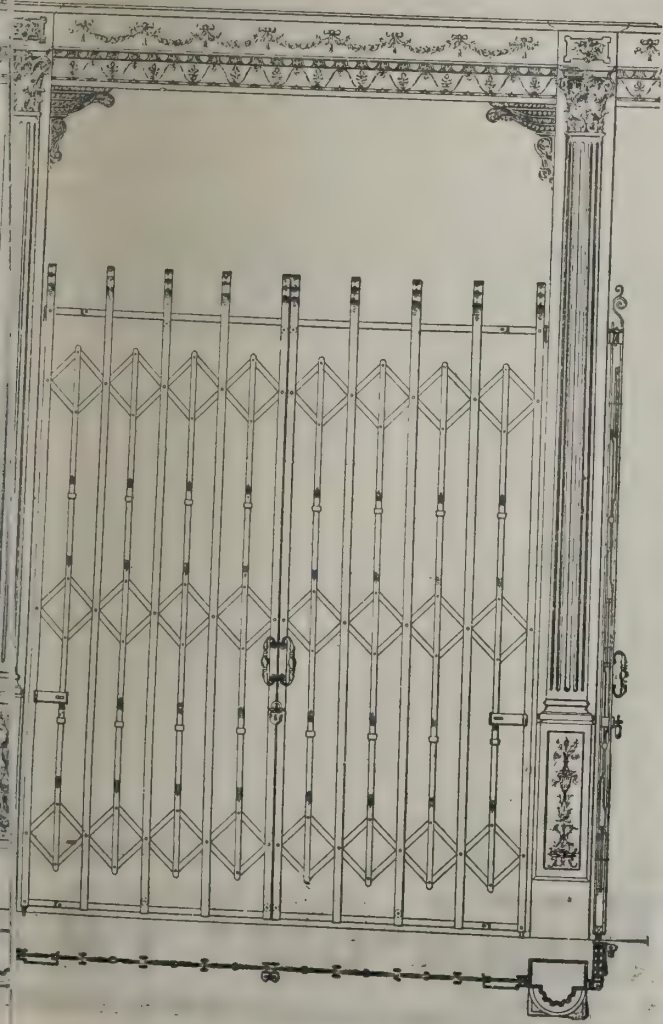
CALIFORNIAN REDWOOD.

The Foreign Office has just issued a report from the Consul-General at San Francisco in which he states that a new demand has sprung up for redwood, a material which California alone can supply. It has been discovered by the chief engineer of the Niagara Falls Power Company that, under certain conditions, which rule in connection with that enterprise, the hardest wood is inferior in resisting power to California redwood. The company sent an agent here to obtain figures for furnishing several million feet of the local lumber for one of the great works at Niagara Falls. It appears that the engineer-in-charge of the Niagara Falls Power Company had recommended

that redwood should be employed instead of steel for a great tunnel to be constructed this summer. The reason given for the preference for the California wood was that when water passed over it continuously there formed a surface of soapy and pasty nature which was proof against corrosion, whereas in the case of steel the particles of sand and matter carried with great velocity from the Niagara River cut into and destroyed the steel in an incredibly short space of time. The Redwood Association was asked if it could furnish 3,000,000 feet of redwood for delivery in Buffalo in July next, and gave an affirmative reply. The redwood lumber to be supplied for the Niagara power tunnel is to be 3 inches by 8 inches, and to be set on the narrow end, the length to be from 12 to 20 feet. Redwood has been found exceedingly useful in the construction of the big pipes used for the conveyance of water to many of the electric-power houses in the northern part of the State. These pipes are built up and banded. They cost less than metal pipes, are more durable, and are more easily carried around the sharp curves followed by these great water lines. It will outlive all other woods when kept constantly moist. While it is not non-combustible, which quality some enthusiasts have erroneously ascribed to it, it burns much more slowly than any other kind of timber used for building purposes, as it contains no inflammable oil or resin. While it is not desirable to be used as a fire wall, the resistance it offers to the inroads of fire has been the salvation of many dwellings constructed with it. The discarded stumps of redwood felled for their lumber many years since have come into favour for the manufacture of furniture and the interior decorations of buildings, the curled grain making beautiful figures, and the wood itself taking a fine polish. Just at present California redwood is in great demand in the East, partly because the forests in that section have become exhausted, but chiefly because of the variety of uses to which it can be profitably put.

PRESERVATION OF TIMBER.

THE subject of "Timber-Treating Plants," with especial reference to railway ties, was treated by Mr. W. W. Curtis before the American Society of Engineers on May 20. Attention was called to the fact that, although the subject of timber preservation had been before the public for a great number of



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years, it had received but little consideration until recently, due, no doubt, to the fact that the timber supply seemed inexhaustible. As time passed on new sources of supply were made available at former rates, because of new methods of merchandising and cheaper rates of transportation. Then too the actual results to be obtained from such treatment were either unknown or disputed. As such treatment is necessarily somewhat expensive in first cost, it was not used by such managements as were desirous of making a good showing for the moment. To-day, however, conditions are different. The value of such treatment is recognised, as may be inferred from the fact that the number of ties to be treated in the present year will probably equal the product of the last twelve years.

As might be expected, several processes are in use. One of the oldest, and also one of the cheapest, is burnettising, or the injection of zinc chloride. Good results are accomplished by this method, but it is open to the objection that the salts being soluble after a time are dissolved out of the timber, so that when the amount remaining becomes less than a certain minimum, fungus life can begin its work anew. A condition for good results with this method especially, as well as with others, is the thoroughly drying of the ties after treatment, and the placing of these in a well-drained road bed.

Another method is the Wellhouse or zinc-tannin treatment. This to some extent overcomes the objections to the former process by sealing up the ducts in the timber by means of injections of glue and tannin following that of the chloride. Doubt has been expressed of late as to the additional life secured by the glue and tannin being equivalent in value to the additional cost of the treatment. As the additional cost of this method as compared with the former is but 3 cents per tie, it would seem that a small increase in the life of the tie would warrant the additional expense, each year's life of the same being estimated at a value of 5 cents.

Still another method which is in use at the present time is that of the zinc creosote treatment. As creosote is the best timber preservative known, it would naturally be expected that any treatment in which this is employed would be an improvement. In regular creosoting such a large amount is absorbed in obtaining a distribution sufficient to have any value that the cost for the oil alone in the case of a 6-inch by 8-inch tie amounts to 30 cents on the basis of 12 pounds per cubic foot and a cost of 1 cent per pound for the oil. This at present is generally considered prohibitive, although a life of twenty years can be expected as the result of such treatment, provided

the ties do not cut out before this time. To overcome this difficulty several methods are used in which a combination of creosote and zinc chloride is employed. The zinc-creosote treatment undoubtedly is of great value, and in Mr. Curtis's judgment superior to most of the other methods employed.

A fourth method employed is the Hasselman process. This consists in the boiling of the timber in a solution of several substances, the principal one being sulphate of iron. A record of efficiency by this process has not as yet been definitely established, although it is no doubt the cheapest method that can be employed.

The cost of treatment per cubic foot by the various methods not including any charges for profit, depreciation or interest varies from 3½ cents for burnettising, 5 cents for zinc-tannin and 7½ cents for zinc-creosote, to 15 cents for creosote on the basis of 12 lbs. to the cubic foot. Although it may not be possible to determine which particular treatment is the most profitable, it is safe to say that whenever an inferior tie can be purchased and treated by any one of the processes, and then cost no more than a white oak or other first-class tie, the adoption of the treatment is justified.

Mr. Curtis then described a plant recently erected. Such a plant, to be of the greatest value, should be so arranged that any process which may be developed in the future may be used. The description included the proper method of handling the ties, both before and after treatment. The requisites of a plant proper, as regards the machinery required, was outlined, including the cylinders in which the timber is treated, the means of generating the steam used for steaming the timber, the condensers and air-pumps for creating a vacuum in the cylinders, and such pumps as are required for transferring a fluid used in the treatment from cylinders to storage tanks *vice versa*, and also for supplying a pressure for forcing a fluid into the timber.

In the discussion which followed the paper, it was brought out that only such treatment as caused the fluid to penetrate all parts of the timber was of value, although several compounds for external application which are being advertised might be of benefit in certain special places, where timbers were exposed to very humid air or similar conditions. Very little data has been obtained as to the effect of treatment on the strength of timbers, the holding power of spikes or similar details. Another fact brought out by the discussion was the destruction of the tie, not by decay, but rather by cutting out, in the case of treated timbers.

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HUGH DORRIAN, Yacht Builder.
Nonsquarter, Kirkeubbin, Co. Down, June 24, 1901.

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I have had it used at Sandringham for H.M. the King and found it most satisfactory. It was used on some large additions last year.

C. SMEDLEY BECK, Architect.
11a, Prince of Wales Road, Norwich, Jan. 21, 1903.

ARCHITECT.

I am exceedingly pleased with the result of the Velure I had last year. Our doors look and feel like ivory, and show every appearance of great durability. I find that they keep very clean, and do not take the dirt.

A. B. PURDIE, F.R.I.B.A.
Meadow Grange, Blean, near Canterbury, Jan. 2, 1902.

IN A STEAM DISINFECTOR.

I am pleased to state that the Velure has been a perfect success so far. It has been subjected to great heat, steam pressure, and withstood the expansion and contraction of the iron, and there are no cracks or flaws to be found, the surface being perfect. It was applied by unskilled labour, the hospital porter doing the work.

J. BROOK, S.I.C., A.S.I., Surveyor, R.D.C.,
Stratford-on-Avon, 5th December, 1902.

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JOHN MACKENZIE, Sail Maker.
Sandbank, Argyllshire, Sept. 26, 1901.

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HEAT OR DAMP, WITHOUT CRACK OR BLISTER.

JOINTS OF DRAINS.

ONE of the papers read at the Sanitary Congress, Bradford, related to "Cement Joints in Drains and Drain-testing." Mr. James G. D. Armstrong, the author, said:—

It has been patent to me for many years that cement joints in stoneware drain pipes fail to maintain their power of standing both or either the smoke and hydraulic tests, and this sometimes soon after the laying of the drains, and sometimes after a considerable lapse of time. As a rule, however, I find that failures can be traced to either the materials being at fault or the method of laying.

[I have often found the flanges of pipes cracked after the water test has been applied, and even before filling in the trenches, and at other times months afterwards when the pipes were "bared" for connections. These failures—notwithstanding the drains have been tested by water and found watertight at the time of construction—are due to one or other of the following causes, viz:—

1. Swelling of the cement in the joint.
2. Uneven expansion of the concrete bed, especially if made of hot cement or ground or lias lime, and not of equal fineness, as when deep holes are filled up in the bottom of the trench or in large "hand-holes"—the expansion lifts the pipes from their bed.

3. Uneven settlement of the bed, causing deflection of the jointing joints.

4. Uneven or careless filling-in of the trench, or workmen treading on or knocking the pipes, or by debris falling, &c.

5. Testing or filling-in the trenches before the cement is thoroughly hard.

6. Contraction of the cement in the joints.

7. Failure of the joint to stand the pressure, excepting, of course, the jointing material.

Causes 1, 2 and 6 are due entirely to the quality of the materials at the time of using or to their wrong manipulation. Causes 3, 4, 5 and 7 are due to a lack of the thoroughly practical and theoretical knowledge of Portland cement which is absolutely necessary that no failure may arise from the material. In this short note a complete specification of the material cannot be given, but suffice it to say it should be free for contraction, expansion, adhesion, disintegration (by boiling for twenty-four hours after parts have been made for twenty-four hours), specific gravity, which should be about 3.1

—weight per bushel is an unreliable guide—also whether it contains free lime or free gypsum; then further for ensile strain, which should be not less than 500 lbs per square inch, at seven days the briquettes being mixed up as stiff as possible and "thumbed" into the moulds; and lastly, but perhaps the most important, its fineness, 80 per cent. of which shall pass through a sieve having 32,400 (thirty-two thousand four hundred) holes per square inch, and the whole through a sieve of 2,500 (two thousand five hundred) holes per square inch. If not very finely ground it may expand months after using, thereby cracking the flanges or loosening the key between the pipe and the cement.

Cause 2.—I do not agree with the use of hot lime being used for foundations owing to its expansion; so far as lime is concerned it should rank in the same category as clay joints. Cement only should be used.

Cause 4.—As to this, probably more failures in drains found by retesting arise from these faults than any other, and "carefulness" alone is the remedy, and the same applies to clause 5, both respecting filling and testing.

The thoughts—on reflection—of failures under 4 and 5 depict a gruesome picture in the face of modern science, and the British workman, who is generally employed to put in drains. Trench excavated—much too narrow—pipes laid and jointed—men very careful—inspector tests by water—the inspector in a hurry—drains full, ten minutes—inspector says "fill in" and goes—the water let out—workman returns to fill in—treads on pipes—"onward march" his only thought—filling begins—"filling bumps" on pipes—ramming begins—shaken joints—trench filled, all, perhaps, in twenty-four hours, especially if a quick-setting cement be used—a most dangerous and expanding material. Oh that it were not true, and more so where drains are inspected and approved by inspectors to local authorities. Yet we have to often retest such work with only one result—failure to hold water.

Have any persons in this audience or any other person ever heard of a local authority that has power, and that insists upon testing private builders' cement used for drains, or is there one authority that insists upon testing the drainage of a building by water after everything is completed, and all external forces and weights have found their permanent bearing? I know none, not even one, nor any statutory power.

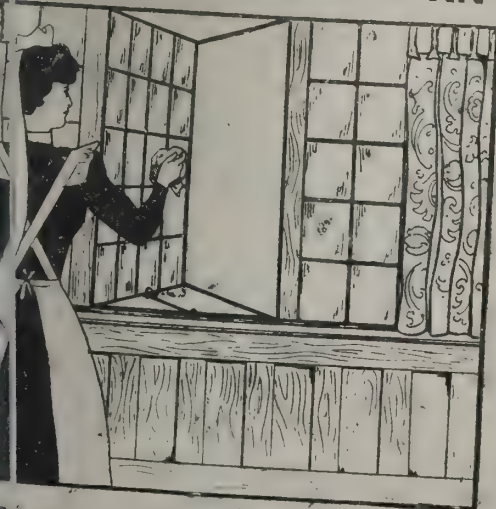
Cause 7 applies in many cases—

(a) From improper form of joint.

(b) From the sockets and spigots of the pipes being so

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highly glazed as not to form a proper surface to allow the cement and pipe to thoroughly adhere to make a permanent water-tight joint.

The only cement joint I know that will stand satisfactorily the water-test is this, *i.e.* the cement should be keyed at both ends, as at A and B, the whole space in the joint being filled in with cement without gaskin or other material, and my personal experience also proves that no sand should be used. The most important point at which the joint should be perfect is at A—*i.e.* between the end of the spigot and the bottom of the socket, a fact which is overlooked by many engineers who use or specify gaskin, &c. When the pipes are being glazed in the kilns they are stacked on end one on top of another, and where the socket and spigot touch the surfaces are unglazed, forming a natural key for the cement. If from careless stacking the ends are glazed they should be chipped.

Joints made with gaskin should be strongly opposed:—
(1) Because they disallow the most important part of the joint; (2) because they allow of a large amount of play in the line of pipes, allowing the pipes to "sag," thus breaking the seal between the glaze and the joint; (3) because they allow of inferior workmen making the joints; (4) because they will not stand any pressure, especially if subject to vibration.

Joints made with cement should be absolutely free and rigid, and drains with cement joints should be laid on a foundation which has no possibility of yielding or uneven settlement if it is intended they should remain watertight. If concrete be used it should be very fine, no part to exceed a $\frac{3}{4}$ -inch ring gauged about 6 to 1 of Portland cement (or stronger, according to soil), and should contain sufficient sand to cause it to consolidate in a solid mass around the pipes—in fact, to form a concrete pipe outside the stoneware pipe.

When recently removing some old drains where gaskin had been used and then the joints "collared" with cement, I found the collars in some places loose, and in others a little pressure enabled me to withdraw the spigots from the sockets. I have also found the same result where the part of the joint between end of spigot and socket has not been full but no gaskin used. It is not to be wondered at when the only seal is between the glaze and the cement.

When the cement used has been of the proper quality, I have no hesitation in saying that very many of the "failures" found upon retesting arise from the breaking of the seal or cohesion between this glazed surface and the cement, and this may arise from many causes tending to alter the position of the

pipes after first making the joint, either before the cement is permanently hard or at any future time, or from the contraction of the cement. It is most imperative that no cement be used for drains which show any signs of contraction, and that a little water as possible be used in its manipulation. These facts are proved by careful observation, which shows that the water oozes out between the cement and the pipe.

Some authorities assert that expansion and contraction in the length of drain causes failure, but I have no personal knowledge of such a result and cannot in any way conceive how the temperature in a sewer can so affect stoneware and cement. Perhaps this idea has been conceived along with the invention of elastic joints, such as mastic, but I cannot accept the theory without proof, which at present I cannot find. With a long stretch of imagination, I might figure some would-be sanitarian put expansion joints on a 4-inch cast-iron drain mile long.

To avoid several of these failures many patent joints have been produced, the chief principle in which is having some jointing material of an elastic nature, such as pitch or putty in positions. Some are very satisfactory if used in connection with cement. There is no gainsaying but that they are "avoidances," not "remedies." Cement-jointed drains are not too well established to be altered from general use; it would almost if not absolutely require an Act of Parliament. Grant this hypothesis, we have to try and make them perfect without resort to patent joints or patent pipes. How can this be done?

1. By having a perfectly rigid foundation or bed. The one way to obtain this is by levelling up on rock with suitable cement concrete, or in other soils by a sufficiently thick bed of Portland cement concrete, which should be thoroughly hardened and set before laying the pipes.

2. By carefully testing the cement to find its qualities, and selecting suitable material.

3. By instructing workmen, and employing only those who can be relied upon to properly manipulate the materials, and who thoroughly understand the causes which produce failure, not only at first testing, but at future tests in years to come.

4. By pipe manufacturers sending out pipes whose spigots and sockets are not glazed, the glazing of which can be materially altered by proper stacking in the "salt kiln."

5. By engineers, architects and local authorities clearly specifying, in detail, not only what has to be done, but pointing out what has to be avoided.



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The Architect.

THE WEEK.

THE London School Board originally obtained designs for buildings through competition. Then Mr. E. R. ROBSON was appointed architect. Afterwards he was selected as consulting architect to the Education Office. On Tuesday, in the House of Commons, Mr. LAMBERT, the member for South Molton, asked the Secretary to the Board of Education what length of time Mr. ROBSON had served as consulting architect to the Board of Education; whether he had received notice that his services would be terminated on September 30; was such notice due to his incompetence, or not, what was the reason for it; and whether, in view of appeals permitted by the Education Act to be made by the denominational managers to the Board of Education, he could take steps to secure that the highest expert assistance would continue to be at the service of the Board. Sir W. ROBSON, in reply, said that Mr. ROBSON has been engaged for eighteen and a half years as consulting architect to the Board of Education. His engagement will terminate on September 30. No question of the competency of Mr. ROBSON is involved. The Board of Education are making new arrangements to meet new conditions, and will, of course, take care that they are properly provided with expert assistance in the matters to which the question refers. We may assume that under the new conditions the office of consulting architect will for a time at least be onerous. In great many places the condition of the schools has fallen below the normal level, and the new authorities do not appear to be eager to approve of the expenditure which is necessary.

ALTHOUGH France is carrying out rigorous laws against religious orders, there is no intimation of any danger impending on the ancient cathedrals and churches. The elevation of M. BOESWILLWALD to the rank of officer in the Legion of Honour could be taken as evidence that in the official world enthusiasm for Gothic buildings is regarded as praiseworthy. His name has been long associated with the style, and he is known as the Gothic Pontiff. An architect of distinction, M. BOESWILLWALD is one of the professors of the Ecole des Beaux-Arts. But he holds a more important office, that of Inspector-General of Historic Monuments. As such he is visiting physician for every ancient church. Among his restorations was the great church of Carcassonne, which dates from the beginning of the twelfth century, and exemplifies the improvements which the Crusaders derived from Syria. It stands on the site of a Roman castellum, and among those who were engaged in its construction were SIMON DE MONTFORT and SAINT LOUIS. VIOLLET-LE-DUC wrote a treatise on the buildings, and M. BOESWILLWALD, who is supposed to inherit that artist's mantle, was charged with the restoration, which is recognised as successful.

New rules and regulations will have to be observed by candidates for admission to the schools of the Royal Academy in January. Candidates in the departments of painting, sculpture and architecture must be recommended by some artist, architect, or person of known respectability, and must submit, together with such recommendation, specimens of their work according to a prescribed schedule. These are deemed satisfactory the candidates will be summoned to attend on a fixed day at the Academy, and here have to pass a prolonged examination. Painters (e.g.) have to paint a head from the life in six days of four hours each; to make a drawing 2 feet high in six days of two hours each; and to make a design, from a subject set by the Keeper, in one day of 6½ hours. The tests for sculptors and architects will be equally severe. Candidates will also have to pass an examination in anatomy and perspective, or, if architects, in perspective and the history of architecture. Successful candidates will be admitted as students for three years, to be prolonged to five years on their passing a further examination. Gold and silver scholarships, of 40% each, for one year, will be given to the best candidates in painting and sculpture.

It will be remembered that a bridge at Uckfield collapsed in last May causing much inconvenience to people in the district. There is no doubt a new structure which would be capable of accommodating the increased traffic is desirable. But the cost would be about 25,000%, if not more. To raise so much money is not easy. The County Council, it appears, would be acting legally if they set up a similar bridge to that which fell, the cost being not more than 750%. It is considered that the local authorities should raise at least 5,000% towards a better bridge. The railway company would also gain by the improvement, but for the present they are judiciously silent, as if they considered the work was one which does not concern them. There is consequently an imbroglio which is caused by astute action all round. No more can be done at present than to obtain from the county surveyor, Mr. F. J. WOOD, plans and estimates for a wider Uckfield Bridge, and by the time they are ready there may be some agreement between the different parties interested in the improvement.

ARTISTS are always pleased when they see the labels on their pictures and drawings which are signs of "Sold." It is human to err, and supposing a label was affixed in mistake, can the artist claim compensation? A case of the kind was heard recently for the first time in the Westminster county court. Mr. G. C. HAITÉ claimed fifteen guineas damages from the Continental Gallery, Ltd., under the following circumstances. The London Sketch Club, of which he is a member, held an exhibition in the gallery, and it was arranged that 25 per cent. would be paid as commission to the proprietors. One of plaintiff's pictures was priced at eighteen guineas, but he agreed to accept fifteen guineas, and it was then marked "Sold." Afterwards it was found there was no buyer, the label having been affixed in error. The judge said Mr. HAITÉ was deprived of his chance of disposing of the picture, because it was supposed to be already sold. It was, no doubt, a mistake. But he considered damage was sustained, and judgment was therefore given for six guineas with costs, the property in the picture remaining with the artist.

UP to the time of the French Revolution Strasburg possessed a university, the Academy having been elevated to that rank by the Emperor FERDINAND II. in 1621. When Strasburg once more became part of Germany, after the war of 1870, one of the first acts of the municipal authority was to revive the university. This was a wise stroke in a political sense, and it was carried out in a manner which deserves all praise. A new district was created in which the university buildings are dominant, and from its position and character a stranger might easily suppose that the Emperor's residence was no more than one of them. As an institution the university may be said to be laid out on the most modern lines in order to be adapted to the requirements of our time. Care was taken, however, to provide means by which the university would be made to have those relations with the past which are always a necessity, if the tradition of civilisation is to be preserved. Ancient literature is as well represented in the libraries as in one of the old institutions. In the explorations which Germany has undertaken in various regions the claims of Strasburg have not been forgotten. Among other endowments, it has obtained rolls of papyri. One found at Oxyrhynchus, in Egypt, contains a large part of the "Iliad." This enables a comparison to be made with similar copies of other portions of the same poem. Professor REITZENSTEIN has been able to prepare an edition of the first book, and Professor PLASBERG has produced a version from another papyrus. They show the changes which the Greek language had undergone by the second century of our era. Various explanations are given, and the publications will be found to have great interest for philologists. What, perhaps, is most remarkable is the circumstance that HOMER once more asserts his binding influence between the old world and the new. We see in one of the latest educational institutions representing the close of the nineteenth century the text of the poet scrutinised with more exactitude than was possible with the Italians of the Renaissance, to whom the "Iliad" seemed almost as if it were a Divine revelation.

PAUL CHENAVARD.

ANYONE who is disposed to meditate on the mutability of things cannot find a more fruitful subject than the Panthéon at Paris. The name itself now sounds satirical, for the most ardent revolutionist could hardly consider the heroes of the first republic as gods. All the inscription tells us, it must be allowed, is that they were great men, "Aux grands hommes la patrie reconnaissante." When Louis XV. laid the foundation-stone of one of the piers of the dome, the building was to be a church. SOUFFLOT was the architect, and it may be remarked that jealousy was excited against him because the king condescended to perform the ceremony. In the course of the construction the walls exhibited signs of settlement. It was necessary to make many repairs, but in 1797 there were no less than 367 cracks to be counted. When the republican government resolved that the church was to be called the Panthéon and to serve as a souvenir of illustrious citizens, there was no doubt they were apprehensive of its failure in endurance. Men of science as well as architects were engaged in proposing remedies which would prevent a collapse.

On the restoration of the Monarchy the building was adapted to its original purpose, and an inscription was set up stating that it was dedicated by Louis XV. and restored (in an ecclesiastical sense) by Louis XVIII. The revolution of 1830 brought back not only the name Panthéon, but the intention of the revolutionists. In 1851 it became a church for a second time, and in 1885 it was once more converted into a Panthéon, in order that it might be used to contain the remains of VICTOR HUGO.

The decoration of the building corresponded with its alternate uses. The pediment is filled with sculpture by DAVID D'ANGERS, which has for subject France awarding laurel crowns to her great men. On one side Liberty bestows the wreaths, and on the other History records the names of the recipients. In the interior the dome displays a painting by GROS, *The Apotheosis of Saint Genevieve*. The lower pendentives or spandrels are filled with allegorical figures relating to NAPOLEON by GERARD. All the world is aware that the walls of the building are decorated by paintings, some of which illustrate the history of the saint who is the patroness of the city, while others represent various historical incidents. The pictures of PUVIS DE CHAVANNES, JEAN PAUL LAURENS, HENRI LEVY, LENEVEU, GALLAND, CABANEL, BONNAT and others are among the most remarkable of modern works. But few of the visitors, whether Frenchmen or strangers, who examine them are able to recall that they also exemplify the mutability which is inseparable from the building. For, if one noble scheme of decoration which was approved and adopted had been carried out, none of those modern paintings would have been undertaken. The majority among them are suggestive of ecclesiastical events, but the project which we are about to describe was of a different kind. Instead of the history of France it would have suggested the history of the world, with the First Revolution as the climax. The scheme is now forgotten, but it was undertaken by a great artist, and he had to bear all the consequences of its renunciation.

Our readers will remember that we published lately an engraving of the bronze relief which is in the French Chambre, and has for subject the visit of the Marquis DE DREUX-BRÉZÉ to the Constituent Assembly, when he was rebuked by MIRABEAU. As far back as 1833 the incident was proposed in a national competition for a great picture to be placed in the same hall. PAUL CHENAVARD, a native of Lyons and a member of a family of artists, who was then in his twenty-fifth year, sent in a design which would have gained the prize if the voting of the competitors was accepted. He was not successful, and the picture for the French Parliament House was never executed. Afterwards he exhibited another design which represented the scene in the Convention when the fate of Louis XVI. was decided. LOUIS PHILIPPE was annoyed when he saw it in the Salon, for in the grouping, his father, the treacherous PHILIPPE D'EGALITÉ, appeared between MARAT and SANTERRE, the brewer. The king ordered the removal of the design from the exhibition. CHENAVARD realised there was no likelihood of success for an artist who was loyal to revolutionary principles. But he was confident his hour would come, and he left France in order that he might

equip himself for one colossal work. His dream was to decorate the walls of the Panthéon, which in 1833 was no longer a church, and he was desirous to master the secret of all the great masters in Europe before he attempted to realise it. He spent fifteen years in the study. Then his preparatory toil was interrupted by the breaking out of the French Revolution of 1848 and the flight of the king. The painter joyfully returned to France. He explained his projects to LEDRU-ROLLIN, the Minister of the Interior, and it was resolved that the enterprise should be undertaken. He was promised a sum of 30,000 francs towards the expense of preparing his preliminary studies, but received only 16,000, or little more than half.

What is remarkable is not the extent of the contribution but the novelty of accepting CHENAVARD'S project. It related not to the history of Paris or even of France, but to the whole history of the world. The artist had become acquainted with the unfinished work of HERDER'S called "Ideas about the Philosophy and History of Mankind," which GOETHE considered was the best of the author's numerous works. To obtain his ideas HERDER was compelled to study Eastern as well as European literature. The task was so onerous, it is little wonder he was described as having Indian life-weariness as well as Hellenic youthfulness in his thoughts. He endeavoured to make out national and racial differences as having slight importance, and tried to represent humanity as a whole passing through various stages in order to attain a destiny which had yet to be revealed. With so vast an ambition HERDER could scarcely fail to be hazy. But his ideas are inspiring to some minds, and CHENAVARD'S was one of them. It was his purpose to convey HERDER'S leading ideas to Frenchmen as far as was practicable by means of the pencil.

The French people were then devoid of ambition to grapple with cosmopolite subjects, and least of all under the guise of art. Since 1848 they have obtained colonies and organised international exhibitions, but a universe which the French race did not play a prominent part in was little interest to them. They hold on by Rome, for they claim a relationship with the old masters of the world, at Greece on account of its arts and literature obtains some sympathy from them. But under no circumstances could the history of Greece be allowed to supplant the history of France.

M. CHENAVARD, after receiving the promise of his commission, set to work in developing his designs with enthusiasm that overmastered him. He intended to place on the walls of the Panthéon fifty grand subjects. He prepared eighteen of them, each being 11 feet by 15 feet and each sufficiently indicating the accuracy of detail to be expected from a pupil of INGRES. The titles of the completed compositions were as follows:—*Philosophy, History, Hell, Purgatory, Paradise, the Beginnings of Rome, Junius Brutus, Siege of Carthage, the Rubicon, Death of Cato and Brutus, End of the Roman Republic, Time of Augustus, Birth of Our Saviour, His Teaching, His Passion, the Christians in the Catacombs, Time of Attila, the Crusades, Luther at Wittenberg, Time of Louis XIV.* Although the whole of his scheme was not fully exemplified, it will be perceived that the subjects selected were closely connected with the history of civilization. The cartoons were drawn in black crayon. Some critics considered that the artist's genius was killed by an excess of study. We have said that he travelled to all the chief cities of Europe (including London) in order to examine pictures, and there was not a detail of any of the masterpieces with which he was unacquainted. His pictures by themselves were inadequate, he believed, to enable him to unfold the history of humanity on the walls of the Panthéon. He supplemented that diligence by poring over books on history, philosophy and theology, and he sought intimacy with those of his countrymen who were competent to discuss such subjects with him. As he used to say, "I will remain in my shell until I attain the wings of an eagle."

All his labours were unfortunately fruitless. The Republic had been transformed into an Empire, and LOUIS NAPOLEON was not disposed to insure that a commission given by LEDRU-ROLLIN should be faithfully fulfilled. The Panthéon was again used for religious services, and the *Siege of Carthage, the Rubicon, Luther at Wittenberg*

and the *Siècle Louis XIV.* could hardly be considered to be aids to devotion. His great cartoons became the property of the State, and some of them have found their way to the musée of the artist's native city. They cost France not more than 40¢ apiece. It was the intention of the artist to have his composition surmounted by a great frieze in which would appear the principal personages seen in action in the large paintings. Scenes like *Hell, Purgatory* and *Paradise* were to be circular mosaics. Some of the same form were also to represent abstractions, such as the development of Action and the Idea.

Although he had studied German literature, CHENAVARD did not forget the limits which divide writing from painting. He is said to have often expressed regret that he could not put more of HERDER's conclusions on canvas, but he was never tempted to go outside the province of painting. He is always objective, never subjective. In that way, although inspired by a German, he avoided all imitation of the methods of German painters. The conclusion that he derived from the study of the art of all schools was that the Italian was best adapted to monumental painting, and he worked as if he were to the manner born.

There were other designs on a smaller scale which were to be part of the decoration. Among them may be named the *Deluge*, the *Judging of Egyptian Kings after Death*, the *Death of Zoroaster*, the *Trojan War*, the *Death of Socrates* and the *Decameron*, in which the chief Italian poets are introduced. Probably, if the Emperor had endorsed his commission, PAUL CHENAVARD would have introduced several alterations in the subjects. It is an onerous task to devise a plan for the decoration of an immense building like the Panthéon. The attempts which were made to effect the decoration of the dome of St. Paul's suggest that even a part of a building may present difficulties which are insuperable. When mural decorations for the English Houses of Parliament were proposed, historians, ministers and others were summoned to the aid of the artists, and it cannot be now said that if all that was proposed was carried out, the result would be satisfactory. The connection between the different paintings could not always be manifest. Large allowances must therefore be made for CHENAVARD's scheme, which was produced in two or three years, although it had been the object of meditation for more than twenty.

We suppose the failure to realise it was partly owing to the acknowledgment which CHENAVARD made of his indebtedness to HERDER. If he had announced that his inspiration was derived from BOSSUET's noble discourse on universal history there would have been more likelihood of success. Although at the time there was talk about the brotherhood of nations, it was not probable the French would approve of the decoration of one of the buildings they most prized in such a way as would make them appear indebted to a German. HERDER was intellectually a citizen of the world; for a man who investigated Hebrew poetry and the popular songs of many countries, and was absorbed in the idea of universal man, could hardly be regarded as a Prussian. His thoughts were as much occupied with Eastern subjects as with those of Germany, and he deserves from his unworldliness to be considered as if he belonged to another sphere. But although Frenchmen occasionally, like BÉRANGER, talk about the holy alliance of peoples, their statesmen will never approve of such an extension of fraternity until the millennium arises.

After the failure to obtain authority from the Imperial Government to carry out his designs, CHENAVARD, like any other artist, returned to Rome, which is the recognised and most fitting refuge for men of great ambition who have suffered shipwreck in their schemes. He took up his abode in a humble house in the Transtevere. EDMOND BLAUNT remarked that CHENAVARD's head seemed to be cut out of a block of marble. It was large and powerful, and embodied all the exterior characteristics of genius. The brothers GONCOURT, who visited him in Rome in 1867, said that he had the head of an antique philosopher, on which was imprinted the sadness of old artists whose hopes are vanished. He was a great talker, but his voice, by its softness, suggested his position. They walked out together to see some of the ruins of Rome, and the painter spoke of his past as if the struggle had been victorious. He was not alone, and others agreed with him, that he was destined

to be the renovator of contemporary art, and the impression the conversation made on the visitors was a melancholy blacker than any aroused by the ruins among which they had wandered. A couple of years afterwards CHENAVARD proved he was still alive and able by entering as a competitor for a prize of 4,000¢ offered by the French Government. His design is in the Luxembourg, and it shows that his power was undiminished. But the Empire was then tottering, and art could not prop it.

There was no modern artist who was so sacrificing of himself in order to obtain fame. Unfortunately his genius is only exhibited in cartoons and in drawings. He was not as fortunate as COUTURE, who, although no less neglected, throughout his life, produced the *Decadence of the Romans*, which is in itself enough to prove his right to be considered as one of the potentates of the French school. France is always supposed to encourage her artists, and occasionally pictures are purchased for public galleries for sums far below their value. But the expenditure of 16,000 francs on a genius like CHENAVARD proves that cases can arise when the loftiest aspirations and unquestioned competency are unable to obtain recognition. He wished to become a painter of epic works, and by looking to the Government as his only patron he failed to gain the rewards acquired by far humbler men who simply sought to please the public.

If his designs were executed there would be more unity displayed on the walls of the Panthéon than at present. On the other hand, it was not to be expected that the treatment would be perfect if so large an undertaking had to be carried out by one artist. MASSON's series of paintings at the Invalides are not encouraging to those who wish unity should be supreme. At present the variety of the paintings is in keeping with a building which has no definite purpose, and they are object lessons which suggest what is appropriate and the reverse in the pictorial adornment of buildings.

DIM RELIGIOUS LIGHT.

THE "dim religious light"—a phrase which MILTON made immortal—was supposed by him to be caused by the stained glass with which church windows were richly dight. His experience is believed to have been derived from visits to Old St. Paul's. It would be unfair to the great poet to imagine he was not acquainted with many other Gothic buildings in England. MILTON, and most of his contemporaries, may have found some inconvenience in Mediæval churches when they tried to read their prayer-books. The type employed was not always clear. Indeed, it has been advanced that the increased area of the window openings which characterises the Perpendicular style in England was mainly due to a desire to enable people to make use of printed pages during services. CAXTON did not appear in Westminster until the end of the fifteenth century, and large windows were to be observed in earlier buildings. One of the reasons for the change in size was the increased power of the artists, by which they were enabled to undertake elaborate pictorial subjects. There can also be no doubt there was a tendency to arrangements which allowed the introduction of white glass. But what is remarkable is that it preceded rather than followed the adoption of printed books. At an earlier time prayer-books were not unknown, but very few people in an English parish were able to purchase an illuminated Book of Hours, and there would be little use in lending one to them.

The dim religious light was, however, a very ancient characteristic of temples as well as churches. The old temples were looked on as shrines to be only entered by priests and favoured persons. The few legends which have come down to us about crazy devotees remaining in Greek temples during a night reveal by the circumstances described that the sanctuaries were vacant. Although it was considered a crime to abstract an object from a temple, yet there were too many treasures deposited in them to allow of unrestricted admission. The enclosures were jealously guarded, and the existence in some of an *opisthodomos*, or rear division, proves that precautions were taken for the preservation of valuable offerings. The Greeks or Romans could not possess strong-rooms like

those in a modern bank, because they had not attained the necessary mechanical skill. But as royal treasuries were sometimes lined with metal plates, we may be sure the gifts bestowed on the deities were no less securely protected against thieves. The lighting of Greek temples is a subject on which it would be absurd to be dogmatic, but the general impression which the references to them make on the mind of a modern student is that the interiors excited awe, and that effect was not likely to be produced with a strong light.

The earliest Christian places of worship are usually thought to have been the catacombs. Afterwards it is probable the meetings were held above ground, and it may have been in public gardens. But the tradition of gloom long continued to exert an influence in the church. When basilicas and other large halls were made available for Christian worship the openings for light were perhaps not always obscured. Other means were adopted. There are statements in early writers which are presumed to mean that curtains were drawn at certain parts of the service, and those who officiated were concealed from view. It has even been asserted that the iconostasis in the Greek churches, and the chancel arches and screens in some western churches, are survivals of the old arrangements to express a mystery. Those structures were equivalent to a darkening of the church. The crypts and "confessions" in Gothic and Romanesque churches also point to a period when darkness was held to be an auxiliary to religious emotions, and therefore to devotion. To recall the times of persecution when the faithful celebrated their rites in the catacombs or on the tombs of the martyrs, a cave was excavated under the altar, says DE CAUMONT, in which were deposited the remains of Christians who died in the odour of sanctity. In Gaul, according to the same authority, the early Christian converts worshipped either privately in their own houses or together in crypts and retired places. The only example which has survived is the crypt of St. Gervais at Rouen, which is said to date from the fourth century. In it the body of St. MILON was interred. The churches of the fifth century in France were believed to be not only large, but even magnificent. The windows, however, were small, not more than 3 or 4 feet in height and $1\frac{1}{2}$ foot or 2 feet in width.

In foreign countries, where the light was often oppressive, means were taken to guard against its ingress. The Greek houses were dark. Pompeii, which was a place for repose, does not add much to our knowledge of ancient fenestration. The recognised discomfort of the sun's beams is suggested in all the old Italian churches. Yet we suppose few travellers would hesitate to acknowledge the feeling of relief enjoyed on passing into one of them from the torrid streets. All our modern notions about the efficacy of light as a sanitary agent were unknown in former times. In DANTE we find expressions which suggest a dread even of the light of Paradise, for he admits

Not long could I endure the ardent glow;
Yet long enough to see sparks burst around,
Such as we see from red-hot iron flow.

His combination of light and heat is suggestive of discomfort, and the manner in which the southern people sought to temper the fierce light which prevailed for several months. In all such cases we must not judge by the standard to which we are accustomed. In our dull climate we can bear with an area of glass which would be oppressive to the eyes of an old Italian. Even in western hospitals the admission of light is not feared. But a Greek or an Italian who spent the greater part of the day out of doors considered semi-darkness as reposeful. The dim religious light of churches was grateful to him. There was no need to use a prayer-book. It was an advantage to have the ceremonies veiled, as it were, by cloudiness, and if he could not see the preacher he was at least able to hear him. It was, therefore, easy for the custom to arise by which small windows were more necessary for churches than for ordinary buildings. In course of time by the power of association their use became identified with ecclesiasticism. We should also remember that in all ages men of gloomy dispositions have considered their rightful place was among the clergy. To them churches destitute of ornament, in which light was barely visible, seemed to be

the best adapted to contain sinners who were obliged to listen to discourses in which men were to be moved to terror. According to some inquirers, BRUNELLESCHI was the first of the Italians who dared to abandon the Gothic devices for restricting light by opening windows which were free from obstacles, and which removed the old auxiliaries to mystery. The experiment was made at the beginning of the fifteenth century, and may thus be said to be almost contemporary with similar efforts in the north of Europe to facilitate the admission of light. Only in some of the buildings of Venice was the old Eastern and Gothic tradition preserved.

It is not necessary for us to trace the advancement in Gothic windows. Too often the subject is treated as if it signified only changes in the form of tracery. Narrow windows for several centuries prevailed in England. Light was obscured by means of columns and arches, and, as sometimes happened, the stonework was doubled for the sake of artistic effect, so that the window became a small arcade of one or two bays. It cannot be urged that any inconvenience was suffered by the congregations. The services corresponded with those in Italian and southern churches. People were able to take part in them without opening their eyes, and, indeed, in many representations of saints we see the eyes closed or downcast, as if devotion were best maintained in that way.

The people in general could not have been dissatisfied if there was obscurity in the churches. In their own houses they considered small windows possessed many advantages. In disturbed times they helped to make homes more easily defended. They were opened in the walls as near as possible to the ceilings so that entrance from without might not be facilitated. This is evident from CHAUCER's description, where surprise is expressed that a window was so low as to be at the level of a man's breast. The Miller in his tale says:—

He cometh to the carpenteres hous,
And stil he stante under the shot window,
Unto his brest it raught, it was so low.

In shops or booths which were on the level of the ground the openings could hardly be called windows. During the day there was no frame with glass, and at night a shutter on hinges, which was fastened to the ceiling, was let down for protection.

The desire for light shown by Perpendicular windows in churches, and in such buildings as St. Mary's Hall Coventry, was also exemplified in many of the great mansions. The openings were extended until at length they became almost excessive, for buildings ceased to present the appearance of solidity which at one time was considered necessary. WOTTON must have had the weakness in his mind when he warned his readers against making a house all eyes, like ARGOS. There was no par more expensive or more ruinous, he said, not only from being exposed to the violence of the weather but on account of the "different and unsociable pieces, as wood, iron, lead and glass, and those small and weak." WOTTON seemingly favoured allowing some darkness in churches, for devotion, he said more required collected than diffused spirits. His suggestion was not adopted. English churches for the reformation were slow in coming, but after MILTON's time, when there was a call for them, it was not reckoned necessary that the lighting in order to be religious should be dim. WREN's London churches, by their large windows, enable the citizens to read their prayer-books and hymn-books, as HOGARTH has recorded, the industrious apprentice at his master's daughter were able to read out of one small volume. A new symbol was created and light was revered as the "offspring of Heaven first-born" and the "bright effluence of bright essence increate," which could nowhere be more fittingly introduced than in churches.

A New Roman Catholic Mission has been opened at Benwell, a suburb of Newcastle. A site for a church, school, and presbytery has been secured, and pending their erection Divine service is held in a temporary iron building, which will be opened by the Bishop-coadjutor of Hexham and Newcastle on Saturday next (to-morrow).

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

THE fifty-fifth annual meeting of the Somersetshire Archæological and Natural History Society was held recently at Taunton. Mr. F. J. Fry, of Cricket St. Thomas, presided.

The annual report stated that since their last report forty-five new names had been added to the list of members. The loss by deaths and resignations had been thirty-three, and the total membership of the Society was 614. The balance of the general account at the end of 1901 was 113*l.* against the Society, and at the close of 1902 the adverse balance was 192*l.* The total cost of vol. xlviii. for 1902 had been 105*l.* The thanks of the Society were due to Colonel Sanford and Dr. Walter for illustrations. Since the last meeting their museum at Taunton Castle had been enriched by a large collection of natural history and other specimens, presented by Mr. C. Dillworth Fox, of Waikari, New Zealand. Consequent on the arrangement of the collections a substantial amount of work had been found to be necessary in the provision of additional cases and repairs. It had been further considered necessary for the preservation of the collections to provide for the warming of the building not included with the great hall in the original scheme. The estimated cost of this added to the adverse balance of last year 238*l.*, and the miscellaneous repairs would probably leave a total balance of some 340*l.* against the Society on the castle restoration account. An appeal for special subscriptions would be made next year. In connection with this year's meeting the Society had, through the kindness of one of its vice-presidents (Viscount Portman), conducted excavations extending over a period of two weeks at Castle Neroche, with a view of ascertaining the date of its construction. The Society's curator (Mr. H. St. George Gray) had been in charge of the work. The number of visitors to the museum during 1902 was 7,444, an increase of 47 per cent. on the previous year, due not only to the many improvements that had taken place, but from the fact of its being Coronation year and owing to the addition of the Walter collection.

The President in the course of his address said:—Our *vigilant opus*, our genial task, which I hope will afford much pleasure and interest, is to explore this neighbourhood. Somerset can boast of no clay tablets or cylinders, no baked bricks, with their imperishable record. We have no portraiture in stone of the old Somerset warriors, no beautiful terra-cotta reliefs such as those found at Susa, representing in blue, brown and yellow, as vivid as if they had come from the very but yesterday, Persian kings, priests and soldiers. But we have to be grateful that many invaluable documents, including the Saxon Chronicle and our Domesday Book, have escaped the ravages of time and the destroying hand of man, so that there are many old manuscripts which have still to be brought to light by antiquaries of the future. Amongst the most interesting historical associations with this part of Somerset are those connected with Charles I. and "King" Monmouth, and with Charles II., some of the villagers on the Somersetshire side of the Axe treasuring the memory of the flight of the king. Charles I. was twice in Chard—on July 24, 1645, when he lodged at the house of Mr. Bancroft, a London merchant, and again on September 23 with 10,000 horse and pieces of artillery. On the 20th of the month the king was at Lord Pawlett's at Hinton St. George. Chard had nothing to rue the day when, in 1685, Monmouth marched through the town, for did not Jefferies hang some twelve or more citizens after the Bloody Assize? In connection with Monmouth I may quote an interesting entry in 1685 in the registers of the church at Membury, on the Devonshire side of the border, which we are intending to visit to-day:—"John and Anne Diskett (?) were married by Vicar Crabb, the 11th June, the very day the traitor Monmouth and his rebels landed at Lyme regis the weddings were then out, and the people would wear no surplice a great irregularity, if not the able signs of a phanaticke, similis (?) simili gaudet." The aim of our Society is to illustrate the history of the past, and also calls our attention to the lessons which nature in various forms of beauty and life so prodigally provides for our enjoyment.

The members afterwards partook of luncheon at the invitation of the Mayor and Corporation of Chard. They then visited the parish church, grammar-school and court-house, and subsequently drove past the Snowdon Hill quarries to Quarry Church and camp.

In the evening a meeting was held for papers and discussion.

Sir Edward Fry (a vice-president) sent an exhaustive paper on "Somerset or Somersetshire?" He said the question of the word "Somersetshire" was a right word to use and depend on the usage of those who spoke and knew how to use the English language. If such persons had been in the habit, of long time, of speaking of "Somersetshire," then it would be dantry to reject it on any antiquarian or etymological ground. If, on the contrary, there had not been such a usage,

but the word had been lately introduced, or had never been habitually used by those whom they regarded as masters of English pure and undefiled, then they were entitled to expel it as a vulgarism or solecism. In a word, usage was the *"jus et norma loquendi,"* and must be decisive in this, and all like cases. Over and above this primary question there might remain another, as to the original propriety of the use of the word, but the two questions must not be confounded together. As to the usage of the word he said, without fear of contradiction, that it had been in use for many hundred years, and that for the greater part of those years its continuous use was apparent, and that throughout the whole of that period its continuous use was probable. Of the contemporary use of the word in question, whether in the popular or the literary language of the county, there could, he supposed, be no doubt. Sir Edward made a number of quotations to establish a long-continued usage of the inculcated word for more than eight centuries. They showed its use by men of the county and men unconnected with the county, by the literate and the illiterate, by antiquaries, historians and geographers. He must be an excessive stickler for antiquity who was scandalised by the novelty of a word used by the Domesday Commissioners of the Conqueror; he must be a purist or a pedant who was offended by a word used by such writers as Clarendon, Coleridge, Macaulay and Froude. At any rate, he (Sir Edward) thought his citations were enough to clear the memories of the founders of their Society from the charge levelled against them of not knowing the name of the county of whose history they were studious. There was strong reason to believe that Somerset was a shire before Oxfordshire or Gloucestershire ever acquired a title to that name, for the shire appeared to be originally a West Saxon institution, and Wessex seemed to have been divided into shires, whilst Mercia was divided into regiones or maegths. The names of the shires into which Wessex was early divided were derived sometimes from the principal towns within them, sometimes from the principal Saxon tribes inhabiting the district, and once at least from a local peculiarity. If the division of Wessex into shires was a single act, then, of course, Somersetshire was contemporary with the others; if it was a process which began with the heart of the kingdom in Hampshire, and spread thence to the remoter parts, it was not likely that Devon would have acquired its title of a shire at an earlier date than the nearer Somerset.

The second day's proceedings were devoted to excursions in the district of Chard.

The first place to be visited was Whitestaunton, where, by the kindness of Commander Elton, R.N., the interesting manor-house and beautiful grounds were inspected. The first object to attract attention was the Roman villa, the remains of which were unearthed in the grounds some few years ago.

The Rev. H. A. Cartwright, rector of the parish, gave a few particulars of the villa, a plan of which was shown by Commander Elton, and the foundations of which now only remain.

A move was afterwards made to Whitestaunton Church, where the rector gave a detailed description of the building, dealing particularly with its early history and its associations with the families of De Staunton and Brett. The present church, of Perpendicular style, and restored in 1878, was built between the years 1478-92, and probably succeeded a Norman building, the Norman font being still in good preservation. Attention was drawn to the beautiful little chapel of the lord of the manor, the rood-loft and staircase, and the remains of the rood-screen.

The Rev. F. W. Weaver, in thanking the rector for his interesting description of the building, said that they were all the more indebted to him as, although not feeling well, he had willingly given his services.

Mr. Buckle gave some supplementary particulars respecting the architecture of the structure, which agreed in the main with those given by the Rev. H. A. Cartwright. Mr. Buckle, however, was of opinion that it was a church which had been altered and rebuilt from time to time, and although now Perpendicular in style it would be rash, he said, to fix any definite date to the building as a whole. The bench ends were very curiously carved, showing great originality, and were apparently local workmanship. The manor-house was afterwards visited, the Rev. H. A. Cartwright explaining that it was built in 1577 by John Brett on the remains of an older building. The rector commented on the enormous quantities of stone which had been quarried from that parish, and a great deal of which was used in the construction of Forde Abbey.

The drive was then continued through the delightful scenery, which is so well known, to the extensive camp at Castle Neroche, situated 900 feet above the sea-level, and commanding a magnificent view of the country for miles around. In anticipation of the visit several excavations had been made on the summit of the camp by permission of the owner, Viscount Portman.

Mr. H. St. George Gray, the curator of the Taunton Museum, gave an interesting account of the result of these

excavations. Although several finds have been made, the spadework had not proved quite so satisfactory as was anticipated. Mr. Gray, who for some years was a pupil of that well-known authority on such matters, the late General Pitt-Rivers, quite upset all preconceived ideas as to the camp at Castle Neroche being of early British date, by declaring that, as the result of the excavations and the fragments discovered, he had come to the conclusion that it was an earthwork of Norman or Mediæval date, probably constructed during the troubled reign of Stephen. There was conclusive evidence, he said, in support of this opinion. He described the camp as a position of extreme strength, and, in conclusion, suggested that a small excavation fund should be opened in connection with the Society, so that excavations might be made each year in various parts of the county of Somerset.

The Rev. F. W. Weaver said that the members were most grateful to Mr. Gray for the trouble he had taken, *con amore*, and for the valuable information he had given on the subject.

The journey was resumed to Ilminster, where the old parish church was visited. Here the vicar, the Rev. J. Street, gave an entertaining and instructive description of the building, with its rich central tower, the choice stone-groined roof open to the interior, and the splendid Wadham Chapel in the north transept. Ilminster Church, which is Perpendicular in style, is considered to be one of the two finest cruciform churches in the county, the other being at Crewkerne. It is well known as containing in the north transept the tombs of the Wadham family, one of whom founded Wadham College, Oxford. As the weather continued showery, some of the party, after the inspection of the church, returned to their destination by train, while the remainder continued the drive to Dowlish Wake Church, and visited the Wake and Speke monuments. This concluded the programme for the day, Chard being reached late in the evening.

On the concluding day, excursions were made to Leigh House, a charming Elizabethan structure, Winsham Church, and afterwards to Cricket St. Thomas, where the president and Mrs. Fry kindly entertained the members to luncheon and were thanked for their hospitality.

The usual votes of thanks having been accorded to all who had assisted in the general arrangements, including the local committee, the proceedings, which despite the somewhat unfavourable weather had proved to be of a successful character, were brought to a close.

FREE LIBRARY, TAUNTON.

EIGHTY-ONE designs for the Carnegie Free Library which is to be erected in Corporation Street, Taunton, at a cost of 5,000*l.*, were sent in. The trustees recently offered prizes of 30*l.*, 20*l.* and 10*l.* for the best designs, and these have been awarded by Mr. J. S. Gibson, F.R.I.B.A., who at the request of the trustees was nominated as assessor by Mr. Aston Webb, R.A., president of the Institute of British Architects. First prize, Mr. A. Colbourne Little, 9 Gray's Inn Square, London, W.C.; second prize, Mr. J. Lindsay Grant, 2 St. Peter's Square, Manchester; third prize, Mr. Henry A. Crouch, A.R.I.B.A., 12 Gray's Inn Square, London, W.C.; fourth in order of merit, Mr. Alfred Gladding, A.R.I.B.A., Beverly, Stoney Lane, Moseley, Birmingham; fifth in order of merit, Mr. H. Dare Bryan, F.R.I.B.A., 38 College Green, Bristol.

Mr. Gibson reported that a bulk of the plans reach a very high order of merit. The trustees do not exactly approve of the front elevation of the premium designs, but Mr. Gibson pointed out that that was the last thing that an architect looked at, and the prizes were awarded for the internal arrangement of the floors, and particularly of the ground floor. The elevation of the first prize design is of Jacobean style, and provision is made for a vestibule leading into a large hall. On the right-hand side is a reference library, and then a lending department, while on the left are a magazine-room and a large news-room, measuring 34 feet by 24 feet. At the far end is a ladies' room, with a librarian's office and a work-room. On the first floor are two living-rooms and on the second floor three bedrooms, these being designed for the resident librarian. The usual sanitary arrangements are also provided for. It is, we are informed, improbable that the front elevation will be adopted, it being thought advisable to have a Tudor front in keeping with that of the municipal buildings on the other side of the street.

The conditions of the competition included the following:—

The free library is proposed to be erected upon a plot of ground with 70 feet frontage to Corporation Street. Prizes of 30*l.* for the design placed first in the competition, 20*l.* for the second and 10*l.* for the third will be awarded on the recommendation of an architect of repute, and a Fellow of the Royal Institute of Architects, who will be engaged by the trustees to act as assessor, and who shall see that the

designs so recommended faithfully comply with all the conditions set forth herein, but the trustees will not hold themselves liable for such prize or for any other remuneration whatever to the competitor whose design may be accepted until they have satisfied themselves by *bonâ-fide* tenders from approved contractors for the several works that the total expenditure in carrying out such design will be within the amount stated in these conditions. The premiated designs are to become the absolute property of the trustees. It is the present intention of the trustees to employ the architect to whom the first prize is awarded to carry out the work provided that the assessor considers the design worthy being executed, and that the author satisfies the Council as to his experience and ability. The trustees do not, however, bind themselves to adopt this course. Should such architect be so employed the prize will merge into the commission which will be at the rate of 5 per cent. on the actual cost of the work. The commission to include the cost of all sketches for approval and full and complete specifications, working and detail drawings, architect's estimates and superintendence and carrying-out the work as architect, and all his travelling expenses and attendance on the trustees. In case, after the detail drawings and specification are prepared, a tender cannot be obtained from a responsible contractor to complete the work according to the design for the proposed amount, the trustees shall be at liberty to discard the design, and the author shall be entitled to no premium or remuneration beyond the amount of half his prize. The elevation of the building must harmonise with the Tudor building used as municipal offices on the opposite side of the street, and the north elevation must be of stone.

THE BOWES MUSEUM, BARNARD CASTLE

IN every distant view of Barnard Castle the great mass of the Bowes Museum towers conspicuously over the rest of the ancient town, and is now one of the chief attractions. A correspondent of the *Yorkshire Herald* gives the following account of its creation:—

The late Mr. John Bowes, and his first wife, Bence Josephine Bowes, the Countess of Montalbo, besides their residence at Streatlam Castle, near the town of Barnard Castle, had a house in Paris, and, in fact, principally resided in France. They were both of them great lovers and patrons of art, and some time previously to the year 1862 had formed the idea of collecting pictures and other objects of art, partly for their own gratification, but also with the intention of founding a public museum. From the time of adopting this view they systematically set themselves to acquire examples which should be adapted for this purpose, in being representative of various classes, styles and periods of art. The question then arose where the museum should be. Their original intention was to locate it in France. The Countess of Montalbo was a French lady, and in the first instance thought of the country of her birth. Their original idea was to build the museum at or near Calais, within the Countess of Montalbo's own country, France, and yet looking towards England, the Bowes's country. They abandoned this idea from a consideration of the permanently unsettled state of politics in France. They thought there was less chance of revolutions occurring in England, in which the works of art might be injured, in England than in France. The result was that they ultimately decided upon Barnard Castle as being a town with which Mr. Bowes's ancestors had been connected for many centuries, and the nearest place of importance to Streatlam Castle. The foundation-stone was laid by the Countess of Montalbo on November 27, 1869, and the museum was formally opened to the public on June 10, 1892, by the late Sir Joseph Whitell Pease, Bart., M.P. The Countess of Montalbo died on February 9, 1874, and Mr. John Bowes on October 9, 1895, during the building of the museum, and both lie buried in the vault underneath the private family chapel at Gibside, near Gateshead. The total cost to the Countess of Montalbo and to Mr. Bowes of purchasing the site of the museum and erecting the museum, was something over 100,000*l.* The cost of the contents is never likely to be known, as imperfect records only exist of the details of the acquirement by the museum of the works of art now in the museum. The contents of the museum are insured for a very large sum—the value is probably three times the amount at the least. Mr. Pease bequeathed to the museum legacies amounting to the principal sum of 135,000*l.*, and a further contingent share of residue.

There has been a long and protracted delay in settling owing to the peculiarity of French laws, and the fact that Mr. Bowes married again; but from a recent public statement it would appear that not only will the legacies be paid but interest thereon. Therefore the total value of this munificent all told, cannot fall far short of half a million sterling.

During the building of the museum a large portion of the pictures which are now on the walls had been in great

First, during the siege of Paris by the Germans in the winter of 1870-71, and subsequently during the possession of Paris by the Commune, March to May, 1871. The pictures had been removed by Mr. and Mrs. Bowes from their residence, 7 Rue de Berlin, in the centre of Paris, to a distant part of Paris for greater safety in case of civil commotion. The house in which they were placed was in Rue Blomet, in the arrondissement of Vaugirard, a south-western suburb of Paris, and was surrounded by small cottages and market-gardens. The house was actually struck during the siege by a Prussian shell, which exploded, fortunately without doing any serious damage. The fragments of the shell may be seen in the picture gallery. The collections were preserved unharmed, but the gentleman who guarded them died afterwards from the effects of the anxiety and want experienced during that terrible period.

The museum is an edifice which, in magnificence of appearance and proportions, has few equals in the provinces. The style of the architecture is essentially French of the Renaissance period, and the building, as a whole, reminds one of the Louvre, in Paris. The façade is copied from the Hôtel de Ville, Havre, and is a fine example of richly-ornamented work, the corbels, cantilevers, capitals, pedimental windows, &c., being elaborately carved. The extreme length of the building is 300 feet. The central dome and turrets are carried to a considerable height above the main building, which has an elevation of about 85 feet. The principal entrance is 24 feet 6 inches high by 12 feet 6 inches wide, the doors being of iron. On the left of the porch are the arms of Mr. Bowes (three bent bows); on the right appears the cognisance of Mrs. Bowes (a white mountain, "Montalbo"); while over the centre, interlaced on a shield, are the letters B and M, the initials of the names "Bowes" and "Montalbo."

The floor of the entrance hall is of Italian mosaicwork, and along one side run two galleries of Craigleith stone, which are reached by a staircase of polished Peterhead granite, galleries and staircase being supported by twelve columns of Peterhead and Aberdeen granite.

Amongst the large collection of pictures are many by the hand of the museum—mostly landscape scenes in Savoy, &c. The collection of porcelain is very extensive—Chinese, Japanese, Dutch, English, French, German, Hungarian, Portuguese, Russian and Swedish; Chinese and French enamels, bronzes, earthenware, Delft, Italian, Della Robbia ware, majolica, sgraffito, &c.; stoneware, including "Bellarmine"; glass crystals, ivories, gold and silversmiths' work, &c.; also some excellent tapestries, all of which could only be done justice in a very lengthy and separate article.

From the windows of the museum a magnificent view is obtained, commencing with Deepdale on the west, embracing Arkendale, Scargill Moors, Barningham, and the "Stang" on the south, and extending on the east beyond Kirby Hill Church.

There are several points of analogy between this right royal seat to the nation and a more recent and also a more valuable one—i.e. the Wallace Collection at Hertford House, London, and the provinces and the latter to the great Metropolis, all of our "Grand Old Country." With respect to the donors, all Englishmen will heartily say "Requiescat in pace."

THE ORDNANCE SURVEY.

THE annual "report of the progress of the Ordnance Survey" to March 31, 1903, has been issued as a Blue Book (C. 1688). For some years past the Ordnance Survey has devoted much labour and attention to its small scale maps, and during 1902-03 marked progress has been made with them. The 1-inch map of the United Kingdom, with hills, has been completed. The amount of labour involved in its preparation is probably not generally realised. It takes about four to six months to make the hill-drawing from the field sketches, and from two years to engrave a sheet of the size of a full English sheet. There are 360 sheets of this map in England, 205 sheets in Ireland of the same size, and 131 sheets in Scotland of the same size. The intention is to have the map of the United Kingdom revised at intervals of fifteen years. At the request of the military authorities maps on a scale of two miles to an inch have been prepared to cover certain areas—notably the country between Salisbury and Portsmouth and the South-west of England. The four-mile map of the United Kingdom has been further advanced, the ten mile revised outline map of the United Kingdom has progressed rapidly, and the ten-mile map of the United Kingdom with hills is being proceeded with as fast as possible. The map on the scale of 1-1,000,000th, the smallest scale map which forms part of the Survey programme, has been begun. A new method of folding in covers has been introduced, which enables a map to be read without necessarily opening it fully. The amount of work, especially printing, done for other departments last year made the work of the Ordnance Survey somewhat less than otherwise could have been. Further efforts have been made to render

the maps of the Ordnance Survey more accessible to the public. Thus, the postal authorities have allowed a stock of folded maps to be kept for sale at certain post offices. It is too early to say how this has answered. As to printing, the use of the Vandyke process has been largely extended at Southampton and has been introduced at Dublin. It has amply proved its value. The report once more complains of an insufficient staff of officers.

THE NATIONAL PHYSICAL LABORATORY.

THE following statement on the work in the Engineering and Physics Departments during the half-year ended June 30, 1903, was prepared by the director and laid before the executive committee at their meeting on July 17, as an interim report on the research work in progress. The committee, believing it would be of interest to a wider circle, ordered it to be printed and circulated.

Engineering Laboratory.—In the wind-pressure research the case of flat surfaces exposed to a perpendicular current of air has been fully worked out, and a general relation established which is now being tested for the case of larger surfaces exposed to the natural wind. The case of parallel plates at varying distances apart has been treated, and experiments are also in progress on the pressure on inclined surfaces. Dr. Stanton hopes to have a paper on the results obtained at present ready for publication very shortly. The testing machine for alternating stresses is nearing completion, and will, it is hoped, be ready for working in the autumn. Drawings have been prepared and some preliminary tests made for the research into the constants of steam.

Thermometry.—Dr. Harker has continued his comparison between the air thermometer, the platinum thermometer and the thermojunctions, and the work is now complete for temperatures between 0 deg. C. and about 1,050 deg. C. The first part of the work for temperatures up to 500 deg. C. was done with M. Chappuis, at Sèvres, and the results have been published. Dr. Harker is now preparing for publication results up to temperatures of 1,050 deg. C. obtained at Bushy. He has also constructed and subjected to stringent tests a set of platinum thermometers for the British Association. A small research on the specific heat of iron at high temperatures—700 deg. C. to 1,000 deg. C.—is nearly complete and promises to be of interest.

Electricity.—Mr. F. E. Smith's research on the resistance of mercury and the construction of a standard mercury resistance is practically complete. Some ten or twelve tubes have been calibrated, and give results which will only differ among themselves by some few parts in 100,000. The value of the specific resistance of mercury will probably prove to be very close to that determined by myself and Mr. Fitzpatrick in 1888. On the assumption that the absolute value of the wire standards in the laboratory is known the length of the column of mercury, 1 sq. mm. in section, having a resistance of 10^9 C. G. S. units is found to be almost exactly 106.29 cm. The difference between Mr. Smith's results and those of the Reichanstalt will not be more than some few parts in 100,000. Mr. Smith has also made good progress with a research into some of the anomalies of the Clark Cell. An investigation of some importance into the changes in insulating strength of various dielectrics used in motors, transformers, &c., due to continued heating, by Mr. A. Campbell and Mr. Rayner, undertaken for the engineering standards committee, promises to lead to results of value.

Metallurgy.—In the metallurgical division preparations have been made for the work on nickel steel in conjunction with Mr. Hadfield; the material is being prepared by him. Meanwhile considerable advance has been made with a series of determinations on some iron carbon alloys. The solidifying points and cooling curves of a series of pure iron carbon alloys have been determined, using platinum platinum-iridium and platinum platinum-radium thermojunctions. The range of carbon is from 0.15 to 3.55 per cent.; the range of temperature from 1,502 deg. C. to 1,111 deg. C. on the thermojunction scale. About fifteen alloys have been made, the weight of each being about 4 lbs. The ingots have been analysed for carbon, sulphur and silicon. The percentages of the two last-named elements do not increase during the time needed for melting. Further, the ingots are satisfactorily homogeneous in composition. The apparatus for taking cooling curves by the differential method is in working order and the above-mentioned alloys will be examined in this way.

The director hopes that a number of important results may be published during the autumn. The equipment of the photometric-room is approaching completion. The main photometer bench which is being standardised at the Reichanstalt has not yet been delivered. On its arrival the director hopes to issue a special circular giving an account of the equipment and a statement as to the conditions of the tests and the fees.

NOTES AND COMMENTS.

PAINTERS have occasionally enriched the public galleries of their countries with presents of their own works. One notable example is the Turner Collection. It is doubtful, however, whether so varied and valuable a gift has ever been made as that which has been given to Holland by M. HENDRIK WILLEM MESDAG. He owes his reputation among his fellow artists in Europe as much to his *bonhomie* as to his talent as a marine painter. He has deservedly been successful, and he has employed a part of his wealth in bringing together a series of pictures of the kind which he personally admired. Every example in it is in some way connected with M. MESDAG, and is evidence of his peculiar taste, which, it is needless to say, was always exacting. His private gallery, with its 300 works, is therefore in many respects the most thoroughly representative of modern art which is to be found in all Europe. Amateurs and public authorities cannot escape from the influence of local obligations, but with M. MESDAG excellence alone dictated his purchases. This invaluable collection, which has been seen by favoured visitors in his beautiful house in the Laan van Meerdevort in The Hague, has been presented to the Netherlands Government on the condition that he is to be allowed to serve as its director until his death. When we say he purchased the paintings, it should be remembered that sometimes the price given for them was not in gold, but in the form of his own delightful works. The French school is well represented, for one of the foremost to encourage him some thirty years ago was J. F. MILLET, the painter of the *Angelus*, whose *Hagar* and *Ishmael* and *Fisher Girl* are among M. MESDAG's pictures.

WATER-SUPPLY is one of the needs of Australia. In New South Wales many of the stock routes are rendered useless through lack of water, and sometimes it is with difficulty the mail conveyances are kept running, for there is nothing which the horses can drink. It is therefore satisfactory to learn that artesian boring is generally successful since the Act was passed by the Sydney Legislature to facilitate operations. Applications under it have been received with such increased frequency that before long it may be found necessary to impose a minimum limit upon the area to be included in any one application, in order to guard against a possible too severe drain on the supply. Steps are being taken to carefully watch and periodically compare the flow from each bore, and to note the effect of new bores on older ones in the vicinity. The importance of observations cannot be overestimated, as although artesian boring is still in its infancy in Australia, the demands for the water will undoubtedly rapidly increase with the population, and it is well to avoid disappointments in the future as to the permanent supply likely to be secured from new bores in the vicinity of old ones. Artesian water will also have to be systematically analysed from time to time, in order that any change in its properties by exposure to aeration may be discovered and its applicability to various soils ascertained. Before capital is expended in reticulation and planting it is desirable that the chemist should be in a position to point out the probable effect of the water on the plants and soil. It is calculated that the cost of the supply has been about 1d. per gallon of the daily supply secured. One bore yields four million gallons per day, another three millions, but in some cases the results were not satisfactory.

THE use of straw in brickmaking is very ancient. A regulation about it was the ostensible cause of the departure of the Israelites from Egypt. PHARAOH's order to his taskmasters was, "Ye shall no more give the people straw to make brick, as heretofore: let them go and gather straw for themselves." . . . "So the people were scattered abroad throughout all the land of Egypt to gather stubble instead of straw." What purpose was served by the straw is uncertain. In some of the Eastern countries it is still employed. In Persia straw cut fine is mixed with earth, and when moulded the bricks are dipped in a vessel containing water and chopped straw. The absence of straw in

modern brickmaking is the best evidence that any advantage arising from its use is considered doubtful. An American inventor proposes to reintroduce straw, not in small pieces but in the form of an extract. He has concluded that what the Egyptians sought in an empirical manner was tannin, and they obtained it by soaking the straw in water. The effect, he ascertained by his own experiments, is to increase the tensile strength of the clay to make it more plastic and to diminish the shrinking. The clay is treated with water in which straw has been boiled. Various proportions have been tried, but the most satisfactory results are said to arise by the use of 2 per cent. tannin during ten days. All that is required is to keep the clay well moistened with water in which tannin is found, and the process can be performed in vats. The inventor it is said, proposes to sell clay combined with tannin Egyptianised clay.

ILLUSTRATIONS.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.

CATHEDRAL SERIES: EXETER.—VIEW FROM SOUTH-EAST.

HIS MAJESTY'S EXCHEQUER AND AUDIT DEPARTMENT, VICTORIA EMBANKMENT.

THIS building, of which we give an illustration, occupies the last of the vacant sites on the Embankment, was erected by Messrs. PERRY & Co., Tredegar Works, Bow, for the occupation of the Exchequer and Audit Department of His Majesty's Government, from the design of Mr. ARTHUR F. BRIGGS, of 9 Queen Victoria Street, E.C., at a cost of about 35,000*l.* The plans, which will appear next week, are of a very simple character, consisting of front and back block of offices connected by a corridor on the east side, on each floor from which the very ample lavatory accommodation is approached. The area dividing the two blocks is of unusually large dimensions, being 60 ft. in length by 45 feet in width, many streets in London being of less width, the light to the offices consequently being quite exceptional. The front block contains the wide and handsome staircase, which is also fitted with a large electric lift. There are two basement floors, the lower one being used as muniment-rooms. The top floor of the back block is fitted up as dining-rooms for the staff, with kitchen accommodation.

RIVERFIELD, NEAR OXFORD.

DENHOLME, WALTON-ON-THAMES.—GARDEN FRONT.

THIS house, which has lately been completed, is situated in Oatlands Chase, and has a nice site of about two acres, with a very fine holly hedge as a boundary to the road, together with some fine trees in the grounds, of which advantage has been taken in laying out the garden. The house is placed at right angles with the road so that the principal garden front may be south-east, and is entered by a carriage court on the north-west, approached by a straight drive from it. The external facings are of purple grey bricks with red pressings, and the roof is tiled and has gables with stone parapets. The walls are purposely left plain, in order to give solidity and to form a good background for creepers.

The accommodation on the ground floor consists of a dining-room, drawing-room, billiard-room, and large alcove with writing alcove and external loggia, while the first and second floors provide thirteen bed and dressing rooms and three bathrooms, &c. The heating was carried out by Mr. EDWARD P. MILNE, of 15 Craven Street, Strand, the domestic hot-water supply and that for the radiator (though separate) being heated by MILNE's patent "Duplex" boiler in the basement. The house has been wired for electric light in anticipation of the current being shortly available. Most of the fireplaces were supplied by Messrs. BRATT, COLBRAN & Co., of 10 Mortimer Street, W., their patent "Heaped" fire having been largely adopted.

Mr. FRANK HAWKEY, of Surbiton, was the builder, Mr. WALTER E. HEWITT, A.R.I.B.A., of 22 Buckingham Street, Strand, W.C., the architect, who also designed and superintended the laying-out of the grounds.

THE BRITISH MUSEUM.

THE last return of the British Museum shows that during the year 1892 the collections were enriched by many valuable acquisitions. Among the rare English books are "An Hospital for the Diseased," published in 1579; "A Booke of curious and strange Inventions called the first part of Needleworkes," 1596. In 1591 a book of "New and singular Patternes and Workes of Linnen" was printed; it was followed by the present book, of which this is the only known copy. The designs are of Venetian origin. One of the foreign books purchased is the "Biblia Istoriat," the Bible translated into Italian by Niccolo Malermi, printed by Gulielmus, called Anima Mia of Piancerreto, at Venice, 1493. An earlier edition of this famous illustrated Bible, printed by L. A. Giunta, at Venice in 1490, was purchased by the Trustees in 1897. The edition now added to the library contains a large number of woodcut illustrations, in themselves of great merit, which differ entirely from those in the Giunta edition. Two other copies only of his edition are known, one in the Cabinet of Engravings of the Berlin Royal Museum, and the other in the library of the Prince d'Essling. Another is Claudio Merulo's "Toccate d'Intavolature," printed by Simone Verovio, Rome, 1598-1604. This is an interesting book both musically and typographically, since Claudio Merulo was one of the first composers who wrote specially for the organ, while Simone Verovio was the inventor of musical engraving. The Trustees have also obtained a Book of Hours, from St. Omer, early fourteenth century, which is a beautifully illuminated little volume, formerly in the library of John Ruskin. Every page has a tastefully-executed border, abounding with charming miniatures and grotesques. From the artistic point of view this is the most important acquisition of the year.

The Trustees have purchased a collection of drawings from Mr. James Reeve. It is distinguished both by choiceness and completeness. Mr. Reeve's connection with Norwich, his personal acquaintance with members of the school, and his intimate knowledge of its history and productions, derived from life-long study, have given him unrivalled authority on the difficult subject of Norwich art, complicated as it is by the existence of very numerous and skilful imitations of the style of the greater men. His collection has long enjoyed recognition as by far the finest of its kind. It includes examples of the work of those able and highly trained amateurs, distinctive of the Norwich School, who caught from its fine tradition unusual breadth of style. The capital feature of the collection is the set of 317 drawings by John Sell Cotman, the pre-eminent master in black-and-white and in water-colours of the whole school. The series includes representative examples of the artist's work in all the many phases through which he passed. Among the thirty water-colours, several of which have been reproduced in *The Architect*, may be signalled "Greta Bridge," perhaps the most famous of all Cotman's drawings, "Duncombe Park," "Mousehold Heath," "Postwick Grove," "Bamborough Castle," and "A Chateau in Normandy." But the artist's range and power are still better shown in the black-and-white compositions and studies, some of the finest of which are comprised in the section of twenty-three drawings in monochrome ash (Indian ink or sepia, with or without chalk or pencil). Among these may be specially mentioned "Breaking the Clod," "Dewy Eve," "A Shadowed Stream," and "Arches in the Cloister of St. George de Bocherville." The pencil and chalk studies and sketches amount to 264, the most notable group being a series in black-and-white chalk on grey paper, made in the last autumn of Cotman's life, during flood-time, as "The Wold Afloat," "Below Langley" and "A Storm of Cromer." Another set consists of small but masterly pencil copies after Turner, chiefly from the "Liber Studiorum." Groups of sketches made on or about Dartmoor, and of shipping on the Medway, may also be mentioned. Of the other members of the Cotman family, Miles Edmund Cotman is represented by six water-colours (three or four being of exquisite quality) and eighteen black-and-white studies; John Joseph Cotman, eight coloured drawings, two of them of large size and three in sepia or pencil; Anne Cotman, by a pencil study. The three water-colours by John Crome, the greatest oil-painter of the school, especially "Woodland Scene, Dunham," and "Waiting for the Ferry," are of particular importance, owing to the great rarity of genuine drawings by his hand. His style is also illustrated by six studies in Indian ink and two pencil sketches.

Two fine water-colours of English scenes and a black chalk study by Edward Thomas Daniell make an interesting addition to the important series, already in the Department, of drawings made in Asia Minor by the same original and able amateur. To other amateurs of great talent, Robert Leman and Thomas Lind, are well represented—the former by fourteen water-colours and two black-and-white drawings, the latter by seven water-colours and four studies in sepia or chalk. Of the better known members of the school, John Thirle contributes to the collection thirteen water-colours and one pencil sketch;

George Vincent, three chalk studies on brown paper (the only authentic drawings by this artist known to Mr. Reeve); and Joseph Stannard ten studies, chiefly of fishermen, in water-colours, six drawings of landscapes and of horses in coloured crayons, and four studies in black chalk or pencil.

The other artists are represented as follows:—John Berney Crome, one water-colour drawing; Robert Dixon, six water-colours and five monochrome or pencil studies; Joseph Geldart, four landscape studies in black-and-white chalks; Ebenezer Gerard, a water-colour portrait; Edmund Girling, two sepia drawings; William Howes Hunt, six studies of Yarmouth and neighbourhood in sepia or Indian ink; William Joy, "Wreck of the Killarney Steamer," in water-colours; Robert Ladbroke, two water-colours; H. B. Love, a water-colour portrait of J. S. Cotman, drawn in 1830; John Middleton, two landscapes in water-colours and one in black chalk; Henry Ninham, five water-colours and one monochrome drawing; James Sillett, three water-colour studies of flowers; James William Walker, six water-colours.

The total number of drawings is 481.

The second main division of the Reeve Collection consists of 702 prints, chiefly original etchings and lithographs. Thirty-six etchings by John Crome, thirteen etchings and four lithographs by John Sell Cotman, have been selected to complete the fine sets already in the Print Room, and make the Museum collection of their work rich in rare impressions and rare states. Other artists are represented as follows:—Robert Blake, thirty-four etchings; J. Brandard, one lithograph; Lucy Brightwell, forty-eight etchings; J. J. Cotman, three etchings and two lithographs; M. E. Cotman, forty-four etchings and twenty-five lithographs; F. J. Crome, eleven etchings; J. B. Crome, three etchings; Robert Dixon, nineteen etchings; Richard Girling, seventy-nine etchings; Edmund Girling, twenty-four etchings; S. V. Hunt, eighteen etchings; W. Howes Hunt, twenty-nine etchings; T. Lound, sixteen etchings; H. Ninham, twenty-one etchings and three lithographs; Alfred Priest, sixty etchings and two lithographs; Alfred Stannard, eight etchings; Joseph Stannard, eleven etchings and one lithograph; Mary Ann Turner, six etchings; Sir W. J. Hooker, fourteen etchings; Lady Palgrave, ten etchings; Lady Hooker, nine etchings; Mrs. Dawson Turner, eleven etchings; Elizabeth M. Palgrave, two etchings; R. H. I. Palgrave, nine etchings; F. T. Palgrave, two etchings; George Vincent, ten etchings and one mezzotint. Besides these there is a supplementary series of seventy etchings by minor artists and amateurs having a local reputation as members of the Norwich and Yarmouth schools, and the collection is completed by a set of twenty-one prints after J. S. and M. E. Cotman.

The Cheylesmore bequest is another invaluable addition. It consists of two separate collections—a collection of 7,675 mezzotint portraits, and a collection of 2,674 portraits of royal personages, principally of Queen Victoria and her family. The collection of mezzotint portraits was formed with the primary purpose of illustrating English history as completely as possible. To this desire was gradually added on the part of the collector an interest in the art of mezzotint for its own sake, leading him to enrich his cabinet with a good proportion of the finest and rarest examples in early or proof states and in the best preservation. Speaking generally, the fine examples are in the proportion of about one to every six or seven of those which are of interest simply as portraits. Taken together with the fine and extensive, though imperfect collection already in the Department, these picked specimens will form a series not to be rivalled elsewhere. The residue, though including a large number of indifferent impressions, is rich in rare portraits, and from that point of view forms a most valuable addition to the departmental collection. Two hundred and eighty-four English and seventy foreign engravers are represented.

The collection of Assyrian contract tablets has been increased by a collection of over 1,000. One circular memorial tablet of clay is inscribed with the name and titles of Gudea, the "patesi," or governor, of the city of Lagash (Shirpurla), in Southern Babylonia, about B.C. 2500. The text contains a dedication to Ningirsu, the city god of Lagash. This tablet was built into a pier in one of the buildings erected by Gudea at Lagash, and set in bricks of a peculiar shape which were made to fit round it. Another tablet is inscribed with a text recording the building of a house in the city of Ashur by Marduk-nadin-akhi, the chief scribe of Ashur-uballit, King of Assyria, about B.C. 1400. The text states that the house was built under the shadow of the temple of Marduk, and was provided with a well of fresh water and with numerous cellars and storehouses. The reverse of the tablet is inscribed with a prayer to the god Marduk, beseeching him to grant that the house may be the resting-place of Marduk-nadin-akhi, and that he may establish it fast for his sons and for his sons' sons, and for his seed and for the seed of his seed for ever. The tablet ends with a prayer that long life and prosperity may be showered upon Ashur-uballit, the king.

In the Department of Mediæval Antiquities the additions comprise a costly and interesting gold reliquary with covers formed of large amethysts, enclosing scenes from the Passion in translucent enamel, and a Holy Thorn said to have been given to a king of Aragon by St. Louis, who bought the Crown of Thorns from the Venetians, but the style is somewhat later than the date of his death: French work, about 1310; given by Mr. Geo. Salting, F.S.A. Another work is a remarkable portable altar, Rhenish work of the thirteenth century, hitherto in many well-known collections; the copper-gilt border of the front engraved with figures of saints, and set with ivory carvings of the Crucifixion and the Virgin and Child, while the back is filled with an inscription enumerating the saints and martyrs in whose honour the altar was dedicated. It was purchased at the sale of Sir T. Gibson Carmichael's collection.

Among the additions to the coins are thirty-eight bronze coins of the age of the Antonines, when Athens was no longer authorised by Rome to strike silver money. The special interest of the Athenian coins of this period lies in the fact that the subjects represented upon them are, for the most part, copies of statues mentioned by Pausanias and others as famous works of art at Athens in their own time. The coins are contemporary with Pausanias's travels, and are in many cases the only evidence we possess of the general scheme of several masterpieces of Greek sculpture mentioned by him.

An examination has been made of the large hoard of silver coins discovered at Colchester in July 1902, and sent for inspection as treasure trove by H.M. Treasury. The coins, which number 10,926 specimens, consist mainly of "short-cross" pennies of Henry II., Richard I., John and Henry III., together with Scottish coins of William the Lion, Irish coins of John, and a few foreign deniers. A tabular statement as to the hoard has been drawn up, and selections for the British Museum and other public institutions have been made. A small hoard of coins of King Alfred found at Stamford has also been examined as treasure trove.

It is pointed out in the report that the Egyptian galleries of sculptures on the ground floor have been repainted and re-decorated, principally on the lines of the well-executed decoration originally applied to the walls and ceilings when the galleries were built, but modified by the introduction of white in the wall-spaces flanking the windows, in order to secure better lighting for the exhibits.

ARBITRATION CASE.

AN arbitration inquiry began at Westminster on Saturday before Sir Benjamin Baker, sole arbitrator, to decide the amount payable by the Great Western Railway Company to their contractors, Messrs. S. Pearson & Son, Ltd., of Victoria Street, Westminster, for works in connection with the construction of the South Wales and Bristol direct railway from Wootton Bassett to Patchway, Severn Tunnel. The total amount of the claim is approximately 1,600,000*l.*, but the amount in dispute was about 500,000*l.* Before proceeding to an arbitration the claimants formally offered to accept, in order to arrive at an amicable settlement, the sum of 312,165*l.* less a cash rebate of 100,000*l.*, or 212,165*l.* net, it being understood that that payment was to be in final settlement of all claims by either party under the contract, whether for construction, maintenance or otherwise. The company's contention, broadly, was that the contract was one for the execution of specified works for a lump sum, and though there might be certain extras for contingent works executed during the progress of the contract to be added, yet substantially the amount to which the claimants were entitled under the contract had already been paid to them. The hearing was mainly occupied with a discussion as to the best way of presenting the accounts. No arguments involving questions of principle were entered upon, and after agreement that the accounts in the form settled upon should be investigated on both sides during the vacation, so as to crystallise the substance of the claim, the arbitration was adjourned.

AYR COUNTY BUILDINGS.

THE following letter has been addressed to the Ayr county clerk from the Scottish Office, dated July 29, 1903:—

Sir,—I am directed by the Secretary for Scotland to refer to your letter of the 9th instant and previous correspondence on the subject of the Ayr county buildings, and to inform you that after communication with the sheriff, and after a conference with the four members of Parliament representing Ayrshire constituencies, which was summoned at the instance of Mr. Orr-Ewing, M.P., and at which I also attended, Lord Balfour of Burleigh is in a position finally to determine what portion of the county buildings shall be appropriated as a court-house, in terms of clause 4 of the order scheduled to the Confirmation

Act of 1901. His Lordship has considered the representation made at this meeting, and again referred to all previous communications from the several parties interested in this matter. His attention has been particularly directed to the terms of the draft order as originally lodged, which ran as follows:—

4. "The County Council shall appropriate to the use of the Courts of Justiciary and of the sheriff, sheriff-substitute, sheriff-clerk, and commissary clerk, and sheriff's procurator-fiscal, the whole of the south half of the said County Buildings, including what are now known as the court-room, the jurors' room, witness-rooms, procurator's rooms, library, procurator-fiscal offices and sheriff clerk's offices, and shall further provide suitable accommodation for the sheriff of the county and his officials, which portion of the buildings shall hereafter be managed and maintained in accordance with the provisions of the Sheriff Court Houses Act, 1860, 23 and 24 Vict. chap. 79, and the Acts amending the same, viz.:—(The Acts 29 and 30 Vict. chap. 53, and 47 and 48 Vict. chap. 42.) The whole remainder of the said buildings shall be assigned to the use of the County Council for themselves, the Justices of the Peace of the said county and their respective officials."

This must be contrasted with the clause as finally adjusted in the statute, which is in the following terms:—

4. "The County Council shall appropriate as a court-house such portion of the County Buildings as shall be approved by the Secretary for Scotland in manner provided by the Sheriff Court-houses (Scotland) Acts 1860 to 1884, and such portion shall thereafter be a court-house within the meaning of the said Acts, to the same effect as if the said portion of the County Buildings had been a court-house erected or improved under the provisions of the said Acts, and shall be managed and maintained in accordance with the provisions of the said Acts, and the County Council may levy and impose the county house assessments accordingly."

The meaning of the clause as drafted and inserted originally in the provisional order is far from clear. It is obvious that the building cannot be fairly described as divisible into northern half and a southern half. Such a line of division would cut across both the room behind the central lobby on the ground floor and across the room above it. The list of accommodation to be appropriated to the court-house side contained in the clause is not exhaustive and cannot really have been supposed by anyone to be exhaustive, for the following words appear later in the clause—"and shall further provide suitable accommodation for the sheriff of the county and his officials."

It is now said on behalf of the County Council or their committee that the "main object" of the order was to secure possession of the three rooms acquired from the town of Ayr for the use of the county. Lord Balfour cannot doubt from the way this is put forward that it states what was in the mind of the promoters of this provisional order, but it does not alter the fact that that intention was not disclosed in text of the order as deposited.

The original clause having been struck out, and the new clause already quoted inserted in its place, argument upon the words contained in the original clause is futile so far as any practical purpose is concerned, and Lord Balfour has made this reference to the clause as drafted because its ambiguity raises no doubt in his mind that Sheriff Brand and as well as the county clerk and the other parties interested in the question have acted in good faith throughout.

The words employed lent themselves to a variety of construction, and different interpretations were, he believes, placed upon them by different persons.

I am now to revert to my letter addressed to you on the 9th ultimo, in which Lord Balfour intimated that, subject to any observations you might wish to make, it was his intention to lay the proposals as detailed in the letter from this office, dated December 9, 1902, before the Lord Commissioners of His Majesty's Treasury.

It is obvious that the scheme for adding to the accommodation available in the existing building by means of a new storey to which he inclined, has not found favour with those mainly concerned, and having regard to the views of the Office of Works in regard to it, Lord Balfour will not further recommend recourse to that expedient. It remains therefore for him to deal with the apportionment of the existing accommodation under the powers vested in the Secretary for Scotland under section 4 of this order as it became law.

After considering your observations as representing the County Council and the various representations already referred to, Lord Balfour adheres to his decision as to the use of the robing-room as follows:—

1. "That the County Council should have the first call on it for the stated days on which the district committee meets, and (2) that after that the sheriff should have the right to it for the hearing of appeals, and (3) that on dates not appropriated for the sittings of the district committee or for the hearing of appeals the use of it for county or court-house purposes should be decided by priority of application."

For the rest he awards the room at the back of the central

staircase on the ground floor to the court-house, leaving the two smaller rooms to the north of it to the county. This will secure for the court-house the whole of the accommodation to the south of the wall bounding the vestibule on the north—except the joint right to the robing-room to be exercised by the county. The Secretary for Scotland is satisfied that by this decision he is exercising the authority conferred upon him by clause 4 of the Confirmation Act in such a way as to provide sufficient accommodation for the necessities of the court-house as they now exist without unnecessarily limiting the space left at the disposal of the County Council.

He cannot but think that if the County Council utilise to its utmost capacity the accommodation left to them by this decision they will find there is ample scope for them to provide separate rooms for any number of committees of their body that are likely to meet at any one time, and so obviate the difficulties in regard to these matters, which have been most prominently brought before him.—I am, &c.,

(Signed) REGINALD MACLEOD.

The County Clerk, Ayr.

ELECTRIC WIRING AND FIRE RISKS.*

AS this paper is presented at a congress whose avowed object is to draw the attention of the public at large to the wholesome truths contained in the old proverb, "Prevention is better than cure," I think a few words upon the importance of sound work in the wiring of buildings for electric light and power will not be out of place.

Experience has shown that a building lighted by electricity enjoys complete immunity from risk of fire, provided always that the erection of the wires and fittings has been carried out in a sound, workmanlike manner, but that the keen competition amongst electric wiring firms, owing to the short-sighted policy of the owners of buildings who are apt to think more of first cost than of possible subsequent outlays, has acted as a powerful stimulant to "jerry" wiring.

It was foreseen at an early date in the history of electric lighting that one of the chief obstacles in the way of the popularisation of the electric light would be the cost of installation of the necessary wires and fittings. A reduction in the outlay for wiring a building for the electric light was quite as necessary a factor as the reduction in the price charged to the consumer for electrical energy, and as soon as the immense superiority of electric light over gas as an illuminant had become recognised by the public, the question of facilitating its introduction became a commercially important one, and the electric supply companies were obliged to do everything in their power to help forward the new industry, and therefore did not go out of their way to establish a high (and therefore expensive) standard of wiring.

It may possibly suggest itself to my readers that the existence of the many sets of rules compiled by the Institution of Electrical Engineers and other authorities render such a paper as this unnecessary; or, *per contra*, that my bringing before them a paper dealing with this subject is a tacit implication that such rules are incomplete, or inadequate, or capable of improvement.

I think, however, that, without falling into either of these alternatives, I may justify my paper on the following grounds:—

(1) Owing to their highly technical character the rules in question, widely known though they be, do not appeal to the very large class of users of electricity, so that the valuable principles involved and the practical lessons to be learnt from them are not sufficiently appreciated, and

(2) Owing to the important commercial principle alluded to before—namely, the necessity of stipulating the least extensive methods consistent with what appears adequate protection to the fire insurance company under ordinary circumstances—insurance companies and others have contented themselves with a standard which, though high and satisfactory as the event has shown—is still, I venture to think, below that which they would like to see adopted were they to have a hand in the design and equipment of an electric-light installation.

My experience for some fifteen years past has lain to a great extent in electrical matters, and I have made a study of the subject of electric wiring systems, and from the point of view of fire prevention I plead for even a higher standard than that which would satisfy the fire-insurance companies' surveyors.

I will now briefly deal with the more important features, in my opinion, are involved in an ideal wiring installation, having regard to the fact that my audience consists for the most part, presumably, of consumers of electricity rather than electric engineers, I will endeavour, as far as possible, to avoid what would sound to them technical jargon.

A paper prepared for the International Fire Prevention Congress C. de Segundo, A.M.Inst.C.E.

Close attention is required to the following points, and skilled supervision is essential in carrying them into effect:—

(1) The means adopted for insulating the wires.

(2) The means adopted to prevent mechanical injury to the insulation of the wires.

(3) The subdivision of the main circuit and the proportionment of the size of the conductor to the work it has to do.

(4) The means adopted to guard against accidental overloading of the conductor.

(5) The nature of the joints made in the conductors; if possible, no joint should be permitted between the terminals of the various pieces of apparatus involved.

(6) The design of the fittings with special reference to ease in wiring without injury to the conductor.

(7) The method of manufacture and erection of fittings and accessory apparatus (switches, fuses, &c.).

(8) The general scheme of wiring and method of fixing in place wires, casing or tubing, &c., and main and accessory fittings so as to avoid the danger arising from proximity to gas and water-pipes and ironwork of all kinds.

The above may be included in the statement that the essential condition of a properly-erected wiring installation consists in providing that the electric current be kept within its prescribed bounds, and that if, by any unforeseen contingency, a way should be opened for the current to travel in any unauthorised direction, the supply should be cut off automatically and instantly. No absolutely reliable means have as yet been devised whereby possible trouble due to electricity "out of bounds" can be guarded against, and the efforts of those who are working in the cause of fire prevention should be directed towards bringing about the adoption of the best kind of insulation and the most suitable kind of mechanical protection for the wires, supplemented by skilled labour and supervision by a competent man during the placing up of the installation; in other words, to teach consumers to trust to preventive measures rather than to so-called automatic "cures."

Rules are excellent in their way, but unmixed with brains in their application they are of comparatively little use, as circumstances frequently arise which call for modification of some one rule without departing from fundamental principles.

Conducting Wires.

The conducting wires should in all cases be copper having not less than the standard conductivity of 98 per cent. of chemically pure copper, and the size of the mains, sub-mains and distributing branch circuit should be calculated to carry the maximum current under normal conditions without any perceptible increase in temperature. With reference to the determination of the allowable rise in temperature of a conductor, I think the following definition is a practical one:—"By safety is meant that there shall be no perceptible heating of the conductors to the touch."

The standard of 1,000 units of current per square inch of sectional area of copper has been adopted as a safe one, provided the maximum current does not exceed 100 amperes; but to secure efficiency as well as safety it is necessary that this factor be controlled by a further provision that in no case is the drop in pressure from the root of any circuit to the extreme end thereof to exceed 2 per cent. of the pressure at the root. So far we provide against overheating of the conductor and against inefficient incandescence of the lamp, or unsatisfactory working of arc lamp or motor fed by any of the circuits as long as the current does not exceed that corresponding to full normal load. It is absolutely essential, however, to provide for such unforeseen contingencies as contact between wires of opposite polarity, or against a flow of current largely exceeding the normal from whatever cause this might arise. To effect this means are adopted analogous to the fusible plug which one has heard of in connection with steam boilers, and wherever a change of section of the conductor takes place a piece of specially made fusible wire should be introduced between the main conductors and the corresponding branch wires, this fusible wire being of such a size that it will melt and thus automatically cut off the current supply before the latter becomes large enough in amount to seriously raise the temperature of the conducting wires in the branch circuit or otherwise to set up a risk of fire.

This principle should be adhered to most strictly, and constitutes, if properly applied, a not inefficient safeguard against fire due to over-heating of conductors. Too much reliance, however, must not be placed upon fuses or cut-outs, for the following reasons. It is impossible to define the volume of current which does, or does not, constitute a risk of fire. In some cases a considerable current may leak across from one wire to the other, or away to earth, without causing any serious heating effect, whereas in other cases a leakage of current of an inappreciable amount has caused a fire. It depends entirely upon circumstances, upon the nature of the path by which the current passes, or, in some instances, one of which I am about to quote, upon circumstances which are entirely obscure. For instance, I have seen a lamp-holder (which held

a 16 candle-power lamp) with the cylindrical portion burnt right through and the contact plungers fused to the sides of the holder, but the 5 ampere fuse which protected this lamp circuit did not blow. What is even more extraordinary is that the heating was quite local. The flexible wires were not injured nor was the lacquer on the screwed cap of the holder affected.

The protection afforded by fuses therefore is at the best of a relative character. A concrete example may perhaps make this more plain. Imagine a circuit entering a building from the company's supply main and conveying current to a large chandelier which would require say 20 amperes. The fuse on this circuit would be designed to melt when the volume of current reached say 30 amperes. It is therefore clear that should any accidental partial contact between these mains take place, 20 amperes could pass from one to the other and constitute a very grave fire risk without affecting the fuse, because a fuse cannot act intelligently and differentiate between 20 amperes going where it ought not to go and 20 amperes performing the legitimate work of supplying the chandelier. If on the other hand this amount of electrical energy had been distributed over a number of lamps on different circuits, it is quite clear that by judicious subdivision of the circuits feeding these lamps the size of the fuses could at a very early period of the subdivision be reduced to such dimensions that the irresponsible action of say 3 to 4 amperes in any circuit would be sufficient to blow the fuse.

For safety against risk of fire one must depend entirely upon the means adopted for keeping the electric current within its designed sphere of action, namely, the character of the insulation of the wires or of the means adopted to prevent contact between wires of opposite polarity. This includes:—

- (1) The insulation on the wire.
- (2) The means adopted to guard against mechanical injury and damp.

For such wires as we are dealing with the material hitherto used as insulation has been mostly rubber, but to those having any knowledge of the rubber trade, the expression "rubber insulation" covers a very wide field indeed. Some so-called rubber insulation taken from electric cables has been found to contain less than 20 per cent. of rubber, the remainder being adulterants and pigments of all sorts and kinds, but which in a number of instances are found to exert a deleterious influence upon the character of the rubber mixture as an electric insulator. Up to the present nothing has been found to touch best quality rubber specially prepared to resist the oxidising action of the atmosphere, and the deleterious influence of any rise in temperature of the conductor.

Damp.

Damp is most insidious in its action, and every effort should be exerted and every means adopted to safeguard the installation from its evil effects.

Damp may arise from a variety of causes. In the case of a new building the moisture is often of an acid nature which, even when present to so small an extent as to be inappreciable by those living in the house, may entirely undermine the wiring installation in six months. I have in my mind a case where the wiring was carried out by a thoroughly responsible firm of contractors for a customer who did not stint them as to price. Inside of six months the insulation test showed a remarkable degree of deterioration, and an examination revealed the fact that the insulation on the wires had become quite rotten, and that in several places electrolytic action had so seriously diminished the sectional area of the conductor as to render the fuses absolutely useless as a means of protection from overheating of the conductors. To show how apparently slight was the extent of the damp, I may mention that in one room which was papered with a paper of a delicate pink hue no sign whatever of damp was noticeable, and the tenants of the house had never felt or discovered any evidence of damp, yet in this room a switch was absolutely corroded up, and copper carbonate had come through the holes in the base from the conducting wires and collected in considerable quantity on the bottom of the base.

This is an interesting but by no means isolated instance, and tends to show that rules alone are not sufficient, and that competent and intelligent supervision of the work is indispensable.

Were it possible I should like to see every wire in a house treated as if it were a submarine cable. Unfortunately, however, gutta-percha (though the insulator par excellence of a cable which is to be immersed in water and protected from the action of light and air) is useless for the wiring of houses: firstly, on account of its extreme sensitiveness to the oxidising action of the atmosphere and to the action of moisture and light; and secondly, because its softness and plasticity at a temperature only slightly elevated above normal renders it unsuitable mechanically. It is possible, however, that before long a new form of insulator may be introduced upon the English market, which, while possessing all the useful properties of gutta-percha, is practically indifferent to the action

of light and air, and is very much harder than gutta-percha. Large quantities of wires insulated with this material have already been used on the Continent with excellent results.

Mechanical Protection.

For mechanical protection various materials are superimposed on to the rubber covering according to the exigencies of the case. For the electric lighting of buildings, however, it has been found more convenient to use the wires containing comparatively slight mechanical protection and to run them through tubes, or in the familiar wooden casing, whereby the risk of accidental injury is reduced to a minimum if properly carried out. The ideal method of wiring a building, to my mind, is to use nothing but the highest class vulcanised or other suitable rubber insulation, with some suitable form of mechanical protection in the way of braiding merely to protect the wire from injury during its passage from the factory to the place at which it is to be erected, and to enclose the wires in a continuous system of cold-drawn steel tubes specially selected for smoothness of bore, with joint boxes inserted at all points necessary to enable the drawing-in of the wires to be carried out without injury to their protective covering and to facilitate inspection, withdrawal of any wires for the purpose, if need be, of increasing their size, &c., the whole system of steel tube and joint boxes being connected to earth. Such systems have been worked out in almost perfect detail by many firms making a specialty of this class of work, and when properly installed by competent workmen under skilled supervision, such an installation constitutes the best means, within my knowledge and experience, of securing immunity from fire due to electrical causes. Unfortunately, however, these systems have the disadvantage of being somewhat expensive as compared with the familiar system of distribution by insulated wires in American whitewood casing. But while there are millions of lights successfully and efficiently fed by wires protected by wood casing, and while I have instances in my mind of such installations, when properly carried out, being as good to-day as they were twelve years ago, still, when dealing with this matter from the point of view of fire protection, there is no sort of doubt in my mind that the system I have described above is the best and safest; and, indeed, the difference in cost is not so serious a matter as appears at first sight. In fact, in the case of a large building for the wiring of which I recently had to draw up a specification, I went into the question of alternative schemes of wood casing and steel tubing, wires of similar insulation resistance being used. The cost on the tube system was certainly not more than 25 per cent. greater. As this is a point of great importance, I have refrained from giving a schedule of prices, or of going into details of cost, but I hope that we may elicit some apposite remarks from those qualified to speak on this point, namely, the wiring contractors, who are, I think, pretty well represented here to-day.

BRITISH MUSEUM EXTENSION.

PLANS for a new wing of the British Museum have been on view in the tea-room at the House of Commons. They were shown in connection with the grant which Parliament is making for the extension. The cost will be about 200,000*l.*, and of this sum 50,000*l.* will be provided from funds bequeathed to the Museum trustees.

The present addition, says the *Daily Chronicle*, is part of a general scheme which will ultimately see the British Museum covering the whole area bounded by Great Russell Street, Montague Street, Montague Place and Bedford Square. The ground forming this block and not already occupied by the Museum buildings was acquired some time ago from the Duke of Bedford. An important step in its utilisation is represented by the plans which Mr. Henry Tanner, the architect of the Office of Works, has just completed. They concern the frontage towards Montague Place, or the northern side of the Museum. Here a fine block 380 feet long will be erected. This length does not cover the whole frontage towards Montague Place. Corner wings, as they may be called, like the white wing which was built twenty years ago to the south-east of the main building, will some day be added. The design of the new block is in harmony with the general scheme of the Museum which is Grecian. In the middle there will be a portico having Ionic columns, suggesting those at the front of the Museum.

The new building, when it has been erected, will be utilised in connection with the Museum library and exhibition galleries. It is to be of five storeys. There will be a basement devoted to storage, and then a sub-ground floor, which will be utilised for storage and also as receiving and packing-rooms. Next will come a ground floor of spacious galleries, and over it a mezzanine floor with a variety of rooms for general purposes and the use of students. Lastly, there will be an upper floor which will consist of galleries and further working space for students. Altogether the new northern block will be an

largement which is much needed at the Museum. A building has just been begun at Hendon for the housing of some of the accumulated newspaper files. As the treasures of the Museum increase, and the demands upon it by students grow, the cry, however, is always for more room. Naturally it will take a considerable time before the new block is ready, though the intention is that it shall be proceeded with expeditiously. Travelling-houses stand upon the site, and their occupants will have to find other homes as the ground is required.

The expansion alike of the Museum as a national collection and of the buildings in which it is housed has been gradual, if remarkable. It originated in 1753 with the purchase of the library and bric-à-brac of Sir Hans Busk, the Chelsea physician and antiquary. His dying direction was that his treasures should be offered to the nation for 20,000*l.*, two-fifths of what they had cost him. Montague House was acquired for their reception, together with the Harleian, Cottonian and other manuscripts. In 1759 Montague House was opened to the public. Between the years 1823 and 1852 it slowly disappeared before the existing structure, which was recently called for by the size to which the national collection had grown. No part of the British Museum is better known than the reading-room, with its lofty dome and endless shelves of books. It was built in 1837, and the new wing will indubitably be brought to the assistance of its many readers.

THE ECCLESIASTICAL COMMISSIONERS AND WESTMINSTER CLEARANCES.

THE subjoined statement appears this week in the *Guardian*:—"We have reason to believe that the following is a correct statement of the facts relating to the decision of the Ecclesiastical Commissioners—upon which many criticisms have been published during the past week—to reconstruct a portion of their properties in the immediate neighbourhood of Westminster Abbey:—Properties in Westminster held upon beneficial leases granted by the Ecclesiastical Commissioners' predecessors in title at small reserved rents have recently been, or will shortly fall, into the possession of the Commissioners. Among such properties were those comprising a block bounded on the east by Millbank, on the north by Great College Street, on the west by Little College Street, on the south by Wood Street. The leasehold interests in these, of which the leases had only short terms to run, were acquired by the London County Council in connection with the Westminster improvements scheme, and so much of the block was not actually wanted for the widening of streets was transferred to the Commissioners, to whom the freehold already belonged. The lease under which the Commissioners and their present offices has too short a term remaining to justify them in making the expenditure necessary to provide additional accommodation required, and the Commissioners have determined to use the block at Millbank for the purpose of rehousing themselves upon their own freehold. The whole of the site will not be wanted for the Commissioners' own offices. It is their intention to erect thereon a group of buildings consisting of offices for themselves and their agents and of other offices and chambers for letting. The buildings have been designed by the Commissioners' architect, Mr. D. Caröe, F.S.A., in the Renaissance style, and will not be unworthy of, or unsuited to, their situation in relation to the neighbouring public buildings. In addition to this block there are other properties in Great College Street, Wood Street, and the neighbourhood which have fallen into the possession of the Commissioners by the lapse of leases, and these are being relet upon long leases for building purposes. The old houses formerly standing on these sites were for the most part practically worn out by some length of time—while the sites upon which they stood have become increasingly valuable by reason of a demand for sites in this neighbourhood, especially for professional men attracted by the extension of Government offices in Parliament Street, Great George Street and other places. By letting the sites for building purposes the Commissioners, who are bound to the interests of the trust committed to them to develop the properties to the best reasonable advantage, have secured long terms rents certainly more than twice as large as the old houses to remain as long as they were capable of being relet. Of the houses that have been or are about to be demolished, none could fairly be said to have such historical interest as would make it reasonable in the circumstances for the Commissioners to maintain it, while many were decidedly out of both in appearance and in the uses to which they were put. The clearances have resulted in the suppression by the Commissioners of three fully licensed public-houses."

GLASGOW UNIVERSITY NEW BUILDINGS.

TENDERS have been accepted for the erection of the proposed extensions of the Glasgow University buildings, and the work is to be proceeded with at once. We are indebted to the *Glasgow Herald* for the following description of these important buildings, in which provision will be made for the departments of physiology, materia medica and forensic medicine and public health in one building, while another will be devoted to the department of natural philosophy. The entire cost, including equipments and fittings, will be between 90,000*l.* and 100,000*l.* For designs for both buildings a limited competition took place, and the plans submitted by Mr. James Miller, F.R.I.B.A., Blythswood Square, Glasgow, were selected.

The site for the medical building is on the south side of the main road, which extends from the front of the university buildings to the Western Infirmary. By reason of the varied levels of the site it has been possible to arrange the plan so that the second floor plan, the highest in the building, is in reality but one storey above the point from which it is entered. The plan is arranged with its main axis running east and west, and the disposition of the various wings or blocks has been so arranged that there is no overshadowing of the laboratories or classrooms. The physiology department occupies the lower ground floor and part of the upper ground floor plans in the west half of the building, while the other two departments are located in the east and south blocks. The lecture theatre for the physiological department is at the extreme west end of the building, while the theatres of the other two departments are at the extreme east end. Female cloak-rooms, with lavatory accommodation, are provided in every department. Each of the three departments contained in this building has its own independent entrance, and is absolutely self-contained, having no communication whatever with either of the other departments. In all cases the windows are made to run to the ceiling line, and throughout the building the stone butts between the windows have been kept as small as possible, in order to obtain the maximum of light and to obviate cross shadows.

The style of architecture adopted is a phase of modern Renaissance, selected chiefly for its ready adaptability to the requirements of the buildings, its directness and simplicity, and consequent economy in design. In no case has any portion of the plans been sacrificed in order to gain architectural effect, the elevation in every case being a direct outcome of the matured plan. Approaching the building by the roadway from the south-west, as the ground ascends the buildings rise in successive masses in sympathy with it, culminating in the dominant gable at the extreme east end. The rounded lines of the physiology theatre contrast with the straighter features of the main blocks, forming with these a picturesque and pleasant bit of grouping. The stone for the exterior will be white or grey rock, in keeping with the present university buildings. The roofs will be slated with undersized Elterwater or Buttermere green slates, the flat roofs being finished with concrete covered with asphalt. The floors of corridors and halls will be laid with terrazzo, forming a smooth, even surface, without joints of any kind. All stairs will be of stone. The walls of the physiological chemistry-room, as also of the chemical laboratories in the materia medica and forensic medicine and public health departments, will be tiled with white glazed tiles their full height. The walls of other laboratories and rooms will have tiled or enamelled brick dados 5 feet high, above which they will be covered with adamant or Robinson's cement, and these and the ceilings will be painted with "Ripolin," an enamel paint having a very hard and glossy surface which can be readily washed down. The lecture theatre and museum and cloak-room will have wood dados with adamant plaster above, as also the professor's private room, assistant's room, corridors, &c. All finishings throughout the building will be of the best quality of yellow and pitch pine, stained and varnished.

The lecture theatre of the physiological department is horse-shoe shaped, 48 feet wide by 45 feet deep, and capable of seating 200 students in loose order, or a working capacity of 250. The seating is formed with steep staging, the students ascending the back by a special stair and descending to their seats. The students' entrance to the building is at the back of the lecture theatre, and is approached from the road by a short pathway. Immediately on entering is a large students' cloak-room, with a large lavatory entering off same, both being placed under the rise of the seating in lecture theatre. The cloak-room would be fitted up with lockers and numbered pegs, accommodating 200 students. Adjoining the door to the cloak-room is the entrance to a circular stair 4 feet 9 inches wide leading up to the back of theatre seats. By this arrangement students can enter the building by their special entrance, pass into the cloak-room, and from thence by the circular stair to their seats in the lecture theatre, and pass out again without requiring to enter any other part of the building. Special study has been

given to the lighting of the lecture theatre. It is lighted from both sides, having two very large windows on each side. Additional light is also obtained from a large cupola in the roof, which, together with the windows, will make a brilliantly-lighted room, and in such a way that the light will not be glaring to the eyes of either the professor or students. The windows will be fitted with light-tight blinds running in special grooves, while the cupola will be darkened at ceiling level by means of a thick dark blind mounted on a roller and running on guides, and easily and quickly manipulated from the floor of the theatre. The whole when closed will render the theatre perfectly dark. Immediately adjoining the theatre on the north side is the professor's room, 18 feet by 15 feet. It is convenient to the main entrance-hall, and the professor can pass into the theatre from his room without requiring to pass through any public part of the building. The museum is 37 feet 6 inches by 35 feet, lighted on its longest side by three large double-light windows, and enters direct from the entrance-hall. Beyond the museum is the psychology department, consisting of a laboratory, 36 feet by 34 feet, and a lecturer's room, 27 feet by 14 feet, communicating. The position of these rooms is close to the museum and large classroom. An animal-room is placed in the area, and is entirely isolated from the main building, its door opening direct into the area, and one requires to pass out of the main building and into the area before it can be entered, thus preventing all smell from getting into the building. It is a well-lighted room, and, besides having a number of windows looking into the area, it has a very large roof-light, having louvred ventilators at the sides all round, affording perfect light and ventilation.

On the south side of the building is placed the physiological chemistry-room, 77 feet by 35 feet, lighted with large double windows in the front wall, with narrow stone piers. In addition to these, it has two large double windows in its north wall. It is provided with two large fume chambers, one at either end, each having a flue starting with a bell-shaped opening to carry off noxious gases.

The experimental-room, 76 feet by 35 feet, is placed with its long side facing north (this room requiring a more steady and equal light than the chemistry-room has been placed on the north side).

The histology-room is 100 feet by 42 feet, is lighted from the north side, and also from the roof. Special care has been given to the manner of lighting this room. The windows are large, and are divided by very narrow stone mullions, while the stone piers are reduced to the minimum width. The roof is formed after the type of the weaving shed roof, having the glass on the north side only, and at such an angle as will prevent the direct rays of the sun from entering the building (excepting, of course, in the early part of the day).

Throughout the whole of this department the greatest care has been bestowed on the lighting, not only of all rooms and laboratories, but also of all corridor passages and staircases.

The department of materia medica and therapeutics is entered by a porch and vestibule at the east end of the building. The students are provided with an entirely separate entrance when they enter the building and pass into the cloak-room and lavatory, and from thence up a special stair to the seating of theatre. A fume chamber is provided in the theatre with flue for carrying off the fumes. In front of the diagram screen a series of electric lights would be suspended on a horizontal rod, capable of being raised or lowered to any degree required. The lamps would be shaded from the eyes of the students by reflectors, which would throw the light direct on to the screen. Descending a few steps from the entrance hall is placed the pharmacy laboratory, 50 feet by 30 feet, lighted throughout its entire length and end and partly on the west side. Communicating with it is the preparation-room, 14 feet by 13 feet, and a large store, 21 feet by 13 feet, communicating with the preparation-room. The museum for students is placed at the end of the corridor; it is 27 feet by 23 feet, with large windows in the front wall, and having one in side wall. Between the museum and the store is placed a room for the preparation of specimens for the museum, 22 feet by 14 feet. Off the top landing of the stair are the experimental laboratory, chemical laboratory, with the balance-room placed between, all facing the east. The experimental laboratory is 30 feet by 25 feet, and has been placed at the corner so as to receive the greatest amount of light, being lighted on three sides (this laboratory has altogether 68 feet of continuous wall lighting). The chemical laboratory is 30 feet by 20 feet, with its longest side lighted throughout its entire length. A large store is provided near the chemical laboratory, with a service-room adjoining communicating with that laboratory. Communicating with the experimental laboratory is a large store or service-room. Next this is placed the assistants' room, being centrally situated to all the laboratories. Westwards is placed the pharmacy B.Sc. Laboratory, 50 feet by 27 feet; its position here is more retired, and greater quietness insured for the more advanced students. In addition to being lighted on its longest side, it has also a large double

window in the east wall. A small service-room or store is provided in connection with this laboratory, and having a door communicating.

The departmental museum and library is a large and beautifully lighted apartment, being surrounded with large double windows. It is L-shaped on plan, and contains 2,150 superficial feet of floor area. Its position is convenient, yet retired, giving that quietness which the purposes of the room demand. The narrow butts between the windows are just sufficient width to allow the ends of the cases to stand against them, the windows occupying the full width between. In the room, and in the four laboratories, the arrangement of plan adopted permits of a very large proportion of lighted wall surface; the windows being large, evenly and regularly spaced, give a uniformly diffused light to all these apartments. All rooms and laboratories have direct communication with the corridors, and in no case has one room been made the passage way to another.

The whole of the accommodation of the department of forensic medicine and public health (with the exception of the departmental museum and library) is provided on one floor viz. the second or top floor. This department, like the other is absolutely self contained. The plan is L-shaped, having all the rooms and laboratories arranged entering off a continuous corridor well lighted throughout its length—a form of plan which admirably lends itself to obtaining good light and access to every part. On the left of the landing is the professor's private room. The preparation and diagram-room and store immediately adjoin the lecture theatre. The entrance to the students' cloak-room is immediately at the top of the stair. Beyond this is the toxicological laboratory, 52 feet by 25 feet, lighted with its long side facing east, but also having windows on the south and west end, the total length of continuous wall lighting in this laboratory being 90 feet. A store-room is provided communicating with this laboratory.

The balance-room, assistants' room and service-room are placed on the south side of the corridor. The balance-room for convenience adjoins the chemical laboratory, and the assistants' room is central and convenient to all the laboratories. The balance-room will have stone shelves built in the wall in addition to being corbelled, and will be entirely insulated from all steel or iron construction. Beyond these is the laboratory for chemical, chemico-physical and meteorological work, 51 feet by 27 feet, and having a large double window in the end in addition to the front windows. The laboratory has also a north light in the roof throughout its entire length. A fume-chamber is provided in this laboratory. The laboratory for bacteriological, pathological and microscopic work is placed at the end of corridor. Its longest side faces north, and is lighted by four large double windows, while a very large window is placed in the end gable, which extends well up into the lofty open ceiling of the laboratory. In addition to the windows in the walls this laboratory is lighted from the roof on the north side throughout its entire length. In the laboratory is provided an enclosed incubation-chamber entered from the main room by means of an intermediate lobby, so that the door between laboratory and lobby would be closed before opening the door into the incubating-chamber, thereby preserving an equable temperature in the chamber. Next the incubating-chamber is placed a well-lighted store specimen-room. A fume-chamber is also provided in the laboratory, and also a space containing hot air and steam sterilising apparatus. The private research laboratory, 22 feet square, is placed in a projecting wing on the north side of the corridor, and has a north light. Its position is very central, and is convenient to the bacteriological laboratory. All gas in the fume-chamber will be controlled from outside the chamber, and a small electric fan will be fitted to the extraction flue, also controlled from a switch placed outside the chamber. The theatre, 36 feet by 34 feet, and is seated for 150 students. It is lighted by two large windows on the east wall, the windows extending the whole width of theatre. In addition to the windows on the east wall a large cupola is also provided in the roof, so that the theatre will be brilliantly lighted in every part. In no case are windows introduced in the walls immediately facing the professor or the students. On the top floor is also placed the departmental museum and library. In this position it obtains better side lighting, as it cannot be overshadowed by any part of the building, and it has also the advantage of roof lighting. It is situated immediately over the toxicological laboratory, cloak-room, &c., and is a fine apartment, 85 feet long by 25 feet wide, lighted all round by large double windows. The roof of this apartment is formed of steel and semicircular in shape. On the east slope of the roof roof lights are provided, the rays of light from the roof lights being more vertical than those from side windows, specimens in cases are seen to better advantage by their introduction. The lift at the staircase has been continued up to this floor to facilitate the transit of specimens, &c., to or from the museum.

The natural philosophy building has been designed to occupy a site on the north side of the road leading from the

front of the university buildings to the Western Infirmary. The building is three storeys in height. The lower storey or basement plan has its windows entirely above ground line, giving thereby light and ventilation equal to any of the upper floors, only a portion of the storey being sunk below ground line. The principal floor plan is approached by a handsome flight of steps in the centre of the main or south front, which leads into a commodious vestibule, separated from the main hall by a glazed screen with large double swing doors. Immediately on entering the vestibule is a small office or room for a hall porter, having a glazed front with inquiry window. Adjoining is a small waiting-room. On entering the hall, the corridor, 7 feet wide, runs east and west, having a leg at each end of about equal length running north and south, the legs terminating at the general laboratory on the one side and at the large lecture theatre at the other. Right and left of the main staircase two areas have been formed for the purpose of giving ample light and air to the corridors and staircase. The laboratories and other rooms are ranged along the corridors, every apartment communicating direct with the corridor. In the front wing right and left are the electric laboratory and chemical physics laboratory, both of which are 45 feet by 17 feet and lighted on two sides by large double windows. In the wing to the left or west side are ranged a large diagram-room, assistants' room, the latter being placed close to the general laboratory, the balance-room being placed between. The assistants' room communicates with the diagram-room, and both are amply lighted with windows the same as the laboratories, and both rooms are provided with open fires. The general laboratory, 60 by 40, is situated at the extreme north end of this wing, and is lighted from three sides with large four-light windows, and also from the roof by means of the weaving shed roof, where the glazed slope of the roof is placed facing north. The walls of this laboratory and also those of the theatre will be sufficiently strong to carry another storey if required. The side lights of this laboratory are sufficient of themselves to amply light the room in the event of an upper storey being built and the extension carried out at north end. Where roof lights have been adopted in the laboratories, lecture theatre, apparatus-room, &c., a 1½-inch hot-water pipe will be run round the roof lights at ceiling level to prevent condensation and also to obviate down-draughts. At the end of the corridor, just opposite the balance-room and projecting into the courtyard, is placed a secondary staircase connecting with every floor. The apparatus-room is placed at right angles to and running between the two side corridors, having double swing doors at both ends communicating with the corridors. The apparatus-room has a ceiling 15 feet high, with an average height of 18 feet at the cupola, and will be brilliantly lighted. This room is placed in a most convenient position with regard to the general laboratory and lecture theatre, the doors at either end giving easy service to these rooms.

On the right or east corridor are placed the professor's private room and private laboratory, the latter communicating with the preparation-room. Each of these apartments are lighted by two large double windows, the light being on the west side of the rooms, and both are provided with open fires. The preparation-room is well lighted on two sides, and, in addition, has a large roof light. It has a door communicating direct with the lecture theatre, and has also a large opening formed in the wall separating it from the theatre, directly in the centre behind the lecture-table, and having a sliding glass screen on both sides, thus forming an experiment chamber. By this arrangement certain experiments can be prepared for the lecture directly from the preparation-room, without requiring to go into the theatre. The floors and walls of the balance-rooms will be constructed in a strong and solid manner, and these rooms will have Caithness stone shelving supported on strong stone corbelling carried out from the solid wall, in addition to being built into the wall. This room will be insulated from all steel and iron construction.

The lecture theatre is seated in the most approved manner, the seats being arranged in circular fashion, thereby enabling the students to face more directly the lecturer or diagram screen. The staging for the seating is formed with graduated steps, so as to give every student a full view of the lecture-table. It is a brilliantly lighted room, having three large windows on either side (one of these on either side extends 13 feet above the floor to the ceiling line). In addition to the side lights, it has also a roof light. A service gallery has been provided, 34 feet long by 5 feet wide, for suspending apparatus, &c. This gallery communicates with a good-sized service-room on the upper floor, the service-room in turn communicating with the preparation-room below by means of a staircase and service stair; it also communicates with the grating spectrometer-room, thereby giving access to the other parts of the upper floor. The service stair in the preparation-room, together with the stair next general laboratory and the main staircase, give access to the upper floor at three distinct sections or points on the plan, thereby greatly facilitating communication between different parts of the building.

The students' cloak-room is a large and well-lighted apartment, fitted up with numbered pegs and lockers, and having hot-water rails for drying coats, &c. Keeping in view the probability of future extension, this building has been so planned that this could be readily and conveniently carried out with the minimum of alteration on the original structures. A large electrically-driven hoist is placed in the well of the staircase, and is arranged to serve all the floors.

The upper-floor plan is arranged precisely on the same lines as the principal floor. The front block contains the magnetic-room and small lecture-room for seventy students. The magnetic-room in its construction will be entirely insulated from all steel or ironwork. Communicating directly with the lecture-room is the diagram and preparation-room, adjoining which is the museum for historic apparatus. The private electric laboratory is placed at the south-east corner, and is lighted on two sides with large double windows. The west block is entirely occupied by the four special research laboratories, all provided with open fires. These laboratories have easy access to the back stair leading down to the general laboratory. Some of these research laboratories will be fitted with light-tight shutters, so that they can be darkened when required. On the opposite side of the corridor are the rooms for spectroscopy, photography, and dark-room. The photographic-room has a north light, with roof-light in addition. The east block contains the room for grating spectrometer. It is entered from the corridor by a small intermediate lobby for use when the room is darkened, and the windows would be all fitted with light-tight shutters, so that the light could be regulated as required. Beyond this room is the service-room for apparatus already described in connection with the gallery in the lecture theatre.

The arrangement of the basement plan is laid out on similar lines to those above, having corridors running completely round the building and communicating at the north end with the students' entrance and stair. By this arrangement the students obtain access to any floor of the building without requiring to make use of the main staircase or front corridors, and without requiring to pass through any of the laboratories or rooms. The corridors and stairs on this floor are as amply lighted as those on the upper floors, the arrangement adopted lending itself to the perfect lighting of every part. The west block is occupied by research laboratories, while under the chemical physics-room is a room for liquid air. A large room for electric work is placed below the electrical laboratory, and it has a large store communicating with it. The dynamo and battery-room is placed in the east block, being near the electrical laboratory. A large and well-lighted workshop is provided. It has a door leading immediately to the back stair up to general laboratory, and another door has been placed giving access to the front corridor, which would give convenient access to the dynamo-room. The remainder of the space on this floor has been given to research laboratories, of which there are ten in all. At the north-east corner is placed the boiler-house, as also the heating and ventilating apparatus.

TESSERÆ.

Concentric Circles in Decoration.

IN Egyptian ornament the use of concentric circles is comparatively rare. In border patterns they sometimes appear as the discs of the Khoker ornament, and seem to be a simplification of the rosette motive. On ivory and wooden objects, combs, &c., they form a more characteristic decoration, and the examples are fairly numerous. But, as a form of ornament, concentric circles are neither prominent in nor characteristic of Egyptian decoration. In Ægean and archaic Greek ornament, and generally the prehistoric ornament of Europe, concentric circles form a most marked and widespread feature. The fact that concentric circles are relatively rare in Egypt, that they do not appear to have ever been recognised as a decorative motive, argues that this ornament in Europe is not a loan as such from Egypt. This statement is confirmed and explained by the local tendencies in Europe to degrade spirals to concentric circles. The latter are, in fact, degenerate spirals. In Egypt artistic skill and decorative training rejected the lower and sustained the use of the higher form of ornament; in Europe a less developed stage of decoration and technical skill did not restrain the tendency to simplification, and the more complex form of the spiral was widely conventionalised to concentric circles. To illustrate the tendency of spirals to degrade to concentric circles examples may be cited even from Egypt. In addition to certain ivory and wooden objects on which true concentric circles are found, they appear occasionally on the scarabs as a substitute for spirals. Mr. Goodyear has published a series in which this transformation is seen. In the first instance, running spirals are simplified to concentric circles joined by tangents; then the tangents are

broken and the concentric circles set loose, portions of the tangents still adhering to them; finally the tangents drop off, and the ornament is reduced to concentric circles.

Sardinian Nuraggis.

The cyclopean structures called nuraggis, both by ancients and moderns, are very numerous in Sardinia, more than 1,200 of them having been found and recorded in the island. They are in height about 50 feet, and in diameter at the base about 90 feet. They are strong buildings in the form of a truncated cone, composed of masses of stone from 2 to 5 or 6 feet square, arranged in layers without cement. The materials are lava, freestone, porphyry, or such other substances as the respective sites afford; and they generally crown the summits of hills commanding plains, where they are seen in every state, some being nearly complete and others a mere heap of rubbish. On entering these edifices, which is effected by a low door, the structure is found to extend below the surface of the surrounding earth. The interior space is almost invariably divided into two floors, each consisting of a vaulted room, to which access is gained from a ramp between two concentric walls, and leading to the summit, where a flight of steps completes the ascent. The nuraggis are of two distinct kinds. Those which are the most common have no marks of the chisel, and are constructed of massive blocks with irregular faces, and smaller stones in the interstices; the materials of the others exhibit exteriors formed by tools, though the stones are not exactly square, but are placed with a stricter regard to keeping the horizontal layers, and gradually diminish in size towards the summit. There have been various conjectures respecting the probable object of these buildings. The darkness of their interior and the fragments of terra-cotta found in them would indicate their having been monuments for the dead—a belief so general that they have obtained in their neighbourhood the name of Domu de Orcu, or the house of death; but the pottery being evidently Roman, and in some instances accompanied by coins of the Lower Empire, indicates only that such was the use made of them at a late period. Captain Smyth, who examined these ancient monuments, says:—"From their laborious construction, their number and their general situation on curcreddus, or eminences, more or less distant from each other, I cannot but suppose they were designed to answer the double purpose of mausolea for the eminent dead and as asylas for the living, especially as many of them are flanked with smaller nuraggis having a subterraneous communication. But the mystery in which they are involved will probably remain impenetrable, since none of them exhibit the least trace of either literal or symbolical characters."



The Architectural Museum.

SIR,—The Architectural Association has now acquired possession of the Royal Architectural Museum in Tufton Street, Westminster, and has obtained from the Ecclesiastical Commissioners a new lease for 999 years, on most advantageous terms.

A contract with Messrs. Holloway Brothers for the necessary reconstruction to suit our requirements has been entered into, the amount of which is 8,440*l*. This expenditure is a considerable one, but the committee has felt that it is bound to make adequate provision for future requirements.

Donations and promises have been received amounting to about 4,500*l*, leaving a balance of 5,000*l*. still required to meet the building contract, furnishing and equipment.

In view of the importance of the work of the Architectural Association to the profession generally, I venture to appeal through your columns for further donations to assist us in meeting our liabilities. It is earnestly hoped that we may be able to enter our new premises free from debt.—Yours faithfully,

HENRY T. HARE, President.

August 10, 1903.

GENERAL.

The King has graciously accepted from the daughters of the painter the picture by the late Mr. H. T. Wells, R.A., entitled "Kensington Palace, Early Morning on June 20, 1837," which was exhibited in the Royal Academy in 1887, and is now on loan at the Cork International Exhibition.

The International Society of Sculptors, Painters and Gravers have been invited to arrange the British fine art section of the Düsseldorf International Exhibition to be held in that city next year. The Council has accepted the invita-

tion, and Mr. A. Neveu du Mont has been appointed delegate by the Düsseldorf Exhibition directors, and also representative of the International Society.

Sir Thomas Hanbury has purchased for presentation to the Royal Horticultural Society the estate and garden of the late Mr. G. F. Wilson, F.R.S., at Wisley, near Woking, which was much admired by all amateurs. The total area of the estate is 60 acres, part of which is used for agricultural purposes. There is a small residence, farmhouse and other suitable buildings on it. The garden has the variety of soil and aspect and the unfailing water-supply which are essential for the purposes of the Royal Horticultural Society, which will have but little to do but provide the necessary plant-houses.

The Earl of Rosebery has again been elected president of the Bucks Architectural and Archaeological Society, which celebrates the jubilee of its existence next year.

The Sketch Plans for the extension of the British Museum by the erection of a new block in Montague Place have been prepared by Mr. Tanner, principal architect of the Office of Works. They correspond in style with the architecture of the existing building.

Mr. Robert S. Peabody, of Boston, has been offered the position of advisory architect of the House of the Representatives office building in Washington.

The Home Secretary has stated that liability for compensation for accidents to workmen employed on buildings less than 30 feet in height is receiving attention in connection with the amendment of the Act now under the consideration of the Government.

M. Robert Mols, a Belgian painter of considerable reputation, died at Antwerp at the age of fifty-five last week. M. Mols is best known in England by his picture of the "Review at Spithead before the Crimean War," which was acquired by the Trustees of the National Gallery for 40,000 francs.

The Parliamentary Committee appointed to inquire into the barrack work of the Royal Engineers have presented the report, which will not, however, be published.

Mr. James Henry Cook, architect, of Liverpool, has passed from this life in his forty-second year. He had only recently returned from abroad, where he went in the hope to recover his health. His ability was shown not only in designing, but in literary composition.

An Obelisk of dark red granite, erected by Mr. Alfred Mosely, C.M.G., to the memory of Prince Christian Victor of the men of Devon, Gloucester and Somerset who fell in the South African war, was unveiled by Lady Audrey Buller of Plymouth Hoe on Saturday. It has been erected from the design of Mr. Fred W. Marks, architect, of London. The base is ornamented with four bronze panels. That dedicated to Prince Christian Victor is the work of Mr. Emil Fuchs, and the others are by Mr. Onslow Whiting. Two of the panels represent soldiers in action, while the third bears an inscription.

The Water-supply for the projected King's sanatorium at Midhurst has been completed. Sir John Aird & Co. have constructed two reservoirs with a total capacity of 220,000 gallons. The engineers are Messrs. John Taylor, Sons, Santo Crimp. Nothing definite is known as to when the erection of the sanatorium itself is likely to begin, but there is every reason to believe a start will soon be made. The preparatory clearing of the actual site has not yet been done, the work is put in hand shortly and the weather proves favorable, the foundations may possibly be completed by the spring.

The Total Sums voted in the estimates 1902-03 for the museums and galleries situated in London have been as follows:—Victoria and Albert Museum and Bethnal Green Museum, 66,994*l*.; Geological Museum, 3,558*l*.; British Museum, 128,729*l*.; Natural History Museum, 49,051*l*.; National Gallery, 18,600*l*.; National Portrait Gallery, 5,541*l*.; Wallace Collection, 9,066*l*.

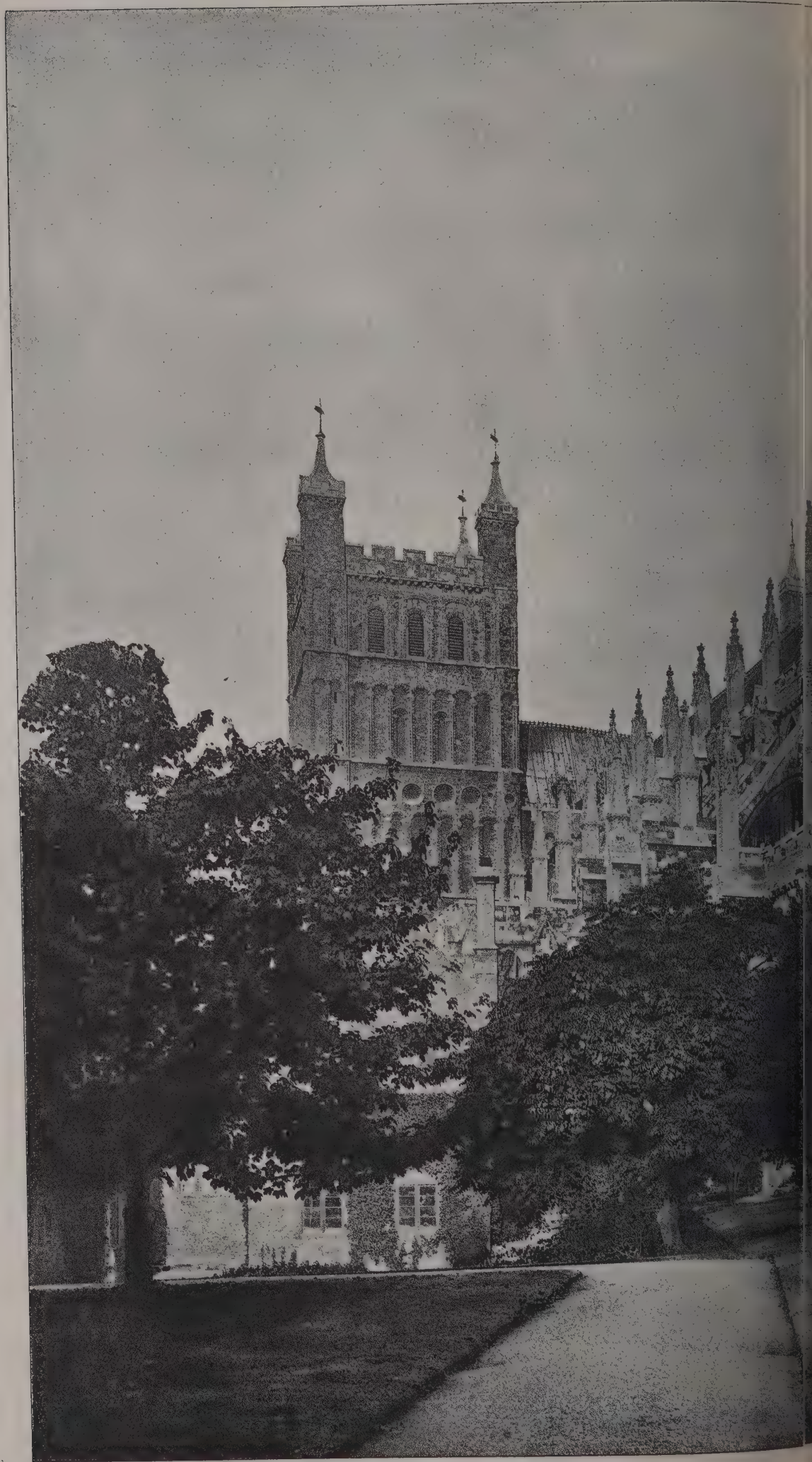
The Nottingham Castle Museum committee contemplate the expenditure of 10,000*l*. on restoration and other works at the castle. The chief requirements are the restoration of the castle lodge (which has been in a dangerous dilapidated state for several years), the repair of the boundary walls, the building of an estate office for the Duke of Newcastle's agent, and the laying-out of the gardens to the southeast of the castle. The Corporation of Nottingham is obliged to carry out this work by the terms of the lease under which they hold the castle and grounds from the Duke of Newcastle.

The London County Council have informed the Board of Trade that, in connection with the reconstruction for electrical traction of their tramways, about 5,000 tons of rails of British manufacture and 10,720 tons of rails of foreign manufacture have been purchased by the Council. Previously to the transfer the company used about 1,000 tons per annum of foreign rails and none of British manufacture.

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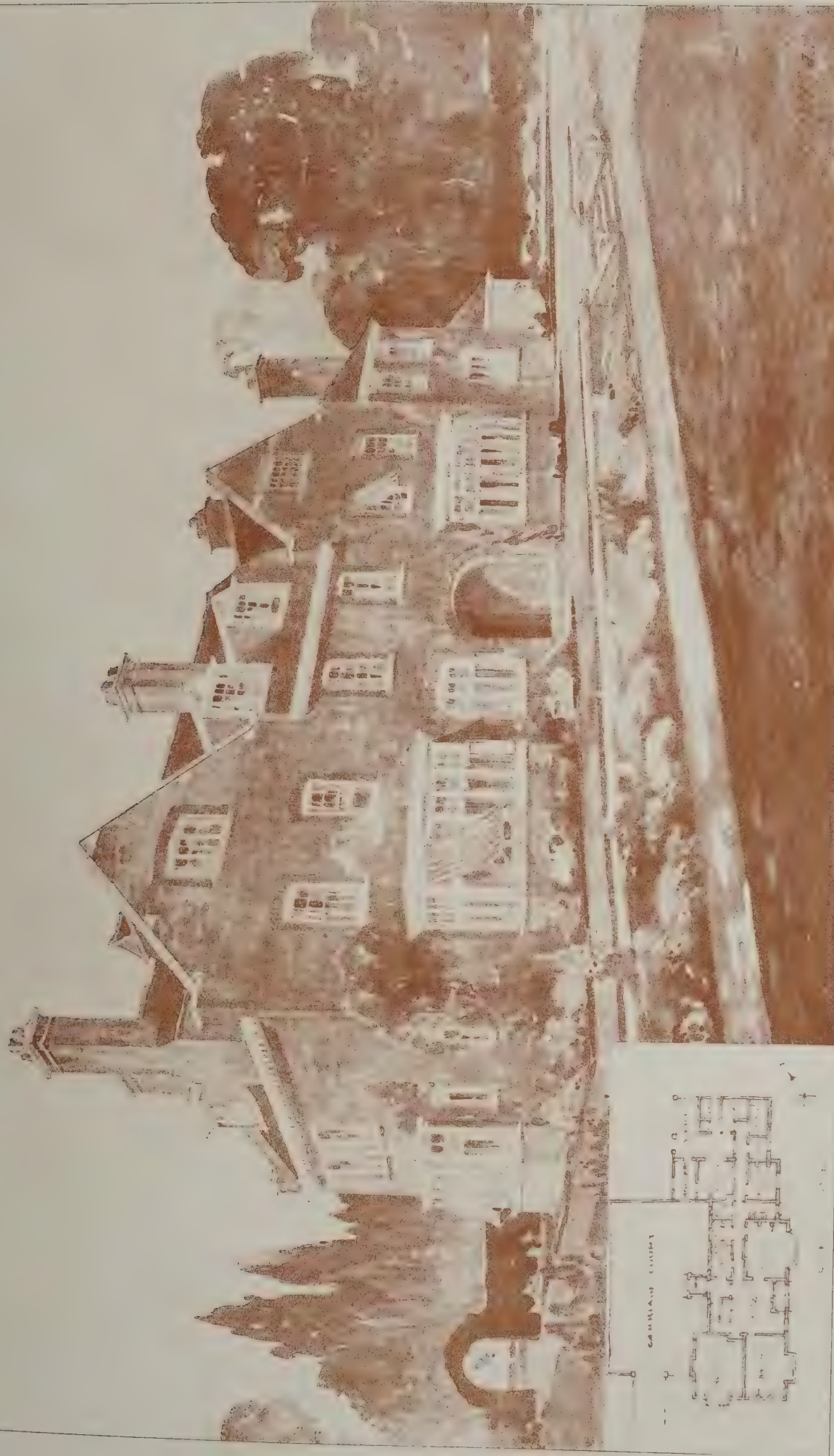


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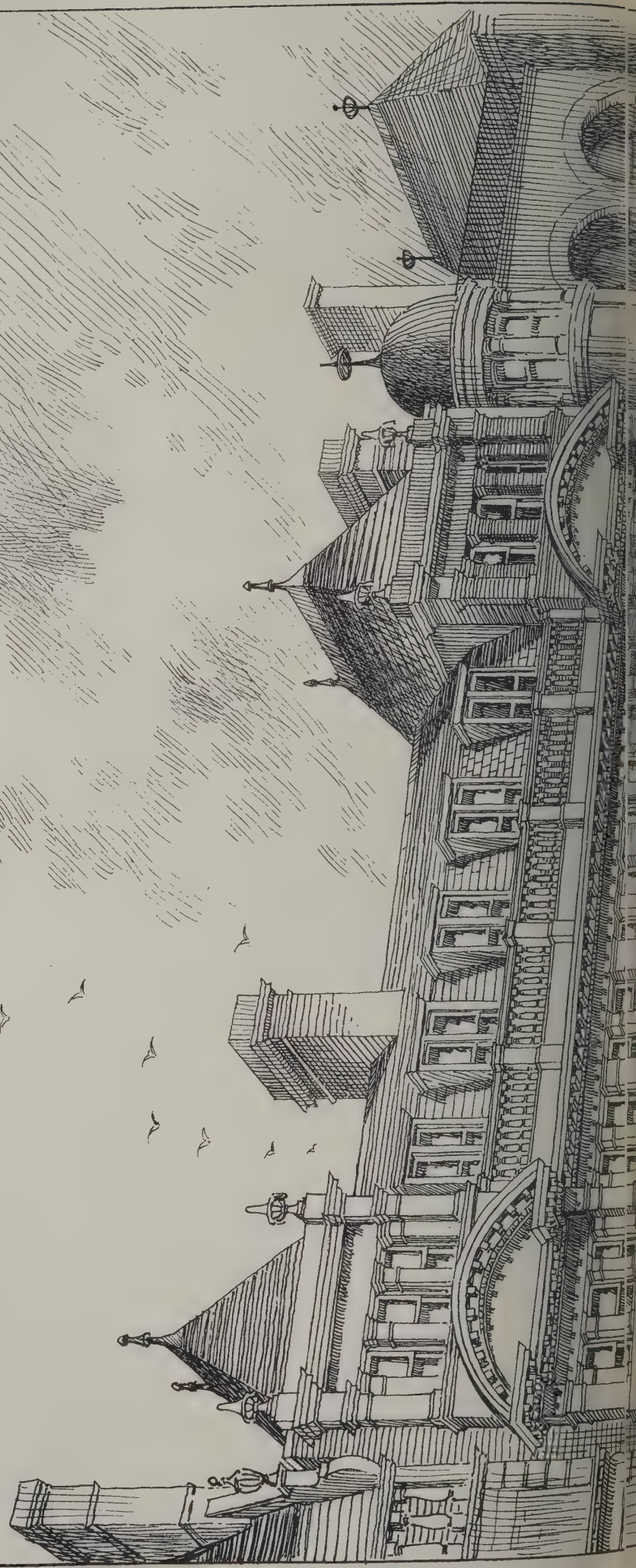
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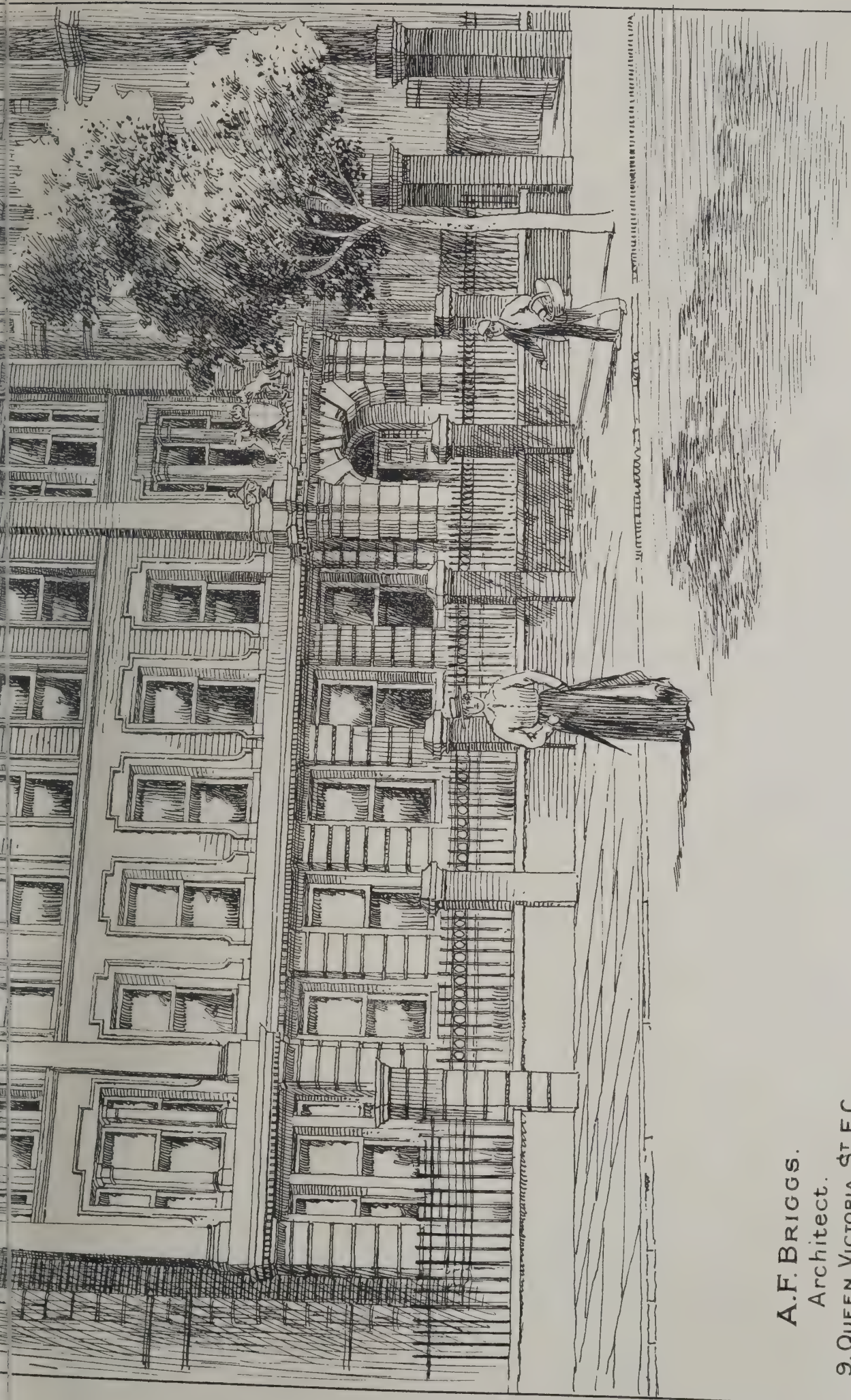
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Victoria Embankment.





A.F. BRIGGS.
Architect.
9, QUEEN VICTORIA ST. E.C.

THE Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

BLACKPOOL.—Aug. 31.—Competitive drawings are invited for new offices to be erected at the corner of Sefton Street and Dixon Street, Blackpool. The architect whose design is selected will be appointed to carry out the work. The competition is limited to architects having offices and practising within the water area of the Fylde Water Board. Mr. C. Arthur, 34 Victoria Street, Blackpool.

HEYWOOD.—Sept. 14.—Competitive designs are invited for library building to be erected in Church Street at a cost of £500. Premiums of 30%, 20% and 10% will be awarded for designs adjudged of sufficient merit and placed first, second and third in order respectively. Mr. J. Ainsworth Settle, Municipal Buildings, Heywood, Lancs.

HOWDEN.—Sept. 12.—Plans and estimates are invited for improving and extending the sewerage of the contributory area of Howden. The successful competitor will be awarded a sum of 15% and the usual commission for superintending the execution of the works. Mr. Henry Green, clerk.

IRELAND.—Sept. 30.—The Great Southern and Western Railway Company offer a prize of 20% for the best design and specification of workmen's cottages, built either semi-detached or in terraces. Mr. Francis Bl Ormsby, secretary, Knightsbridge Terminus, Dublin.

LEYLAND.—Sept. 26.—Plans are invited for the laying-out and development for municipal and other purposes of about 11,902 square yards of land in Church Road and Sandy Lane, Leyland, Lancs. A premium of 15% 15s. is offered to the author of the plan considered to be the best design. Mr. M. H. Wilkinson, surveyor, 21 Towngate, Leyland.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75% for design placed first, and one of 25% for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100%, 50% and 30% respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

SCOTLAND.—Sept. 22.—Competitive plans are invited for the erection of a hospital and offices. Conditions of the competition and full particulars may be obtained from Mr. J. E. Shaw, clerk to the Lunacy Board, County Buildings, Ayr.

SCOTLAND.—Plans are invited for a new higher-grade school to be erected at Fraserburgh for the accommodation of 650 pupils. Mr. Alex. Henderson, clerk to the School Board, Fraserburgh.

CONTRACTS OPEN.

ACTON.—Aug. 18.—For the erection of isolation hospital buildings at The Friars, East Acton. Mr. D. J. Ebbetts, surveyor, 242 High Street, Acton, W.

BARNSELY.—Aug. 19.—For the erection of latrines and outbuildings at the Park Road schools. Mr. Ernest W. Dyson, architect, 14 Market Hill, Barnsley.

BARROW-IN-FURNESS.—Aug. 22.—For alterations to the old municipal buildings. Particulars obtained at the office of the Borough Engineer.

BATLEY.—Sept. 4.—For additions to the town hall Messrs. Walter Hanstock & Son, architects, Branch Road, Batley.

BINGLEY.—For the erection of a small detached residence on the Myrtle Grove Estate, Bingley, Yorks. Mr. Edgar H. Parkinson, architect, Old Bank Chambers, Bradford.

BRISTOL.—Aug. 31.—For the erection of one or two warehouses at Cumberland Basin. Mr. W. W. Squire, engineer, Engineer's Office, Underfall Yard, Cumberland Road, Bristol.

BURNLEY.—Aug. 17.—For the erection of general offices, Queensgate car depot, for the tramways committee. Mr. G. H. Pickles, borough surveyor, Town Hall, Burnley.

BURTON-IN-LONSDALE.—Aug. 31.—For the erection of a Wesleyan Sunday school and classroom at Burton-in-Lonsdale. Mr. Robt. Richardson, Halfway House, Cantsfield, Kirkby Lonsdale.

CANNOCK.—Sept. 8.—For certain works at the workhouse, Cannock, Staffs, in connection with (a) rebuilding and additions to the laundry and washhouses, and (b) the provision and fixing of steam-engine and laundry machinery. Mr. Ashton Veall, architect, 84 Darlington Street, Wolverhampton.

CLEETHORPES.—Aug. 19.—For the erection of a shelter, males' conveniences, greenhouse and potting frames, Cleethorpes Park. Mr. Egbert Rushton, surveyor, Poplar Road, Cleethorpes, near Grimsby.



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COLWYN BAY.—Aug. 24.—For the erection of isolation hospital, including pavilion and ward blocks, administrative building, laundry and outbuildings. Mr. Jos. H. Roberts, clerk, Council Offices, Station Road, Colwyn Bay.

COVENTRY.—Aug. 18.—For the erection of shop and stores, Harnall Lane East, and six houses, King Edward's Road. Messrs. Harrison & Hattrell, architects, 23 Hertford Street, Coventry.

EPSOM.—Aug. 20.—For putting-in foundations of the Tenth County Lunatic Asylum (Long Grove), near Epsom, Surrey. Mr. G. T. Hine, architect, 35 Parliament Street, S.W.

GILLINGHAM (KENT).—Aug. 19.—For the erection of a brick wall round a plot of land on Gillingham Pier and Wharf. Mr. F. C. Boucher, clerk, New Brompton.

GOLDTHORPE.—Aug. 27.—For the erection of a boys' school and caretaker's house at Goldthorpe, Bolton-upon-Deerne. Mr. Geo. Dickinson, clerk, School Board, Bolton-upon-Deerne, Rotherham.

GRIMSBY.—Aug. 24.—For the erection of an underground sub-balancing station in Riby Square, and a fan-house, &c., at the electricity works, Doughty Road. Mr. W. A. Vignoles, borough electrical engineer, Grimsby.

GUILDFORD.—Aug. 18.—For the erection of a porter's lodge, &c., at the Woodbridge hospital, Guildford, and additions to the small-pox hospital at Whitmoor Common, near Guildford. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

GUILDFORD.—Aug. 31.—For the erection of an underground convenience for both sexes in North Street. Mr. C. G. Mason, borough surveyor, Tuns Gate, Guildford.

HALIFAX.—Aug. 27.—For the erection of official administrative block, comprising Board-room, section-rooms and appurtenances, at Union workhouse, Gibbet Street, Halifax. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

HASLAND.—Aug. 18.—For the erection of mixed school, fence walls and conveniences at Grassmoor, and mixed school, fence walls and conveniences at Hasland, in the county of Derby. Messrs. Rollinson & Son, architects, 13 Corporation Street, Chesterfield.

HEMSWORTH.—Aug. 19.—For the erection of caretaker's house, boundary walling, &c., at Hemsworth. Mr. W. E. Richardson, architect, Rothwell, Leeds.

HORNCASTLE.—Aug. 17.—For taking-down and rebuilding the bridge over the stream on the road leading from Scamblesby to Donington, in the parish of Asterby, Horncastle, Lincs. Mr. W. H. Holmes, surveyor, Council Office, 4 Church Lane, Horncastle.

HUDDERSFIELD.—Aug. 19.—For the erection of five lock-up shops at Crosland Moor. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

HUDDERSFIELD.—Aug. 20.—For the enlargement of the manager's house for the Shelley and Shepley Gaslight Company, Ltd. Mr. E. W. Lockwood, architect, 37 Byrom Arcade, Huddersfield.

HULL.—For the erection of a new villa residence, Newland. Mr. John M. Dossor, architect, 2 Manor Street, Hull.

ILFORD.—Aug. 18.—For the erection of a post office at Ilford, for the Commissioners of H.M. Works and Public Buildings. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

IRELAND.—Aug. 19.—For the erection of six cottages, with out-offices, piers and gates, and for the fencing of four one-acre plots; also for alterations, additions and repairs to two houses in the townland of Kilnaglery, Kinsale, including the erection of out-offices for each house, taking-down and hanging a gate on an existing pair of piers, and supplying and hanging a new gate in lieu of the one so removed; and for the fencing of the plot attached to each house. Mr. John Murphy, clerk, Board-room, Workhouse.

IRELAND.—Aug. 26.—For additions and alterations to Armagh Road Presbyterian church, Portadown. Mr. Thomas Houston, architect and civil engineer, Kingscourt, Wellington Place, Belfast.

IRELAND.—Aug. 29.—For the erection of cycle works, showroom and dwelling-houses at St. Lawrence Gate, Drogheda. Mr. F. H. Tallan, architect, 356 Kildare Street, Dublin.

KESWICK.—For reslating Black Lion inn and cottage adjoining in Main Street, Keswick. Messrs. Jennings Bros., Ltd., Castle Brewery, Cockermouth.

KNARESBOROUGH.—Aug. 19.—For the erection of an engine-house in connection with the waterworks at Killinghall, Knareborough. Mr. William Lupton, 44 Station Parade, Harrogate.

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LANCASTER.—Aug. 22.—For putting in a new shop-front and other works at premises in Cheapside. Mr. T. Cann Hughes, town clerk, Town Hall, Leicester.

LEEDS.—For additions to Meanwood Road Council school. Mr. W. S. Braithwaite, architect, Leeds.

LEEDS.—Aug. 24.—For rebuilding block of office premises, Albion Street, Leeds. Messrs. Thos. Winn & Sons, architects, 92 Albion Street, Leeds.

LEICESTER.—Aug. 26.—For the enlargement of the head post office at Leicester. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

LONDON.—Aug. 21.—For the erection of out-relief stores at the rear of the Union offices, Tooley Street, S.E. Messrs. Newman & Newman, architects, 31 Tooley Street, S.E.

LONGFLEET.—For the erection of the new infirmary and other buildings in the workhouse grounds, Longfleet. Mr. H. F. J. Barnes, architect, Poole, Dorset.

MACCLESFIELD.—For the erection of a provision shop. Mr. Jabez Wright, architect, Macclesfield.

MARSDEN.—Aug. 20.—For the cabinetwork required in the erection of choir stalls, screens, &c., in the chancel of Marsden parish church. Messrs. Kirk & Sons' Offices, John William Street, Huddersfield.

MILNSBRIDGE.—Aug. 21.—For alterations to three shops, Market Street, Milnsbridge. Mr. John E. Lunn, architect, Milnsbridge, Yorks.

NEWARK.—Aug. 24.—For the erection of new infirmary buildings and appurtenant works at the premises of the Guardians in Bowbridge Road, Newark. Mr. Arthur Marshall, architect, King Street, Nottingham.

NEWCASTLE-UPON-TYNE.—Sept. 7.—For the erection of senior and junior departments (in two blocks) at Forsyth Road, West Jesmond, for the Newcastle-upon-Tyne School Board. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

NEW MALDEN.—Aug. 31.—For the erection of new public offices, fire station, stabling, &c., at New Malden, Surrey. Mr. William Hope, architect, Seymour Road, Hampton Wick.

NORTH SHIELDS.—Aug. 18.—For the erection of an accumulator house at the electrical power station, North Shields. Mr. John F. Smillie, surveyor, Tynemouth.

NUNEATON.—Aug. 25.—For the erection of an infirmary and laundry. Mr. Harry Quick, architect, 64 Hertford Street, Coventry.

OTLEY.—Aug. 19.—For the erection of stabling, offices, &c., adjoining the Black Horse hotel, Otley, Yorks. Mr. Harold Chippindale, architect, Guiseley, Leeds.

PADDINGTON.—Aug. 22.—For the construction of a room at the public baths, Queen's Road, Paddington. Mr. E. B. B. Newton, borough surveyor, Town Hall, Paddington, W.

PRESTON.—Aug. 17.—For the erection of a new tramway power station, car-sheds, &c., at Holmrook Road and Sussex Street East. Mr. Walter H. Tittensor, electrical engineer, 25 Burrow Road, Preston.

PUDSEY.—For reseating and decorating the Wesleyan chapel, Church Lane, Pudsey, Yorks. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

ROWHEATH CHICK.—For the erection of a detached residence at Rowheath Chick, St. Osyth, Essex. Mr. George Gardiner, architect, Marine Parade, Clacton-on-Sea.

SCOTLAND.—Aug. 17.—For the erection of Crosshill and Govanhill district library, Glasgow. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

SCOTLAND.—Aug. 17.—For the works to be executed in the erection of a new passenger station at Plean Junction, near Bannockburn, for the Caledonian Railway Company. Mr. J. Blackburn, secretary, 302 Buchanan Street, Glasgow.

SCOTLAND.—Aug. 17.—For mason, carpenter and slater's work of steading at farm of Delavine, and for alterations on stable and barn at Wester Tournahaish. Mr. Charles Christie, factor, Estate Office, Strathdon.

SCOTLAND.—Aug. 17.—For the erection of a cottage at Hornewells, Aberdeen. Messrs. Alex. Stronach, jun., & Sons, advocates, 20 Belmont Street, Aberdeen.

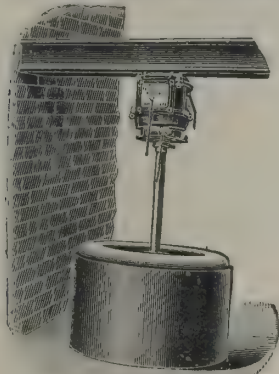
SCOTLAND.—Aug. 19.—For the erection of cottages at Easter Colfield. Messrs. A & W. Reid & Wittet, architects, Elgin.

SCOTLAND.—Aug. 24.—For the rebuilding and extending of business premises, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SCOTLAND.—Aug. 24.—For the erection of the Carnegie public library, Montrose. Mr. J. Lindsay Grant, architect, Manchester.

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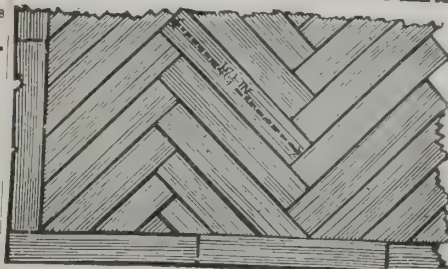
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FULL LIST, and dates when they appeared, of THE CATHEDRALS which have been published on Application to The Publisher.

SCOTLAND.—Aug. 25.—For the erection of the Renfrewshire combination poorhouse at Crookston. Messrs. MacWhannell & Rogerson, architects, 51 West Regent Street, Glasgow.

SCOTLAND.—Aug. 31.—For the erection of hotel at Turnberry. Mr. James Miller, architect, 15 Blythewood Square, Glasgow.

SELLY OAK.—Aug. 24.—For the erection of a boiler-house at the workhouse, Selly Oak. Messrs. C. Whitwell & Son, architects, Temple Row, Birmingham.

STAINBURN.—Aug. 17.—For the erection of five cottages and out-offices at Stainburn, near Workington. Mr. Joseph Iredale, Stainburn.

STOURBRIDGE.—Aug. 17.—For the erection of a free library and technical institute in Hagley Road and Church Street. Mr. Frederick Woodward, Town Hall, Stourbridge.

UPTON-ON-SEVERN.—Aug. 20.—For the erection of an isolation hospital near Upton-on-Severn, in the county of Worcester. Messrs. Lewis Sheppard & Son, architects, 51 Foregate Street, Worcester.

WALES.—For masonry at the new sinkings at Groesfaen and Penygarey, near Bargoed. All particulars may be obtained at the offices, Rhymney.

WALES.—Aug. 17.—For the construction of about 340 yards of retaining and fence walls and widening and forming carriageways and footways on the Cardiff Road, Treforest, Pontypridd. Mr. J. Colenso Jones, clerk, Urban District Council, District Council Offices, Pontypridd.

WALES.—Aug. 17.—For the erection of a Sunday school in connection with St. Cadoc's Church, Trevethin. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

WALES.—Aug. 17.—For the erection of an infants' school and master's house at Brithdir, in the Rhymney Valley. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Aug. 18.—For the provision of a new electrical department for lupus treatment, &c., at the Cardiff infirmary. Mr. Edward Seward, architect, Queen's Chambers, Queen Street, Cardiff.

WALES.—Aug. 19.—For the erection of a manager's house at Caerau. Messrs. E. W. Burnett & Son, architects, Tondur.

WALES.—Aug. 19.—For the extension of the New Trinity Congregational schoolroom, Cowbridge Road, Cardiff. The Rev. D. Tyssill Evans, 5 Eton Place, Cardiff.

WALES.—Aug. 19.—For the erection of an organ chamber and altering, repairing and renovating Llandilofawr parish church. Mr. David Jenkins, architect, Llandilo.

WALES.—Aug. 20.—For the erection of fifty workmen's dwellings, public offices, stables, &c., at Risca, Mon. Mr. J. Williams, surveyor, Public Hall, Risca, Mon.

WALES.—Aug. 20.—For alterations, plumbing and drainage work at the harbour offices, Swansea. Mr. John Thomas, 32 Fisher Street, Swansea.

WALES.—Aug. 21.—For rebuilding St. Mark's Church, Rhymney, Mon. Messrs. J. Llewellyn Smith & Davies, architects, Aberdare.

WALES.—Aug. 22.—For alterations and additions to Lloyd Street chapel, Llanelly. Mr. D. L. Jones, architect, 12 West End, Llanelly.

WALES.—Aug. 24.—For the erection of about 146 roods of dry stone wall between Little Salkeld and the village of Winkskill, Penrith. Mr. Thomas Watson, surveyor, Kirkoswald.

WALES.—Aug. 24.—For taking-down and rebuilding portions of the east and south walls of chancel, with buttresses, inside lining, &c., and putting in new foundations and making good east window of St. Mary's parish church, Builth Wells, Breconshire. Mr. Telfer Smith, architect, Builth Wells.

WALES.—Aug. 25.—For the erection of a new branch post office at Barry Dock, Cardiff, for the Commissioners of H.M. Works and Public Buildings. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—Aug. 26.—For the erection of a school at Troedyrhiw for 400 boys. Mr. J. Llewellyn Smith, architect, Aberdare.

WALES.—Sept. 14.—For the erection of two new departments for boys and girls at Penygraig, Ystradyfodwg. Mr. Jacob Rees, Hillside Cottage, Centre.

WALES.—Sept. 14.—For the erection of public offices in Morgan Street, Pontypridd. Mr. Henry T. Hare, architect, 13 Hart Street, W.C.

WARRINGTON.—Aug. 17.—For rebuilding Newchurch Church. Messrs. Travers & Ramsden, architects, 44 Church Street, Leigh, Lancs.

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WARRINGTON.—Aug. 17.—For rebuilding the church, Newchurch. Messrs. Travers & Ramsden, architects, 44 Church Street, Leigh, Lancs.

WARRINGTON.—Aug. 20.—For the erection of a glass roof behind the Crossfield conservatory, Bank Park. Mr. Thos. Longdin, borough surveyor, Town Hall.

WEM.—Sept. 14.—For the erection of a market house, assembly-hall, &c., at Wem, Salop. Mr. James Brown, architect, 12 Castle Street, Shrewsbury.

WIMBLEDON.—For the erection of two blocks of flats in connection with the Soldiers and Sailors' Families Association, Queen Alexandra's Home, Wimbledon. Mr. C. E. Lancaster Parkinson, architect, 44 Bedford Row, W.C.

WOOLMER FOREST.—Aug. 19.—For the erection of a terrace of ten six-roomed dwelling-houses at Whitehall, Woolmer Forest, Hants. Messrs. Rake & Cogswell, architects, Prudential Buildings, Portsmouth.

WOMBWELL.—Aug. 20.—For the erection of six houses, Hough Lane, Wombwell, Yorks. Mr. A. B. Linford, architect, Carlton Villa, Wombwell.

THE foundation-stone was laid recently of the new workhouse which the Hammersmith Guardians are building at Wormwood Scrubbs, in which ample accommodation is to be made not only for the able-bodied "wastrel," but for those whom disease has driven out of the ranks of labour. This is the first institution of their own which the Hammersmith Board have possessed, for hitherto their poor have found a home in the Fulham Workhouse. The new building, which stands on a site of 15 acres almost adjoining Wormwood Scrubbs prison, will comprise an infirmary with wards for 350 patients, capable of extension to accommodate 600, and a workhouse for 400 inmates, also admitting of enlargement for 800. It is being constructed by Mr. Thomas Rowbotham, of Coventry Road, Birmingham, from designs and under the supervision of Messrs. Giles, Gough & Trollope, of Craven Street, W.C., in accordance with the latest scientific ideas and with regard to the last recommendations of the Local Government Board. A notable feature in the preliminary work was the construction of a railway from the Great Western main line to the site about one and a half mile away. The amount of the contract is a little under 200,000l.

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For painting and varnishing cemetery gates and seats. P. DUFFY, 18 West Row (accepted) £7 6 0

BURNLEY.

For the construction of a water cistern in the workhouse grounds, Rakehead. Mr. S. EDMONDSON, surveyor. R. PARKER, Walshaw, Burnley (accepted) £235 0 0

CARDIFF.

For the erection of a self-contained weighbridge of 20 tons capacity. Mr. W. HARPUR, borough engineer.

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CHELSEA.

For the installation of electric light in the lower hall of the town hall buildings. Mr. T. W. E. HIGGINS, borough surveyor.

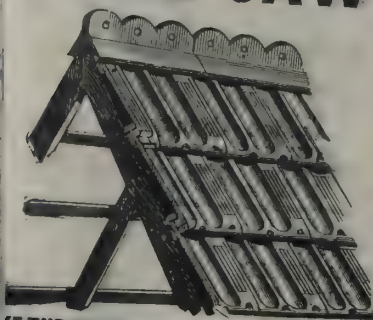
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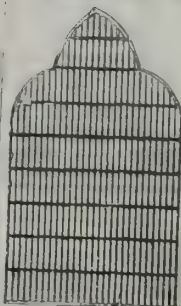
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DEVIZES.

For converting part of the town hall into public offices and other alterations.

R. B. MULLINGS, Devizes (accepted) . . .	£932	0	0
J. Chivers	825	0	0
H. Ash	761	0	0

DUDLEY.

For additions to the technical school, Stafford Street, Dudley, and an underground convenience at the Market Place, Netherton. Mr. JOHN GAMMAGE, borough surveyor.

*Accepted tenders.**Technical school.*

Willetts & Son, Old Hill, near Dudley . . .	£739	0	0
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Convenience, Netherton.

Oakley & Coulson, Dudley	395	0	0
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FENWICK.

For painting and limewashing the school premises and master's house, Fenwick, Yorks.

J. Stephens	£27	13	9
Skinner & Son	19	17	6
G. E. Stoney	16	0	0
J. BESCOBY, Doncaster (accepted)	14	17	6

GRASSINGTON.

For the erection of a residence at Grassington, Yorks. Messrs. EMPSALL & CLARKSON, architects, 7 Exchange, Bradford.

Accepted tenders.

- A. Waddington, Hebden, mason and bricklayer.
 T. Verity, Linton, carpenter and joiner.
 J. Verity, Linton, plumber and glazier.
 T. Bailey & Sons, Skipton, plasterer and concrete.
 T. Nelson & Sons, Otley, slater.

HEBDEN BRIDGE.

For widening the railway between Hebden Bridge and Luddendenfoot, Yorks.

HOLME & KING, LTD, Liverpool (accepted).

IRELAND.

For providing and fixing electric bells throughout the Baltin-glass workhouse.

J. O'GORMAN, Hacketstown, £1 7s. 6d. and £2 2s. each (accepted).

KETTERING.

For providing and erecting the steel trusses and other work required for 2,000 yards super of roofing on the buildings for the electricity and destructor works. Mr. T. READER SMITH, surveyor.

J. Williamson & Co.	£1,343	19	4
Railway and General Engineering Co. . .	1,205	12	3
Bruce & Still	1,022	8	6
W. Lucy & Co., Ltd.	926	2	0
S. Wright, Leicester	904	0	0
Francis, Morton & Co.	863	7	8
G. R. Mather & Son	857	0	0
Grays Steel Construction Co.	853	0	0
Fulham Steelworks Co.	851	1	6
E. J. Raybould & Co.	836	13	0
A. Handyside & Co.	830	0	0
Heenan & Froude	804	3	9
W. A. Baker & Co., Ltd.	766	13	6
Gilbert, Thompson & Co.	714	9	0
Powers, Deane & Ransome	709	0	0
Lewis & Allan	697	7	8
Peirson & Co., Ltd.	684	16	0
Sands & Son	672	10	6
Gimson & Co.	661	0	3
G. B. Smith & Co.	660	5	7
Cross & Cross	617	2	0
E. C. & J. Keay, Ltd.	588	11	4
Clyde Structural Iron Co.	577	16	0
Lees & Harrison	560	17	0

For tar macadam works. Mr. T. READER SMITH, surveyor.

F. G. Sheppard & Co.	£1,750	0	0
W. Grimley & Co.	1,664	0	0
Asphaltes United	1,557	4	2
North of England Asphalte Co.	1,402	15	7
Scudamore & Co.	1,359	10	0
F. Barlow	1,211	12	0
A. Jewell	1,207	3	4
A. Lewen & Son	1,197	0	0
Goodman & Murkett	1,059	0	0
La Brea Asphalte Co.	930	10	0

LIMAVADY.

For the erection of two cottages in the townland of Drumsurn. J. GORDON, Drumagoser, Limavady, £144 10s. each cottage (accepted).

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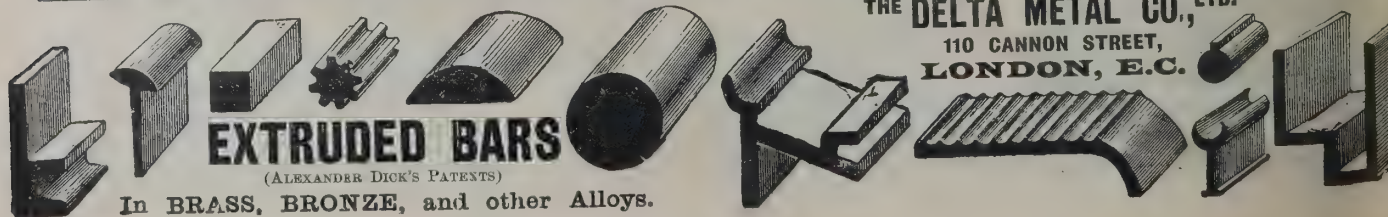
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KENSINGTON.

For decorative and painting works in the interior of the town hall extension.	
G. & F. Kent	£452 0 0
J. Barker & Co.	370 0 0
W. B. HEAD & SON (accepted)	264 0 0

LINCOLN.

For the erection of creosoted boarded fencing round the land to be used as a site for the infectious diseases hospital, Long Leys Road. Mr. R. A. MACRAIR, city surveyor.	
J. W. Giles	£345 11 8
J. Stenning & Son, Ltd.	267 0 0
Rowland Bros.	234 15 0
Bullock & Bell	228 7 0
G. SMITH, Swinderby, Lincoln (accepted)	181 13 9

LONDON SCHOOL BOARD.

The work at the following schools will be done during the summer holidays—July 25 to August 22. Where exterior as well as interior work has to be done, an additional week will be allowed for the former.

For painting exterior, Cook's Ground.

J. & M. Patrick	£369 0 0
E. B. Tucker	331 0 0
Lathey Bros.	313 0 0
Bristow & Eatwell	297 0 0
E. Triggs	282 0 0
W. R. & A. Hide	270 0 0
C. F. Kearley	173 0 0
W. HAMMOND (accepted)	163 0 0

For painting exterior, The Fox.

S. Polden	£96 0 0
C. F. Kearley	90 0 0
W. Brown & Sons.	86 0 0
W. R. & A. Hide	84 15 0
G. M. Sealy	82 0 0
F. T. CHINCHEN & Co. (accepted)	73 0 0

For cleaning interior, Orchard Street.

W. Shurmur & Sons, Ltd.	£167 0 0
Barrett & Power	154 0 0
H. Runham Brown	147 0 0
W. SILK & SON (accepted)	147 0 0

LONDON SCHOOL BOARD—continued.

For painting interior, Olga Street.

Barrett & Power	£549 0 0
G. Wales	503 0 0
W. Chappell	495 0 0
A. Porter	486 0 0
R. Woollaston & Co.	481 0 0
G. BARKER (accepted)	429 0 0

For cleaning interior and painting exterior, Summerford Street.

C. Willmott & Son	£1,163 10 6
G. Wales	950 0 0
Barrett & Power	692 0 0
G. Barker	660 0 0
A. Porter	631 0 0
H. RUNHAM BROWN (accepted)	620 0 0

For painting interior and exterior, Arlington Square.

C. & W. Hunnings	£301 0 0
G. Kirby	228 10 0
A. Porter	215 0 0
H. Runham Brown	210 0 0
C. Dearing & Son	197 0 0
STEVENS BROS. (accepted)	192 10 0

For painting interior and exterior, Windsor Road.

G. Wales	£482 0 0
W. Chappell	435 0 0
W. Silk & Son	422 0 0
F. Bull	421 0 0
A. W. Derby	415 0 0
G. BARKER (accepted)	398 0 0

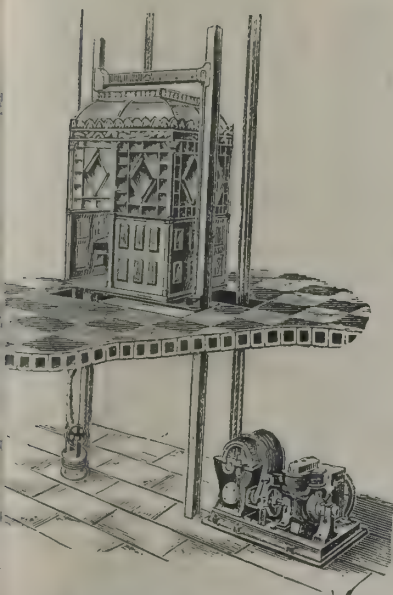
For painting exterior, Baltic Street.

Parrott & Isom	£161 0 0
Johnson & Co.	149 0 0
Gavin Bros.	134 5 0
John Greenwood, Ltd.	129 17 6
W. Chappell	115 0 0
F. & H. F. HIGGS (accepted)	115 0 0
G. Barker	108 10 0

For painting exterior, Purrett Road.

H. Groves	£165 10 0
W. Banks	142 17 6
E. PROCTOR & SON (accepted)	140 0 0

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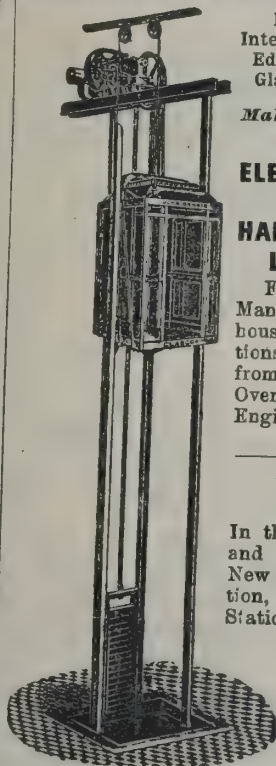
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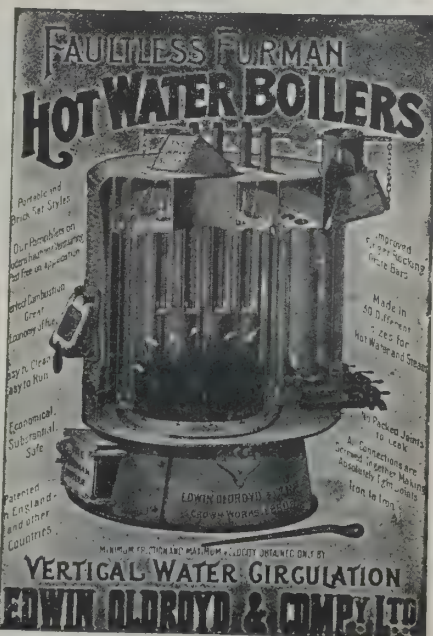
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LONDON SCHOOL BOARD—continued.

For painting exterior, Drury Lane day industrial.

Bargman, Son & Co.	£288	0	0
Parrott & Isom	227	0	0
Gavin Bros.	212	8	6
W. Hornett	179	10	0
H. Runham Brown	169	0	0
W. CHAPPELL (accepted)	125	0	0

For painting exterior, Penrose Street (old and new portions).

J. C. Chalkley	£372	10	0
J. R. Sims	350	0	0
G. Brittain	346	0	0
J. F. Ford	313	0	0
W. Hornett	279	10	0
W. Sayer & Son	263	6	0
F. & H. F. Higgs	258	0	0
W. V. GOAD (accepted)	245	0	0

For painting exterior, Winchester Street.

J. Willmott & Sons	£433	0	0
C. & W. Hunnings	306	0	0
G. S. S. Williams & Son	281	10	0
Bate Bros.	271	0	0
T. Cruwys	269	0	0
Marchant & Hirst	259	0	0
F. W. HARRIS (accepted)	239	0	0

For painting interior, Blackheath Road (old and new portions).

W. Banks	£497	0	0
G. Kemp	450	0	0
C. G. Jones	393	4	0
E. Proctor & Son	370	0	0
W. J. Howie	358	0	0
H. GROVES (accepted)	325	0	0

For painting exterior of main and special schools, Enfield Road.

J. Stewart	£192	0	0
Barrett & Power	164	0	0
C. Dearing & Son	156	0	0
R. Woollaston & Co.	154	0	0
McCormick & Sons	149	10	0
H. Runham Brown	142	0	0
J. Grover & Son	134	15	0
G. WALES (accepted)	134	10	0

LONDON SCHOOL BOARD—continued.

For painting exterior, Gayhurst Road.

C. Willmott & Son	£203	10	0
J. Stewart	194	0	0
A. Porter	158	0	0
W. Shurmur & Sons, Ltd.	147	10	0
H. Runham Brown	137	0	0
W. Silk & Son	127	10	0
F. BULL (accepted)	119	10	0

For painting exterior, Morning Lane.

W. Shurmur & Sons, Ltd.	£258	0	0
G. Wales	256	0	0
Barrett & Power	250	0	0
J. Stewart	245	0	0
W. Silk & Son	238	0	0
F. Bull	199	10	0
J. Chessum & Sons	199	7	0
WOOLLASTON BROS. (accepted)	176	0	0

For painting exterior, The Pulteney.

W. Hornett	£370	16	0
J. R. Sims	359	0	0
G. Foxley	327	0	0
Lathey Bros.	289	0	0
W. Brown & Sons	281	0	0
T. CRUWYS (accepted)	242	0	0
W. Chappell	235	0	0

For painting interior of all buildings, Lavender Hill.

General Builders, Ltd.	£1,079	0	0
W. King & Son	845	0	0
W. Chappell	685	0	0
Holloway Bros. (London), Ltd.	668	0	0
Martin, Wells & Co., Ltd.	615	0	0
R. A. Jewell	600	0	0
E. Triggs	599	0	0
J. Garrett & Son	589	0	0
J. & M. PATRICK (accepted)	586	0	0

For painting interior, Merton Road.

Dowsett & Jenkins	£483	17	0
R. S. Ronald	280	0	0
J. & M. Patrick	260	0	0
Maxwell Bros., Ltd.	235	0	0
Rice & Son	227	10	0
R. A. JEWELL (accepted)	181	0	0

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LONDON SCHOOL BOARD—continued.

For painting interior and exterior, Maida Hill.

T. Cruwys	£169	0	0
W. T. & A. Hide	154	15	0
F. T. Chinchin	119	0	0
H. Wall & Co.	116	10	0
Marchant & Hirst	105	0	0
A. Balfour & Co.	97	15	6
W. CHAPPELL (accepted)	82	10	0

For painting parts of exterior of old portion not done with enlargement (boys, girls and infants), and painting interior and exterior of special schools, Galleywall Road.

H. J. Williams	£249	0	0
W. Sayer & Son	194	0	0
Rice & Son.	170	0	0
J. Garrett & Son	165	0	0
J. Greenwood, Ltd.	158	0	0
J. C. Chalkley	157	0	0
W. HOOPER (accepted)	127	0	0

For exterior painting, Duncombe Road school.

McCormick & Sons	£222	0	0
Bate Bros.	220	0	0
J. Grover & Son	196	0	0
C. & W. Hunnings	196	0	0
H. Wall & Co.	195	0	0
F. T. Chinchin & Co.	193	0	0
G. Kirby	187	0	0
F. W. Harris	179	0	0
Stevens Bros.	174	0	0
MARCHANT & HIRST (accepted)	167	0	0

For painting interior and exterior, Tidey Street.

G. F. Holliday	£311	10	0
R. Woollaston & Co.	250	19	0
VIGOR & CO. (accepted)	227	0	0

For exterior painting, Rathfern Road school.

W. Hayter & Son	£225	0	0
F. & H. F. Higgs	215	0	0
M. E. Allen	209	7	0
J. & C. Bowyer	196	0	0
C. G. Jones	169	10	0
W. Banks	160	0	0
G. Kemp	127	0	0
H. GROVES (accepted)	122	0	0

LONDON SCHOOL BOARD—continued.

For exterior painting, Old Woolwich Road school.

W. Hayter & Son	£175	0	0
C. G. Jones	150	5	0
W. Banks	145	10	0
H. Groves	144	0	0
Lathey Bros.	137	0	0
E. PROCTOR & SON (accepted)	112	0	0

For exterior painting, Rushmore Road school.

G. Wales	£251	0	0
J. Stewart	226	0	0
Barrett & Power	170	0	0
Corfield & Co.	166	16	0
H. Runham Brown	163	0	0
W. Shurmur & Sons, Ltd.	160	10	0
F. Bull.	149	14	0
W. Silk & Son	142	10	0
Woollaston Bros.	135	10	0
A. PORTER (accepted)	126	0	0

For exterior painting, Scrutton Street school.

G. Wales	£207	0	0
Barrett & Power	181	0	0
Corfield & Co.	169	14	0
W. Silk & Son	156	0	0
C. Wilmott & Son	149	0	0
H. Runham Brown	143	10	0
W. Chappell	135	0	0
J. HAYDON & SONS (accepted)	134	10	0

For exterior painting, Wenlock Road school.

Belcher & Co., Ltd.	£301	0	0
J. Grover & Son	298	0	0
McCormick & Sons	288	0	0
Gavin Bros.	233	16	3
Lathey Bros.	231	0	0
Johnson & Co.	216	0	0
J. HAYDON & SONS (accepted)	195	0	0

For exterior painting, Heber Road school.

F. & H. F. Higgs	£279	0	0
W. J. Mitchell & Son	264	10	0
J. & C. Bowyer	217	0	0
J. F. Ford	169	0	0
G. Kemp	158	0	0
MAXWELL BROS. (accepted)	149	0	0

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LONDON SCHOOL BOARD—continued.

For exterior painting, Nunhead Passage school.

J. F. Ford	£208	0	0
W. V. Goad	186	0	0
F. & H. F. Higgs	160	0	0
Maxwell Bros., Ltd.	155	0	0
W. Hooper	155	0	0
W. Sayer & Son	153	0	0
J. GARRETT & SON (accepted)	152	0	0

For exterior painting, Honeywell Road school.

J. & M. Patrick	£364	0	0
Dowsett & Jenkins	261	0	0
General Builders, Ltd.	247	0	0
W. Johnson & Co, Ltd.	235	0	0
W. Hornett	229	0	0
E. B. Tucker	225	0	0
Rice & Son	203	0	0
E. FLOOD (accepted)	152	10	0

For exterior painting, Mantua Street school.

Macey & Sons, Ltd.	£159	0	0
Holloway Bros. (London), Ltd.	148	10	0
R. A. Jewell	140	0	0
E. Triggs	139	0	0
R. S. Ronald	135	0	0
RICE & SON (accepted)	133	0	0

For exterior, painting Knapp Road school.

D. Gibb & Co.	£180	0	0
J. F. Holliday	159	0	0
A. J. Sheffield	144	0	0
Vigor & Co.	112	0	0
A. W. Derby	110	0	0
G. Barker	104	10	0
J. HAYDON & SONS (accepted)	101	0	0

For exterior painting, Settles Street school.

J. F. Holliday	£279	10	0
Johnson & Co.	272	0	0
D. Gibb & Co.	225	0	0
Vigor & Co.	215	12	6
Gavin Bros.	199	5	0
J. Haydon & Sons	196	0	0
G. BARKER (accepted)	179	0	0

LONDON SCHOOL BOARD—continued.

For exterior painting, Midway Place school.

J. & M. Patrick	£227	0	0
Lathey Bros.	168	0	0
W. Sayer & Son	168	10	0
Johnson & Co.	158	0	0
H. GROVES (accepted)	139	0	0

For exterior painting, Woolmore Street school.

J. F. Holliday	£179	0	0
D. Gibb & Co.	175	0	0
A. J. Sheffield	167	0	0
Vigor & Co.	130	0	0
A. W. DERBY (accepted)	110	0	0

LONGFORD.

For the external painting of the houses in St. Mell's Road, St. Michael's Road and six labourers' cottages in Connaught Road.

Devlin	£46	0	0
P. FARRELL, Longford (accepted)	39	10	0

MANCHESTER.

For the foundations for new buildings adjoining the approach road to Victoria Station, Manchester, for the Lancashire and Yorkshire Railway Company.

T. & W. MEADOWS, Stockport (accepted).

MELTHAM.

For the construction of a new road, 36 feet wide, to the sewage purification works. Messrs. J. B. ABBEY & SON, engineers 34A New Street, Huddersfield.

J. & J. MELLOR, The Helmit, Meltham, near Huddersfield (accepted).

MORLEY.

For pulling-down and re-erection of the Melbourne Mills Morley, Yorks. Messrs. BUTTERY & BIRDS, architects Queen Street, Morley.

Accepted tenders.

H. Spensley, joiner	£646	0	0
G. Ainsworth, mason	455	12	0
Newsome, Askam & Co, Dewsbury, ironfounder	213	16	0
J. Atkinson & Son, Leeds, slater	116	0	0
J. W. Stakes, plumber	106	0	0
E. Firth, plasterer	72	18	0

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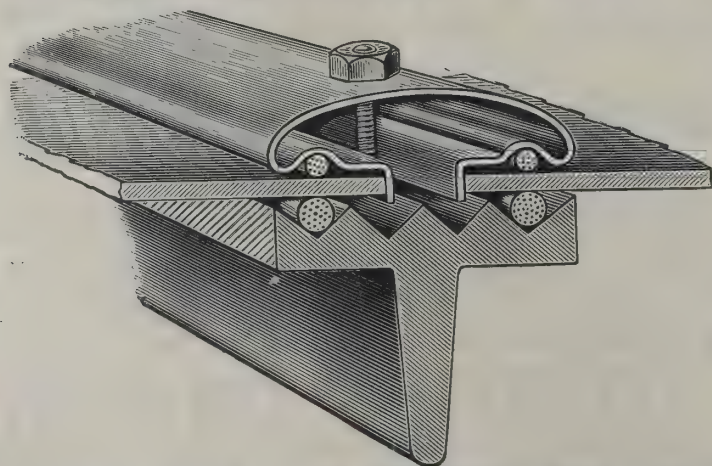
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For Index of Advertisers, see page x.



ILLUSTRATIONS.

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CATHEDRAL SERIES: EXETER.—VIEW FROM SOUTH-EAST.

HIS MAJESTY'S EXCHEQUER AND AUDIT DEPARTMENT,
VICTORIA EMBANKMENT.

RIVERFIELD, NEAR OXFORD.

DENHOLME, WALTON-ON-THAMES.—GARDEN FRONT.

PRESTON.

For street works in the back roads between Threlfall Street and Webster Street.

G. CHADWICK, 384 St. George's Road (accepted) £235 13 4

For the erection of an abattoir for pigs, cattle market, Brook Street.

J. CARTMELL & SON, Park Road (accepted) . £296 0 0

For painting, &c., required at No. 2 destructor and pumping station, Watery Lane.

G. B. WILDING & SONS, Lime Street (accepted) . £89 15 0

PUDSEY.

For painting and redecorating the interior of St. Paul's Church, Pudsey, Yorks.

E. Shaw & Sons £110 0 0

R. & J. G. Beetham 105 0 0

Willock & Gratton 84 0 0

Smith & Son 81 10 0

T. H. Hewitt 78 10 0

J. NICHOLSON, Chapeltown, Pudsey (accepted) . 75 0 0

A. W. Richardson & Co. 75 0 0

A. Barwick 69 0 0

J. H. Harwood 67 0 0

G. Oates 65 0 0

RADCLIFFE.

For the erection of a bowl-house and other conveniences in connection with the public park. Mr. W. L. ROTHWELL, engineer.

COLLIER & SMITH, Radcliffe (accepted) . . £142 8 0

RADSTOCK.

For the erection of two semi-detached houses at Radstock.

Mr. S. J. GREGORY, architect, Radstock.

W. Webb £952 0 0

T. Foster 925 0 0

Mannings & Sons 850 0 0

Hodder & Sons 818 0 0

W. HEAL, High Littleton (accepted) . . . 780 0 0

RAMSBOTTOM.

For street works in Hardy Street, Mill Street, Heap Street, Moore Street, Harrison Street, Back Harrison Street and Cunliffe Street Mr. T. H. BELL, surveyor,

CHADWICK BROS., 160 Whalley New Road, Blackburn, £219 10s. 7d, labour only (accepted).

RAMSGATE.

For painting, decorating, &c., at the schools in Church Road and King Street.

E. R. DUNN, 90 Queen Street (accepted) . . £294 0 0

REIGATE.

For extensions to the electric-lighting station. Mr. FRED. T. CLAYTON, surveyor.

C. NIGHTINGALE & SONS, Reigate (accepted).

ROCHDALE.

For painting inside the library.

HILL & THACKWRAY, Penn Street (accepted).

SCOTLAND.

For the erection of bank house at Rothie-Norman. Mr. R. G. WILSON, architect, 181A Union Street, Aberdeen.

Accepted tenders.

C. Coutts, Oldmeldrum, mason.

T. G. Archibald, Huntley, carpenter.

S. & W. Christie, Dyce, slater.

Sellar & Co., Aberdeen, plasterer.

J. Laing & Sons, Inverurie, plumber.

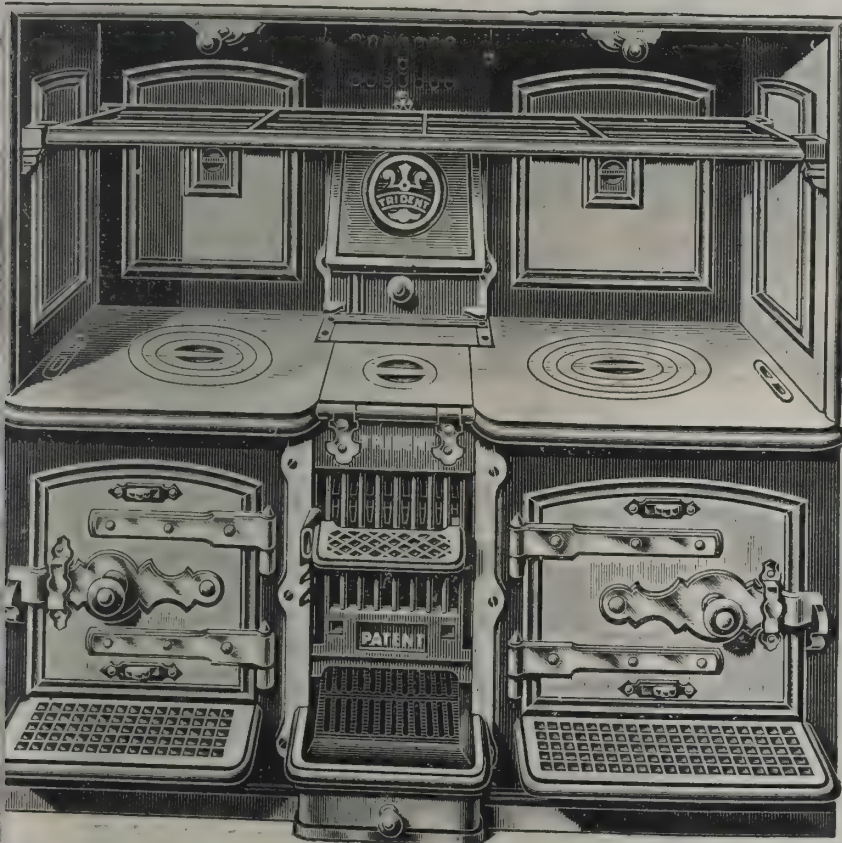
J. D. Watson, Turiff, painter.

For drainage and sewage purification works at Auchterarder.

Mr. WILLIAM ALLAN CARTER, engineer, 5 St. Andrew Square, Edinburgh.

W. MITCHELL & SONS, East Dock Street, Dundee (accepted).

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IRONMONGERS AND MERCHANTS.

WILLIAM GREEN & CO. (Ecclesfield), Ltd., ECCLESFIELD, near SHEFFIELD.

SCOTLAND—continued.

For the erection of a schoolmaster's house, Gordon, Berwickshire. Mr. T. R. ATKINSON, architect, Earlston.

Excavator, mason and waller.

Wood	£458	0	0
J. Mabin & Son	447	5	3
W. Linton	437	10	0
W. Rodger & Sons	427	16	3
A. SMEATON, Greenlaw, Berwickshire (accepted)	339	11	0

Carpenter and joiner.

C. Brodie	425	0	0
Brown & Son	375	0	0
W. Kerr	295	0	0
W. Carfrae	269	0	0
W. Riddle & Son	263	0	0
J. Watson	262	0	0
J. HUNTER, Gordon, N.B. (accepted)	252	0	0

Plumber.

J. Jardine	76	4	5
R. Murdison	69	0	0
B. Ruthven	67	0	0
T. B. MURDISON (accepted)	65	0	0

Plasterer.

A. Clapperton	54	10	0
E. Speirs	53	12	0
A. HILSON (accepted)	48	15	0

Slater.

L. McLaren & Sons	48	17	0
A. Hilson	44	10	0
E. Speirs	39	2	0
R. Murdison	37	0	0
T. B. MURDISON, Earlston (accepted)	29	10	0

Painter and glazier.

S. Fisher	32	15	6
Wilson	25	11	0
J. BROOMFIELD, Greenlaw (accepted)	20	6	10

For sewerage works in Fraser Road, Holland Street and Stafford Street, Aberdeen. Mr. W. DYACK, burgh surveyor.

P. TAWSE, Torry, Aberdeen (accepted) £5,542 10 1

SEABROOK.

For the erection of a petty sessional hall, reconstruction of heating apparatus and internal painting at Seabrook police station. Mr. FREDERICK W. RUCK, surveyor, Week Street, Maidstone.

Trethowan & Brett	£1,750	0	0
F. W. & J. Clark	1,595	10	0
Nightingale	1,360	0	0
J. Gosby	1,347	12	0
Goodwin & Jeffery	1,332	0	0
Castle & Son	1,300	14	0
G. Pearce & Sons	1,240	0	0
A. Dyke	1,238	15	3
R. Ayard	1,238	0	0
W. W. Martin	1,222	0	0
J. Howland & Son	1,212	4	0
Wallis & Son	1,167	0	0
H. J. SMITH & SON, Maidstone (accepted)	1,099	0	0

SHEFFIELD.

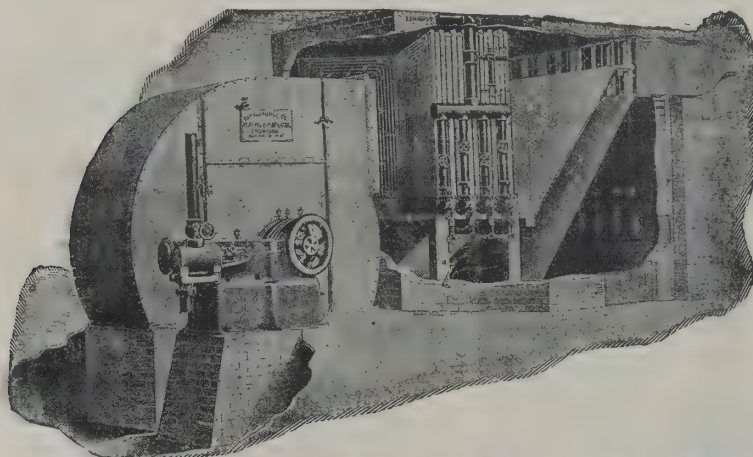
For alterations and additions to Guzerat House, Nether Road and Glen Road. Messrs. HALL & FENTON, architects, 14 St. James Row, Sheffield. Quantities by architects.

A. Andrews	£500	5	0
J. Mastin & Sons	475	10	0
E. & W. Oxley	409	0	0
H. White	403	10	0
J. S. Teanby	398	5	0
Powell & Sons	389	0	0
Wilkinson & Sons	359	0	0
T. MARGERRISON, Church Street, Dronfield (accepted)	355	0	0

SOUTHAMPTON.

For the supply of cast-iron and rivetted wrought-iron pipe. Accepted tenders.

Cochrane & Co., Dudley, cast-iron pipes	£201	1	0
Workington Engineering & Waggon Company, wrought-iron pipes	46	0	0



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PASSENGERS OR GOOD



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Hoisting Engineer
LEE

ST. AUSTELL.

For the supply and erection of wrought-iron entrance gates and granite posts at the new cemetery at Treverbyn, St. Austell. Mr. JOHN MUTTON, architect, Charlestown.

Entrance gates.

W. A. Baker & Co.	£43	0	0
E. James	41	15	0
Charlestown Foundry Co.	41	0	0
R. Richards	40	0	0
J. James	40	0	0
W. FRANCIS, St. Austell (accepted)	33	10	0

Granite posts.

TRETHEWEY BROS., Polkyth Road, St. Austell (accepted)	41	10	0
J. James	40	10	0
R. Richards	40	0	0

ST. NEOTS.

For additions to infirmary, St. Neots Union workhouse, Hunts. Mr. S. INSKIP LADDS, architect, Huntingdon. Quantities by Messrs. A. BOXALL & SONS, 8 Adam Street, Adelphi, W.C.

Kerridge & Shaw	£2,953	15	0
F. Giddings	2,642	0	0
Willmott & Sons	2,626	0	0
G. Page & Son	2,335	0	0
F. Wellham	2,310	0	0
W. Howard	2,259	0	0
W. Wade	2,165	0	0
Geo. Wrycroft & Sons, St. Neots *	2,135	10	0

* Conditionally accepted.

STEPNEY.

For painting, cleansing and decorating the interior of the union workhouse chapel, St. Leonard's Street, Bromley-by-Bow, E.

H. ROBINSON, 43 Mornington Road, Wanstead (accepted) £58 10 0

STOCKTON-ON-TEES.

For the heating of the borough hall.

BLAKEBOROUGH & RHODES, High Street (accepted) £77 0 0

STYAL.

For additions, &c., to Styal Cottage Homes, Cheshire. Mr. J. B. BROADBENT, architect. BURGESS & GALT, Ardwick (accepted).

THRAPSTON.

For painting, graining, colouring, varnishing, &c., the centre portion of the workhouse.

W. W. BOLTON, Thrapston (accepted) £29 18 6

TUNBRIDGE WELLS.

For street works in Newton Road. Mr. W. H. MAXWELL borough engineer.

A. C. Soan	£827	17	6
H. Windsor & Co.	754	16	9
J. Crates & Son	720	0	0
T. Hallett & Sons	692	9	5
T. Free & Sons	690	13	4
T. G. Challans	659	5	4
W. Arnold & Sons	570	8	6
JARVIS & SON, 6 Vale Road (accepted)	568	4	10

WALES.

For the erection of a Wesleyan church at Bitchgrove, Whitchurch, near Cardiff. Mr. EDWIN SEWARD, architect, Cardiff.

G. Hallett	£1,130	0	0
G. Griffiths	1,125	0	0
Ransom	1,099	4	8
Beames & Nephew	1,095	0	0
Lattey & Co., Ltd.	1,092	0	0
Knox & Wells	1,017	0	0
S. Grinter	980	0	0
C. H. Hockridge	962	13	4
S. HANSON, Fidlas Road, Llanishen (accepted)	950	10	0
E. R. Evans & Bros.	950	0	0

For the erection of a steel bridge over the river Twrch, near Pumpsaint.

T. GRIFFITHS, Dollas, Pumpsaint, Llanwrda (accepted) £507 0 0

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ILLUSTRATED CATALOGUES AND ESTIMATES FREE ON APPLICATION.

WANSTEAD.

For the erection of a 7-feet disinfector building at the hospital site, Cook Road, Wanstead Flats, E. Mr. C. H. BRESSEY, surveyor.

Manlove, Alliott & Co.	£279	0	0
Tomlinson & Milan	200	0	0
THRESH DISINFECTOR Co., 19 Great George Street, S.W. (accepted)	171	12	0
Defries & Co.	160	0	0
Reck Heating Co.	102	0	0
Musgrave & Co.	75	0	0

WARRINGTON.

For a concrete engine foundation.

A. Walker & Son	£293	0	0
Bennie & Thompson	231	7	3
J. Dolan	195	0	0
P. Rigby	192	15	0
T. STRINGER, Wilderspool Causeway (accepted)	151	17	6

WATERLOO.

For the erection of (Contract No. 1) park shelter and tool-house combined at Victoria Park, Waterloo, Lancs, and (2) park shelter and bowl-house combined at Bowersdale Park, Seaforth. Mr. F. SPENCER YATES, surveyor.

*Accepted tenders.**Contract No. 1.*

G. E. Johnson, Bootle.

Contract No. 2.

G. Woods & Son, Bootle.

WEALDSTONE.

For street works in the Station (main) Road. Mr. H. WALKER, C.E., surveyor.

H. Brown	£1,582	0	0
J. Meston	1,533	19	1
W. Griffiths & Co., Ltd.	1,470	8	3
Empire Stone Co.	1,352	10	0
T. Free & Sons	1,349	4	0
A. B. CHAMPNISS, Wealdstone. (accepted)	1,346	8	8

WITHINGTON.

For the erection of master's residence, Withington workhouse.

Mr. J. B. BROADBENT, architect.

BURGESS & GALT, Ardwick (accepted).

WESTMINSTER.

For the construction of brick and stonework pipe-sewers, for the City Council.

Pedrette & Co.	£6,711	0
Pethick Bros.	4,192	0
D. R. PATERSON, 32 James Street, Camden Town (accepted)	3,714	0

WHITCHURCH.

For the erection of new Wesleyan schools, &c., Whitchurch Hants.

Harris & Son	£1,083	0
F. Beale & Son	1,058	0
Godwin	993	0
F. G. WEEKS, Whitchurch, Hants (accepted)	870	0

WHITEHAVEN.

For the erection and completion of a house in the parish Moresby. Mr. J. S. STOUT, architect, 36 Lowther Street, Whitehaven.

T. DAVIDSON, Parton, Cumberland (accepted). £634 13

WOODFORD.

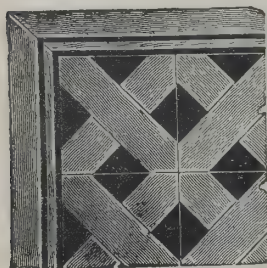
For laying-down a 3-inch cast-iron water-main, standpipes and hydrants. Mr. T. LLOYD, engineer, Halford Street, Thrapston.

G. Young	£136	0
A. Wright	98	17
W. W. Bolton	84	15
Dixon & Fish	80	0
C. Pettitt	75	16
T. PANTER, 64 Station Road, Desborough (accepted)	74	0

WORTHING.

For the erection of fire brigade station and firemen's cottages in High Street.

F. Farnfield	£3,864	12
Bostel Bros., Ltd.	2,925	0
Potter Bros.	2,791	0
Longley & Co.	2,739	0
R. Cook & Sons	2,679	0
W. Sandell	2,617	10
W. W. Sandell	2,603	2
Sattin & Evershed	2,548	0
ROWLANDS BROS., East Street, Horsham (accepted)	2,309	0



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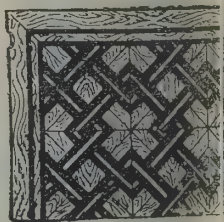
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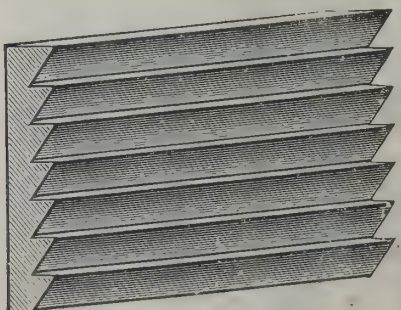
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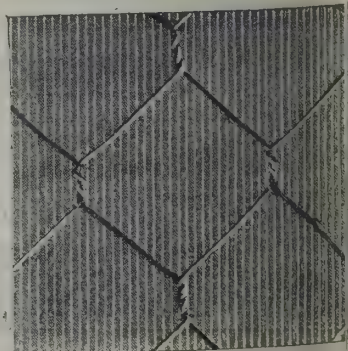
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street works in Oxley Lane.

Owens	£299	16	4
Holloway	289	14	6
H. READING, Wolverhampton (accepted)	279	0	0

WOODHALL SPA.

sewerage works and the construction of a Shone ejector station. Mr. ERNEST BOLTON, surveyor.

Stedman	£3,555	5	0
T. Edwards	2,526	15	6
ckers & Co.	2,350	0	0
k Building Co.	2,028	18	11
M. HARRISON, Lincoln (accepted)	1,994	4	3
berts & Co.	1,483	4	0
akes & Sons	1,438	0	0

Received too late for Classification.

ERITH.

street works in Sussex Road, Northumberland Heath.

J. Brice & Sons	£1,012	0	4
T. Jackson	930	11	0
Adams	890	6	8
Ballard	878	8	6
ad Maintenance and Stone Supply Co., Ltd.	852	6	6
FREE & SON, Maidenhead (accepted)	745	2	3

EXMOUTH.

the erection of schoolroom and classrooms at South-lands school, Fairfield, Exmouth, for the Misses Vinter. Mr. WALTER B. COLES, architect, 31 Bath Road, Exeter. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.

Hayman	£729	16	6
ws & Son	702	0	0
Abell	687	1	9
Perry	670	0	0
Grace	642	6	7
OPER & SON, Exmouth (accepted)	593	5	6

LIVERPOOL.

For the erection of a new hospital for infectious diseases at Fazakerley, for the Liverpool City Council.

MORRISON & SONS, Wavertree (accepted) . £121,475 0 0

PAIGNTON.

For the erection of proposed cottage flats, Merritt Road, Paignton, for Mr. W. M. G. Singer, C.C. Mr. W. G. COULDREY, architect, Paignton. Quantities by Mr. VINCENT CATTERMOLLE BROWN, Paignton.

E. Westlake	£5,116	0	0
G. Webber	5,096	10	0
R. Harris & Sons	5,035	0	0
C. & R. E. Drew	4,992	15	0
H. Webber & Sons, Paignton*	4,916	0	0

* Accepted subject to modifications.

CONTRACT OPEN.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

"FIGHTING THE FLAMES," the great sensational episode represented on the immense stage of the Empress Theatre at Earl's Court, has by dint of repeated performances reached to a degree of realism of which the show on the opening day, capital as that was, gave little promise. It now goes with admirable "snap" and sparkle, and shows off the dexterity of the men and the training of the horses to the greatest advantage. The history of fire-combating appliances as illustrated in the preliminary procession continues to stimulate the interest of the spectators, and the whole entertainment is evidently very much to the taste of the large audiences which assemble twice daily. In the grounds the interesting "side shows" attract numerous visitors, while among the beautifully-arranged *parterres* of flowers the music of the Grenadier Guards and the Hon. Artillery Company delights the many visitors.

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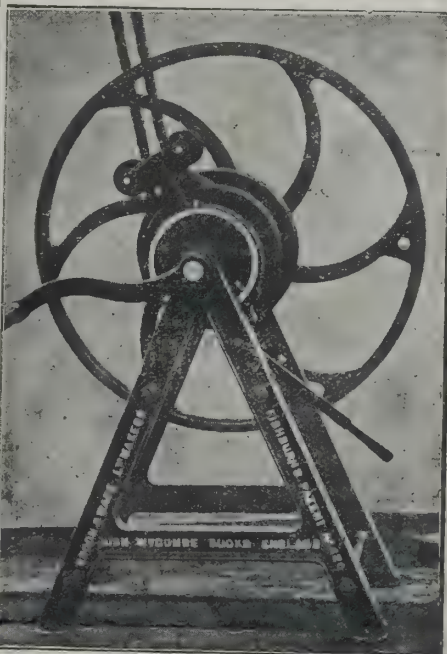
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NEW CATALOGUE.

THE St. Pancras Iron Work Company, Ltd., have just prepared a new edition of their catalogue of fire-escape staircases and general ironwork. A feature of these staircases is the new patent non-slipping tread, which consists of a slab $1\frac{1}{2}$ inch thick made of steel embedded in a peculiar manner in a special kind of concrete, on the wearing surface of which a series of lead rings is inserted. These slabs are made 10 inches from back to front and 12 inches wide, and half-slabs 6 inches wide. They drop into a rebate at the top and bottom of the adjoining risers, and the front edge is protected by an iron nosing. The illustrations in the catalogue show a number of staircases which have been supplied and fixed by the St. Pancras Company.

ELECTRIC NOTES.

THE Myrtle Street Baptist church, Liverpool, is closed during this month for improvements, including the installation of the electric light.

At a meeting of the Wednesbury Town Council, the town clerk announced that the Local Government Board had sanctioned a loan of £11,000 for electric-lighting purposes.

At the Bootle town hall, Mr. W. O. E. Meade King, M.Inst.C.E., Local Government Board inspector, held an inquiry with regard to the application of the Council for sanction to borrow £40,000 for purposes of electric lighting. The borough engineer explained that the sum of £40,000 was required for the purchase of additional plant to be installed at the electric-lighting station in Pine Grove. It was stated that this was necessary in consequence of the increase in the number of consumers, and to the fact that the output at the present time was very near the capacity of the plant. The amount mentioned would be expended upon machinery, buildings, mains, feeders and service-lines, and also on enlargement of the office and stores. Details of the works were furnished by the electrical engineer, and the inspector was informed of the success of the undertaking up to the present. The Council considered this as a sufficient justification for the further expenditure they now proposed to make. There was no opposition.

TRADE NOTES.

A CONTRACT for four electric lifts and two hydraulic lifts at the extensive new premises of Messrs. Robinson & Cleland, Ltd., Regent Street, W., has been awarded to Wm. Gibson, Ltd., 28 Fleet Street, E.C.

ST. PATRICK'S National Cathedral, Dublin, has been warmed satisfactorily by Maguire & Gatchell, Ltd., Dublin, with their improved hot-water apparatus. The triforium is specially warmed to prevent down-draughts of cold air.

MESSRS. HARTLEY & SUGDEN, LTD., Atlas Works, Halifax, inform us that they have now come to a satisfactory arrangement with their welders, who have now resumed work so that all orders can be promptly executed.

MESSRS. WM. POTTS & SONS, clock manufacturers, Guildford Street, Leeds, have received instructions to alter and fix a new illuminated hour striking clock and bell at Lord Grimthorpe's designs and plans at the Yorkshire Inebriates Homes, Cattal, near York. The work is now well in hand.

VARIETIES.

A NEW school, erected at the head of the village of a head, N.B., by the Crichton School Board, has been formally opened.

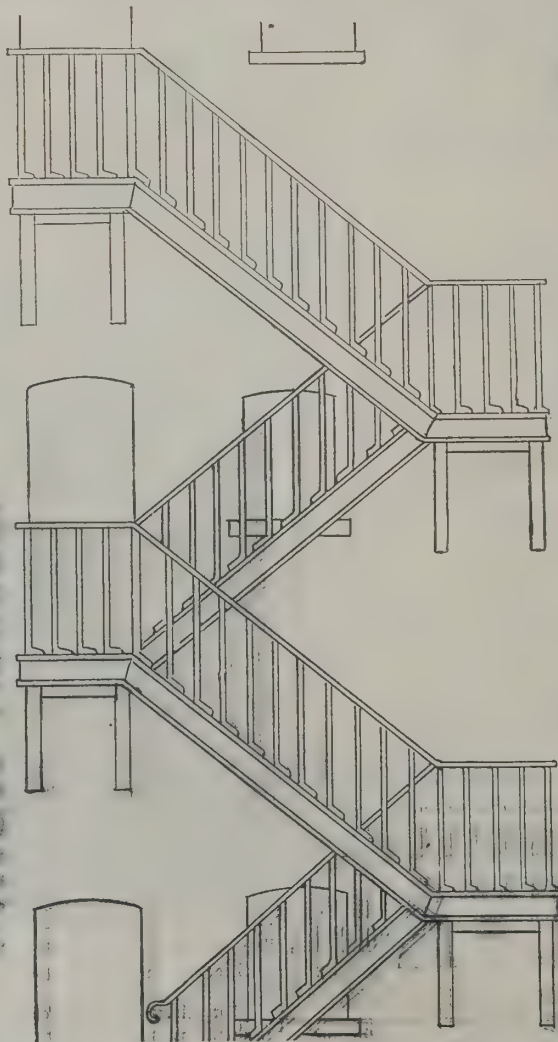
THE new Catholic day schools in connection with Oswald's Church, Old Swan, Liverpool, were opened by the Bishop of Liverpool (Dr. Whiteside).

THE new parish church at Shettleston, Glasgow, has been opened for public worship. From plans prepared by William F. McGibbon, architect, the church is of the thirteenth century French Gothic style of architecture, and is seated for 1,050 persons. An organ has been provided by the congregation.

A USEFUL little illustrated booklet for tourists is issued by the Brighton Railway Company, entitled "Holidays on the South Coast and the Isle of Wight." The utility of this little volume is vastly extended by their being printed in three languages—English, French and German—which appear column side by side.

DURING the excavations at a new building in Market Place, Stirling; the workmen came upon the remains of

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lis at right angles to each other. They had been most substantially built, the walls being about 4 feet thick, and it is posed they formed part of the buildings in connection with Blackfriars Monastery, which extended to the north of site.

THE new church of St. Patrick's, Donabate, was dedicated Sunday by the Most Rev. Dr. Walsh, archbishop of Dublin. The building is in the Gothic style. It is cruciform in plan, a large nave, north and south transepts, semi-octagonal side chapels, sacristies and organ gallery. The tower, which stands beside the principal entrance, contains the belfry and is surmounted by a belfry. The building has been erected in accordance with the designs of Mr. George Connor, C.E., Dublin, by the firm of Messrs. Conolly & Son.

THE monthly report of the Association of Engineers shows the number of members is now 94,847, compared with 93,099 last month. Of these 3,078 are on donation, 2,053 on and 4,413 on superannuation funds, the corresponding numbers last month being 3,041, 1,940 and 4,376 respectively. Barnes, the secretary, intimates that, according to the rules of the Manchester rules, the representative meeting will take place at Newcastle-on-Tyne next Easter Monday, one representative being sent from each district containing 6,000 members. Manchester branches are included in three different divisions.

THE new technical schools erected by the Sisters of Mercy, common, were formally opened last week. The new schools have taken almost four years to erect. There are five storeys, in each of which there is a large schoolroom and classrooms, in which it is intended to carry on various branches of technical instruction. The building is rectangular in shape, and a raised tablet over the front of the third floor bears the name in Gaelic letters, "Technical Schools, Convent of Mercy, Roscommon. A.D. 1902."

THE new water supply at Margate, which has been carried out at a cost of over 120,000l., was formally inaugurated on the 6th inst. It comes from a spot near the village of Wingham, about sixteen miles from Margate, and the water is said to be of great purity. The engines and pumps provided are able to deliver 5,000,000 gallons per hour, whereas the maximum supply required for Margate during the height of the season is 1,250,000 gallons. Although the Corporation have powers to drive adits for three miles, an abundance of water has been found after going

1,200 yards that there is ample to provide 3,000,000 gallons daily, and further adit driving has been stopped.

BUILDING AND BUILDERS.

THE laying of foundation-stones of a new Congregational schoolroom took place on the 5th inst. at Farnworth.

AT a meeting of the Rugby Board of Guardians it was decided to proceed with the erection of a new Board-room and offices, at a cost of 2,136l.

IT is estimated that the new sewerage scheme of the Featherstone District Council, which comprises sewage works and a refuse destructor, will cost 12,622l.

THE Roman Catholic bishop of Liverpool laid on Sunday the foundation-stone of new schools in that city, which are to cost 8,000l.

A NEW Roman Catholic church now in course of erection at Tooting is to be dedicated as a memorial to the late Pope Leo XIII. Together with the adjoining schools it will cost over 5,000l. It will be opened during the autumn.

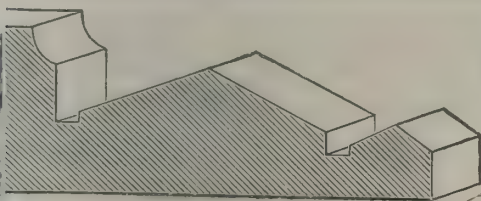
THE foundation-stone of a new Congregational church which is being provided by the churches at Lytham and St. Annes, in association with the Lancashire Union, was laid on Saturday.

DR. WALSH, archbishop of Dublin, has recently laid the foundation-stone of the new Catholic church of St. Columba at Drumcondra. The church is intended to be the parish church of the newly-formed parish of Drumcondra and Glasnevin, and it will occupy a position at the top of St. Alphonsus Road.

THE Manchester city architect has submitted to the housing committee of the Corporation designs for a large block of workmen's dwellings to face Sudell Street and Rochdale Road, abutting on an open space. The estimated cost of the building is 11,500l.

WITH Masonic ceremony, the memorial-stone of the new permanent premises for the Nottingham Gordon Memorial Home for Destitute Boys was laid on the 5th inst. The premises have been designed to accommodate seventy-two boys, compared with forty in the existing building in Peel Street, and the cost is estimated at 7,000l.

THE foundation-stone laying ceremony in connection with the building of the new corn market, to be erected by the Corporation at the Cattle Market, Southampton, took place on



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the 6th inst. The building, which will be 52 feet long by 32 feet wide, is being erected by Mr. W. Ward, contractor, 113 Avenue Road, to the plans of Mr. Crowther, borough engineer. It will be a one-storey building of red and white brick, with carved keystones, and with carvings of shepherds' crooks and sheaves of corn.

IN their plans for the extension of the Central station at Glasgow, the Caledonian Railway Company propose to erect a roof above the bridge across Argyle Street. The Corporation, by resolution arrived at nearly three years ago, restricted the height of the roof to 18 feet above the station platform, but the company desire the consent of the Council to heighten the roof to 54 feet, and at present negotiations are proceeding between the two bodies.

AT Ince on the 5th inst. the foundation-stone was laid of the new Urban District Council offices and public hall. The ground floor of the new building contains the following accommodation for the officials:—Clerk's office, assistant clerk's, overseer and assistant overseer, accountant, collector, medical officer, school attendance officer, nuisance inspector, pay office, &c., and behind a large public room 68 feet long and 35 feet wide, with retiring-rooms attached. The first floor contains:—Council chamber, committee-room, chairman's parlour, surveyor's offices and spare rooms, also waiting-room. In the basement are the living rooms for the caretaker. The general design for the exterior is in the Queen Anne style of architecture, with Ruabon pressed brick front and red terracotta dressings.

To meet the exigencies of the rapidly growing postal business of Oundle, Northants, a new and commodious post-office has been erected, and is now in occupation in New Street, to which it has a frontage of 25 feet in Weldon stone, with fluted columns and caps and mullion windows fitted with plate-glass lights. The back way for mails, &c., is in West Street. Though no pretence has been made to any particular style of architecture, the whole façade corresponds well with adjoining properties and the buildings of the town, the interior has been well fitted up, and everywhere the most has been made of the available space. Messrs. Siddons & Freeman are both the designers and builders.

AT an adjourned meeting of the Aberdeen Town Council the question of building a city hall was discussed on a motion by Mr. William Cooper, who wished a remit to the finance and improvements committee to consider and report as to the

advisability of utilising Exchequer Row area for the erection of a public hall suitable for accommodating large gatherings of the citizens for public meetings and other purposes. The principle of a city hall appeared to meet with general approval, but objection was taken to limiting the site to Exchequer Row—the area in the east end that was cleared under a provision made in 1861, and order several years ago. Mr. Taylor, who moved the proposition, objected to a policy that would coddle the people and destroy private enterprise. On a division the motion was carried by fourteen to eleven for the previous question. At the close of the meeting Bailie Esslemont gave notice of a meeting of a motion widening the remit, and not limit the committee to the consideration of this particular site.

LIVERPOOL BUILDERS AND THE TRADES COMMISSION.

THE following correspondence has taken place:—
9 Liston Street, Walton, Liverpool.
July 13, 1903.

To the Right Hon. A. J. Balfour.

Dear Sir,—I am directed by the committee of the Liverpool and Vicinity Building Trades' Federation to forward to you the following resolution passed at their last meeting:—"That we protest against the appointment of the Trades Commission, being calculated to hinder the early settlement of the objection, and in addition to this fundamental objection we are against the composition of the Commission, which includes a majority of members already publicly committed to a course of action in relation to the subject they have to examine and report upon, while it also contains a representative of organised employers, but no representative of the ordinary workers, and is therefore neither impartial nor judicial."
I remain, yours truly,

J. CONNOR, Secretary.

[Reply.]

10 Downing Street, Whitehall.

July 15, 1903.

Dear Sir,—Mr. Balfour desires me to acknowledge the receipt of the resolution which you forwarded to him, and in reference to the composition of the Trades Disputes Commission, and in reply to call your attention to the answer given upon the subject in the House of Commons on Thursday, July 2. A copy of that answer is enclosed herewith.—I am, yours faithfully,

WILFRED M. SPENCER.

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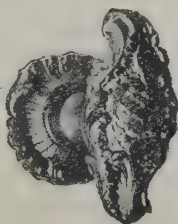
Finger Plate 1571.

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"1. I am aware that various opinions have been expressed in connection with the appointment of this Commission. I have more than once explained the nature of the choice open to the Government in determining whether the Commission should be large and representative, or small and specially qualified, and the advantages which appear to attach to the latter alternative. Although I should have no objection to a temporary Commission's vote being discussed if time allowed, I am afraid that in the present condition of supply I cannot give no pledge on the subject.

"2. The hon. member cannot, I think, be aware that the Royal Commission has been formally appointed. It is not possible now to reconstruct the Commission, and by a large majority to its members, whether of trades unionists or employers of labour, to change the whole basis of its constitution.

It was resolved by the committee that this reply be put on the table in the waste-paper basket.

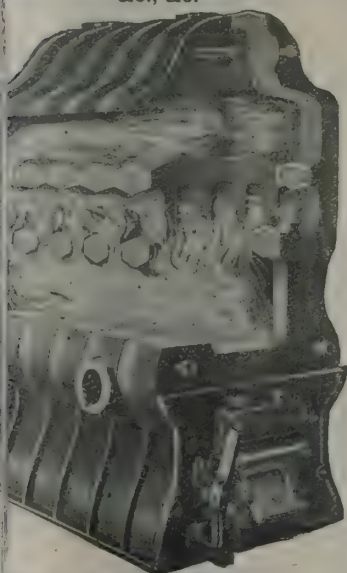
WOLVERHAMPTON'S NEW WORKHOUSE.

A new workhouse at New Cross, Wednesfield, about two miles from Wolverhampton, which has been in course of construction for the past three years for the Wolverhampton Union, is rapidly nearing completion, and is expected to be occupied next month. The old workhouse was erected about seventy years ago, and although additions have been made to the buildings and other premises rented for the use of the poor, people who had to seek the assistance of the poor-law authorities, the Local Government Board for years advised the Guardians to erect a new building. A plot of land containing 12 acres at New Cross was purchased for £11,128, and Mr. Arthur Marshall, of Nottingham, was engaged to prepare plans for what the Guardians now style "the new homes for the poor." The contract for their erection was entrusted to Messrs. Fish & Son, of Nottingham, the tender amounting to £8,791. This sum only relates to the buildings, and when the cost of the furniture, road-making and other items have been added, it will be found that the cost of the new homes will reach at least £200,000, a far greater sum than the Guardians originally proposed to expend. Of the 50½ acres, 12 acres have been covered with buildings, which have been designed on the block principle, and will provide accommodation for 1,246 inmates, twenty nurses and sixty other officers.

But although the buildings have not yet been opened, it has been stated that, owing to the increase in the number of paupers, additional accommodation will have to be provided at no remote period. The total number of buildings is thirty-one, of which the chief are the administrative section, comprising eight blocks which are connected on the ground floor by enclosed corridors, the roofs providing means of communication between the upper wards. In the centre of this collection of buildings is the residence for the master and matron, the assistant master, clerks, chaplain and other members of the staff. There is a dining-hall capable of seating 800 people; adjoining are the kitchens, sculleries and stores, while abutting upon the central block are three-storey buildings for each sex, a nursery and quarters for sixteen married couples. At the rear of this block is the infirmary, with space reserved for extensions, and there are provided quarters for the medical officer and nurses. Three blocks will be utilised for males and the same number for females, and contiguous are the dispensary, operating and consulting-rooms and a lying-in ward. Still further to the rear is another block designed for the use of the imbeciles, separate quarters being provided for the epileptic patients. Two hospitals for special diseases and an isolation hospital are placed still further to the rear of the main buildings. A nurses' home has been erected to accommodate forty. These are fitted in the most up-to-date fashion. A laundry, workshops for blacksmiths, tailors, tanners, carpenters, mat-makers and wood-choppers, with the labour master's house near by, have been provided. The whole of the buildings will be lighted by electricity, which will be supplied from a power-station situated near the centre of the grounds. Two entrances have been made from the Wednesfield Road. Near the main entrance are the porter's lodge and the board-room and offices, and, adjoining the other entrance, is the casual ward. As a large area of the ground will be cultivated by the paupers there has been in connection with this section of the work a farm building erected, together with piggeries, stables and other outbuildings. Conduits for carrying the gas and water-pipes and the electric-lighting mains have been placed around all the buildings, and by means of these convenient tunnels any defect below the ground level will be remedied without disturbing the fabric or the floors. In the infirmary pavilions the floors are fireproof, being composed of concrete and steel joists supported on steel girders, and as a further precaution against an outbreak of fire there are, in addition to the usual staircases, means of exit provided by outside emergency staircases of iron in all the

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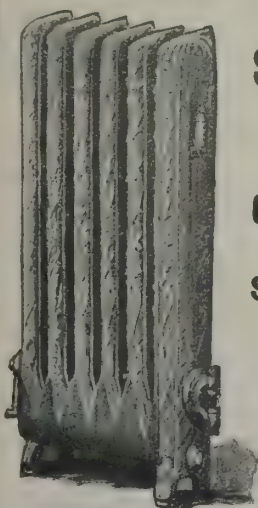


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buildings where the inmates will be housed. At present there is one important and necessary element absent from the "new homes." For some time boring operations have been in progress to secure a supply of water, but without success, and it is expected that a connection will have to be made with the Wolverhampton Corporation mains.

PUBLIC CONTRACTS IN CANADA.

AN Act is now in operation in the State of New York, having reference to government and municipal contracts. It has been revised for Canadian use, and was presented to the Government for adoption. The following is the text:—

The people of the Dominion of Canada represented, do enact as follows:—

Section 1.—All specifications or contracts hereafter made or awarded by the Dominion or by any public department or official thereof, for the erection and construction of buildings, shall be understood to embrace stone and masonry work, carpenterwork, painting and decorating work, plumbing, heating, electrical work, structural ironwork and roofing.

Section 2.—The officer, board or commission charged with the duty of drawing specifications and contracts for the erection and construction of buildings for the Dominion, or any political or other subdivision of the Dominion, must draw separate specifications and contracts to cover the separate kinds of work referred to in Section 1 of this Act, and they must be so drawn as to permit of unfettered bidding for and upon the separate branches of work to be performed.

Section 3.—All contracts hereafter made or awarded by the Dominion, or public department or official thereof, for the erection and construction of buildings, are to be awarded separately upon the separate branches of work, as referred to in Section 1 of this Act, to responsible and reliable individuals, firms and corporations engaged in the business of the kind to which the work to be performed belongs.

Section 4.—No bid shall be received or accepted by the Dominion or any public department or official thereof, unless the party making the bid shows by affidavit that he is a citizen of the Dominion of Canada, and as a test of his fitness to properly perform the work bid for, that he has served an apprenticeship of at least three years at the line of work specified in his bid, or that he is a contractor in the particular line, and has had at least five years' practical experience.

Section 5.—If any person, firm or corporation, to whom a contract is hereafter let, granted or awarded by the Dominion or by any public department or official thereof shall, without the previous written consent specified in section 5 of this Act, assign, transfer, sublet or otherwise dispose of the same, or any right, title or interest therein, to any other person, firm or corporation, the Dominion, public department or official thereof, as the case may be, shall be relieved and discharged from any and all liability and obligations growing out of the contract, and to the persons, firm or corporation to whom the contract is so assigned, transferred or sublet, or otherwise disposed of, right, title or interest in the same, and said contractor, assignee, transferee or sub-lessee shall forfeit and lose all moneys theretofore earned under said contract, except so much as may be required to pay his employés, provided that nothing herein contained shall be construed to hinder, prevent or obstruct an assignment by such contractor for the benefit of his creditors made pursuant to the statutes of the Dominion.

Section 6.—All Acts and parts of Acts inconsistent with this Act are hereby repealed.

Section 7.—This Act shall take effect immediately.

AMERICAN TRADE "GRAFTING."

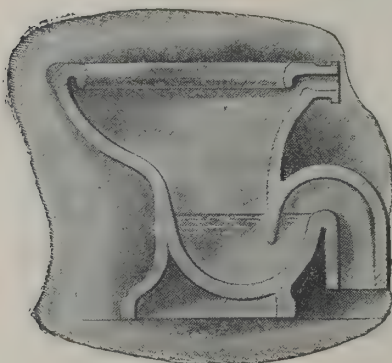
AN article on "Graft in the Labour Unions" appears in the *New York Daily Tribune* of July 25. The writer says: "The building trades of this city have long been in a demoralised condition. It would be by no means an exaggeration to say that the organised labour in general to judge it by the doings of the 'adventurers' and 'grafters' who have found through their control of the masons, carpenters and smiths here a ready instrument for the practice of systematic extortion or blackmail. We may well believe that the situation revealed in the trial of Lawrence Murphy is exceptional. Nevertheless it shows such possibilities of perverting labour organisation into machines for systematic and wholesale blackmailing that it ought to put all honest workmen on their guard. He was charged with embezzling 12,000 dols. of the funds of the Journeymen Stonecutters' Union. His defence is that the money was obtained by extortion; and therefore that he could not be held for embezzling money from those to whom it did not rightly belong. We are not concerned with the moral sufficiency of this defence. If accepted, it merely shows that two sets of thieves have fallen out. The trial, however, a little doubt that the contractors have for a long while

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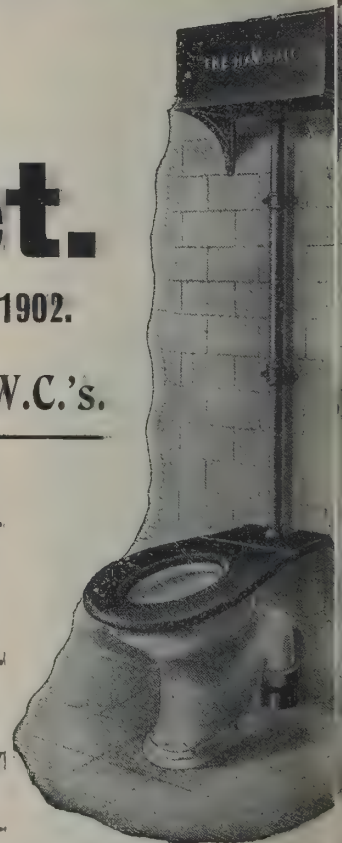
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submitting to robbery. Perhaps they are not entitled to sympathy; the man who is so cowardly as to let himself be blackmailed generally deserves it. They are to blame as much as anybody for the expensive troubles in the building trades. Instead of resisting extortion at the first and putting down, they have paid for peace, and each year found the demands made upon them more extravagant. Finally they have lost vast sums of money in a strike which was precipitated when they could get no further in concessions. The accounts given by Mr. Andrew D. Baird of a 10,000 dols. payment to a union when his men joined it, as a penalty for having carried on business before without making them join, could doubtless be paralleled by many other contractors whose own timidity laid them open to extortion. Nevertheless, labour unionists cannot afford to ignore the criminal activities of those whom they put in power. Submitting themselves to the dictation of walking delegates, as they have, they have created an engine apt for extortion. They have made it difficult for the contractor, especially the small contractor with little capital, to resist extortion. He learned from experience that they would generally stand by the walking delegate, no matter how unreasonable his demands. The contractor could not go to the workers and reason with them, and show that the union demands were being made by leaders, not to benefit the employes, but to fill the pockets of their dishonest leaders. They would not believe it. The strike would go on, and the contractor might be ruined. The labour unionists, by blind partisanship and clannishness, have made robbery in their name easy, and if they do not want themselves and their organisations to be utterly discredited they must take a more vigilant attitude toward their leaders, and put a stop to blackmailing in their behalf. Respectable labour unionists must show that they have no sympathy with such methods, and all aid no allied unionists who let themselves be made instruments of extortion.

OILING EXPERIMENTS IN BOMBAY.

At a recent meeting of the Bombay municipality a report was presented by the executive engineer upon the results of oiling the roads of the city with petroleum—an experiment which has been tried in this country but has not fulfilled expectations. The Bombay engineer says:—

"The surface was experimentally treated of a portion of

the Esplanade Road from the National Bank to Messrs. Treacher & Co.'s premises (except the tramway track) with crude petroleum as a means of preventing the dust nuisance caused by the heavy vehicular traffic on that road. The public were at first much prejudiced against the experiment. But as time went on the work was much appreciated. From the time the first dressing was put down until now no complaint as regards dust nuisance has been received except from one of the firms occupying the ground floor of a building abutting on the road, but this was more owing to the dust from the undressed portions on either side of the oiled portion. Three dressings have been given—the first on November 26 last, when about 5½ tons, or 1,298 gallons of the oil, was sprinkled; the second on December 21 last, when about 3½ tons, or 737 gallons, was used; and the third on February 22 last, when 1½ ton, or 413 gallons, was used. It will be seen from this that the quantity of oil was diminished at each subsequent dressing.

"The oil was laid by means of the ordinary watering carts and cans, and then equally spread over the road surface by means of brooms and brushes. On the first application the oil soaked quickly into the road surface, rendering it smooth and firm, but it was slightly slippery where, owing to unevenness of the surface, there was a stagnation of oil in the hollows. It also gave off a strong smell for a day or two in the beginning, but it gradually disappeared. The experiment has so far proved a success. The sprinkling of the oil keeps down the dust, and makes the surface smooth and pleasant to drive on. The questions now to be considered are what effect the monsoon will have on the oiled surface, and what the cost would be compared with that of watering and scavenging. As the dressing has not yet been subjected to the action of the monsoon, I have some hesitation in pronouncing the oiling to be a success, though the chances are likely to be in its favour.

"The cost of the three coatings of oil has been 408 rs., against 179 rs., which would have been the cost if the same area had been watered and scavenged as usual. If the third coating of oil lasts till the setting in of the rains, which I hope it will do, then the excess expenditure incurred by treating the road surface with oil, measuring about 5,800 square yards, would be about 229 rs. over the cost of watering and scavenging. This last sum includes the cost of scraping, sand-stoning and general patching the road surface, and the value of the water at 3 annas per 1,000 gallons; also the cost of repairs to the hydrants, &c.

"It appears to me that the application of oil to the road

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surface not only lays down the dust and renders the surface smooth, but prevents the road from being cut up. It cannot be stated at this stage what the saving would be in repairs to the road, but I believe it will not form an insignificant item. Taking everything into consideration, I am of opinion that after the ensuing monsoon is over the whole of the road extending from the Apollo Bunder to the Municipal Offices should be treated with oil."

THE PROPOSED AUSTRALIAN CAPITAL.

A CORRESPONDENT of the *Standard* supplies the following description of Tumut:—The town is a picturesque little "one-horse" place. It lies spread over a hillside, its long main street falling along the slope from the "bush"-covered hill-top to the winding river below. The majority of the houses are one-storeyed weather-board cottages, with narrow verandahs along their street frontage. The better-class buildings are of brick, of the ordinary bungalow type, with deep verandahs on every side. Only in the central part of the town do we find two-storeyed houses; the banks, four in number, the hotels, ten in all, and the stores are the only buildings that soar higher than the ordinary single-storey level.

The Post Office and the School of Arts are the centres of civic life. They are, as is usual in colonial towns, the most important buildings. The Post Office is the general rendezvous at that movable feast, the arrival of the mail coach. Then only can the thrill of being in touch with outer things be experienced by the citizens. As the four-horse coach approaches the Post Office, with a mighty cracking of whip by the coach-driver, the whole town is diverted from the contemplation of local concerns to the affairs of the great world. In the evening the School of Arts becomes the centre of interest. The reading-room and the public library are there. Meetings are held within it and lectures are delivered beneath its roof. Not far off the favourite hotel bars are handy for the thirsty man, and the term includes a very large number of the population on this heated continent. In nothing more than his adherence to the type of hotel familiar to him in the old country does John Bull show his conservatism, for in this huge continent, with a climate ideally fitted for the outdoor café, there is scarcely a single example of the continental open-air resort. The closed-in, cramped-up bar, whose atmo-

sphere alone should produce faintness, flourishes as if Australia were in the frigid zone. In the town are two large schools, the standing of an English higher-grade school, and the control of the Minister of Public Instruction, the only convent school. The four churches—Presbyterian, English, Roman Catholic and Wesleyan—occupy the four points of a compass at the extremities of a cross. The colonist is an ardent church-builder, but he is not always so enthusiastic a church-goer.

Such is the quiet and secluded spot in which the Federal authorities propose to raise a new city, to accommodate the machinery of central government in Australia. If it is chosen from the grosser interests of mere commerce being the ideal, Tumut is the ideal, and in its excellent climatic conditions a legislator will be provided with the best atmosphere for stimulating mental activity, and at the same time insuring a healthy mind in a healthy body. The isolation is, of course, irremovable. A short line of some twenty miles—a distance now served by coach—would connect the town with Gungahlin, the nearest railway terminus. The latter town is not on the main railroad from Sydney to Melbourne, but is the terminus of a branch, thirty miles in length, that joins the main line at Cootamundra. From the latter junction the Federal legislature can go north-west to Queensland, or south to Victoria and to South Australia. West Australia, still unconnected by rail, and the island State of Tasmania, are out of touch with the main arteries of railroad communication.

It is curious to note how this little, unknown town has won a commanding position with regard to the four great capitals of the East. It is equidistant from Sydney, Melbourne, and from Adelaide and Brisbane, which are, however, about 400 miles further off than the two first mentioned. Then, situated as it is on a tributary of the one great Australian artery—the Murray river—Tumut, as it were, overlooks the highest spot the whole Murray basin, a district which comprises much more than half the area of the continent. The Site Commissioners have to be congratulated on the result of their labours, for their task of decision must have been difficult. Bathurst and Bombala, Eden and Armidale, and the other rivals, have probably much more political influence without the natural advantages that Tumut so undoubtedly possesses. The recommendation of Tumut is therefore creditable in that it steers clear of the baser motives which are not always wanting from the actions of even the most interested of political parties.

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The Architect.

THE WEEK.

THE late RICHARD M. UPJOHN, who died in March, was for so long a time prominent among American architects, it was generally believed he was a native of the States. But according to the *Quarterly Bulletin* of the American Institute Mr. UPJOHN was born in Shaftesbury, Dorsetshire, in 1828, and was taken to America when he was 20 years old. When he was eighteen years old he entered the office of his father, who was one of the charter members of the Institute, and began to study architecture. He afterwards became his father's partner, and finally succeeded him. He was a Fellow of the American Institute of Architects from its foundation in 1857 to the time of his death, and was President of the New York Chapter for two years. He was also a member of the Metropolitan Museum of Art. His office was the schoolroom from which many architects graduated into a professional life to which they gave, in several cases, given more than usual evidence of their early training in securing, through their works, exceptional honour; among these being Mr. CLINTON, of CLINTON & RUSSELL, Mr. CYRUS L. W. EIDLITZ, of New York, and Mr. SOLON S. BEMAN, of Chicago.

WHEN OCTAVIUS accepted the title of Imperator from the Roman Senate, which was soon followed by that of Augustus, he was able to persuade the Romans of the restoration of peace which was supposed to be universal. The Temple of Janus was closed, and according to custom, an altar was erected. The Ara Pacis Augustæ was, like other memorials, believed to have been demolished, and its site was disputed. About twenty-five years ago some marble blocks with figures and ornaments were assumed by German archaeologists to have been part of the altar. A volume on the discovery was published in Vienna. After times remains in a similar style were found, and were thought to belong to it. They were traced to the grounds of the Palazzo Fiano, adjoining the Corso. That building now belongs to Signor ALMAGIA, an engineer and contractor. He has given permission for explorations in the court and grounds, as well as in the cellars of the building. One of the first objects discovered was a fragment of a frieze which corresponds with the parts above mentioned. It could be well if the work could be continued in the neighbouring streets, but the authorities will not allow them to be opened. The operations in the lower part of the Palazzo were carried out with great difficulty, for water has entered, and is only by unceasing pumping the place is kept from inundation. It is now believed that the history of the house of CÆSAR was represented and shown to be identical with that of Rome.

THE Place Malesherbes, near the Parc Monceau, in the north-west of Paris, is adorned by a memorial of ALEXANDRE DUMAS, which is the work of GUSTAVE DORÉ; it is suggestive of the great creator of romances, for on one side of the pedestal we see the figure of D'ARTAGNAN, and on the other a workman reading one of the marvellous books to a young woman. Everybody was satisfied to have a public recognition of a writer who afforded immense enjoyment not only to Frenchmen, but to readers in all countries, yet is never able to attain admission into the Academy. One of the proofs of the gratification of Parisians was given in the proposal that memorials should also be erected in the Place to General DUMAS, who was one of the revolutionary warriors, and of ALEXANDRE DUMAS fils, who was also a writer and the foremost dramatist of his time. The latter work of M. SAINT MARCEAUX, and may now be said to be completed. The idea inspiring the work has given hope for an admirable combination of figure sculpture, around the pedestal will be represented the principal figures created by the author, from "Margaret Gauthier," a "Dame aux Camélias," the first of the creations, to "Denise," who may be considered the last. General DUMAS is shown as he appeared in his attack on the bridge of Arcole. The name of the Place will no doubt be soon changed, for it is popularly known as La Place des Trois mas.

THERE is one peculiarity of the English language which makes it suitable for universal application, especially for inscriptions—that is, the absence of accents. An inscription in English capitals consists of two parallel lines which are unbroken, and range with the architectural lines. One in French has the upper line disturbed by accents, and sometimes the lower one by the cedilla. The Germans are not partial to accents, but the diæresis is no less disturbing of continuity. One notable case which has been made the subject of much comment is the inscription on the façade of the Grand Palais in Paris. If set up in type it would be as follows:—"Ce monument a été consacré par la République à la gloire de l'art français." But the stonemason, who no doubt recognised the importance of the lapidary style, was indifferent to the "accents aigus" or the "cedilla." The appearance of the line of letters, in a decorative sense, is improved, but teachers of grammar, writers, and above all M. SARDOU, the dramatist, who was consulted by the architect, are horrified. Accents no doubt help in phonography, but who would care to have a page of English set up in the manner of a pronouncing dictionary? An inscription on a building should be considered as sculpture and allowed some of the privileges of that art.

WE have lately referred to the manner of instruction in the Technical High School of Berlin. There is also an Agricultural High School, of which one section, that of geodetics, may have interest for our readers. The course in geodetics lasts from four to five terms (two to two and a half years) and commences after Easter; students of this latter course must produce leaving certificates of a nine-class higher preparatory school (classical or "real" gymnasium, upper "real" school) and proof of at least one year's practical work. The number and nature of subjects considered necessary seem somewhat extensive for land surveyors, and beyond their usual sphere, but at present in Germany most students of geodetics devote themselves in the course of their further studies to the agricultural engineering branch of their profession. This is probably the result of the fact that most land surveying operations are now undertaken with a view to drainage and irrigation work later. The subjects comprise mathematics and physics, tracing of roads, drawing, practical surveying work, agricultural civil engineering, designing of drainage and irrigation works, agricultural civil engineering, earthworks, building materials and building construction, road and bridge building, hydraulic engineering, projecting of roadways, bridges and hydraulic works. There are also classes for land and moor reclamation, national economy, law, &c. The instruction given in the lectures is supplemented and assisted by practical work and scientific research work in the laboratories, collections and various institutes, and by demonstrations and excursions. The professorial staff of the Agricultural High School consists of no less than sixty-five members, including qualified professors, lecturers and assistants. Similar schools have been set up in other parts of Germany.

FEW of those who can only make a short visit to Paris are acquainted with the river known as the Bièvre. Its course is not always marked on a map of Paris, but one prominent point where it is seen is near the Gobelins Factory, and it enters the Seine near the Pont d'Austerlitz. It has its rise not far from Versailles. It is as dirty as any river in an English manufacturing town. It does a great deal of work, and in return is fouled. But here and there along its sides many tumble-down houses are visible, which are rather picturesque, especially in contrast with the regular architecture of the streets. The law of change weighs heavily in Paris, and the river Bièvre will soon be covered over, for it is doomed to conversion into a sewer, a purpose which it serves already to a great extent. On that account it was condemned, for it is as unpleasant to the sense of smell as to the sight. It had some fascination for one class of residents. It ran through a district which even the Quartier Latin disowned, but in which some of the poorest students were compelled to live. That it should retain motion in spite of all its burdens suggested to many unfortunates that life could be sustained amidst miseries. It will now have to do its work in secret.

GREEK ELASTICITY.

GREEK architecture is so prized in modern times, we find a difficulty in understanding the seeming indifference of ancient writers towards it. Modern buildings, especially in this country, are, it is true, rarely noticed in books, and we explain the neglect by supposing that authors do not possess the knowledge which is requisite to express praise or blame. It is not to be imagined that the men who are to us as classics were handicapped by ignorance, and their general silence is therefore inexplicable. When any allusion to building is made by one of them, it becomes a gem which merits preservation. The simple remark by ARISTOTLE, when in his "Ethics" he was endeavouring to explain the difference between law and equity, thus acquires an importance which would have amazed the philosopher and his disciples. In Lesbos he said the rule employed in measuring buildings was not made of wood or iron, as in other places; there it was formed of lead, in order that it might more easily be adjusted to the variations of surface of the stones. The words were characteristic, for they suggested the philosopher's desire to make truths visible, as it were, to the sight, while his master believed there was more affinity in the human mind towards abstractions. Probably the Lesbian surveyors had not sufficiently classified moulded or curved work to be capable of calculating the cost of extra labour by the foot run or to make an average allowance for each manner of dressing stone. But the words are a revelation of practice, which is the more interesting from the general absence of descriptions of the processes employed by the Greeks in construction. BLACKSTONE, it may be mentioned, demonstrated the dissimilarity in another way. Courts of equity, according to him, were established because the law from its universality was sometimes unable to deal with particular instances. The Greek and the Englishman alike considered that rhadamanthine inflexibility was ill-adapted for a country where freedom prevailed, and where compromise was a necessity.

We have no intention of discussing either Greek law or Greek surveying. Both were based on theories which were held to be unalterable. Measurement was governed by geometry, which is the least elastic of all forms of truth or science. But in Lesbos it had to succumb to common sense. The geometers could have calculated the relations between convex or concave surfaces and planes, but was the result worth the trouble? The lead rule was simpler.

May we not therefore suppose that those who listened to the Peripatetician or who studied his scrolls were in a condition to realise that, as in geometry, it was sometimes necessary to admit that a line had breadth as well as length, so in a great many other affairs there was no avoiding a compromise with primal or theoretical truth? It was, however, very difficult at one time to appreciate that fact. In England, and within the last century, for instance, it was a conviction that there was a series of dimensions which expressed perfect Greek architecture, and to depart from them was to be guilty of the greatest of crimes against antiquity, good taste and beauty. Men went on year after year building chapels and cottages and public buildings in which the parts were so rigidly consistent to rule they might have been worked out by a mechanical designer, and they took pride in themselves because they were assured they were following the Greek principle.

If the truth were known it would be found that the Greeks were about the last people on the earth's surface who could sustain monotony in any shape or form. The honest citizen who voted for the banishment or death of ARISTIDES because he was wearied of hearing him called "the Just," was a representative man of Athens. We have still higher authority for their preference for novelties in the revered words:—"For all the Athenians and strangers which were there [*i.e.* in Athens] spent their time in nothing else but either to tell or to hear some new thing." Can we suppose that a people with an instinctive love of what was strange could approve of an environment which was without variation? Much as they esteemed Doric temples it could not be said there was evolved a normal settled proportion for one of the columns. Every designer, we imagine, was permitted to introduce variations which pleased him so long as the recognised character of the

style was perceptible. As we now see the ruins there is some warrant for the supposition that when you have seen one Greek temple you have seen all Greek temples. But we possess little more than the skeletons of the buildings. Days when they were in use there were likely to be variations in colour, ornaments, drapery by which no two were considered as identical. There may have been also changes in decorative elements such as drapery or garlands from time to time, and there was no need to test the strength of a Greek's aversion to monotony. Among the survivors remains there is enough evidence to prove that within the limits which were inseparable from the nature of the temple there existed a remarkable variety of detail.

As exceedingly few references to architecture are to be met with, it is necessary to seek in some other art for testimonies indicating the Greek spirit. Let us take sculpture. We possess, unfortunately, no treatise by a Greek on that art. If we were obliged to draw our inferences from the examples which have come down to us, it would be concluded that there were almost as many ideals as artists. But the allusions to statues by Greek writers and the traditions which PLINY recorded must be taken into account. The statement, for instance, that POLYCLETUS produced the *Doryphorus*, or Lance-bearer, which was known as the Canon, has helped to create the belief that in sculpture, as in architecture, there was an established set of proportions to which artists were pressed to conform. However, no other statue confirms that theory. A few figures are found which may be more or less accurate copies or adaptations of the work of POLYCLETUS, and they are expressive of a figure that was well suited to throwing a lance from a fixed position. But figures of other different and more agile kind were adopted for other varieties of warriors as well as for athletes. What is true in that case is true in others. There is no slavish copying of examples. Another case may be mentioned. In FLAXMAN'S day the *Apollo Belvedere* was considered to be adapted for a standard. But FLAXMAN believed it was not likely to be as much appreciated by the ancients as it was by the moderns, because there was a very similar statue, but more in motion, by PHIDIAS, and the stronger expression of the latter, of which only a few traces exist, was sure to prevail. There is no doubt that limitations were accepted by Greek sculptors. Realising that marble and bronze were yielding materials, they never went so far as CANON, and some modern French sculptors in suggesting the softness and pulpiness of flesh. The influence of material is always to be recognised in Greek work. It is only necessary to examine the head of SELENÉ'S horse from the Parthenon, which is now in the British Museum, in order to perceive the effect that was exercised on the artist by the marble. The sculptors were also restricted by tradition. The invention which is allowed to a modern sculptor was not exercised by them, probably because it would not be approved by judges. In days before evolution became a system it was manifested in the sculpture of the Greeks. Although the ancient figures were considered to be rude and uncomely, yet as they were believed to be divinely inspired they were treated with as much reverence as if they expressed sublime ideas in the language of childhood. While the sculptor admitted indebtedness to antiquity he was able to demonstrate that he could not easily although encumbered with fetters. As long as it was required to manifest respect for tradition it was hardly possible for any later sculptor to allow his works to be displayed as paragons of perfection. Like the athletes, particular sculptors may have had their special admirers, but there was too much independence to admit that any one had attained the *beau idéal* which could never be surpassed.

The most striking proof of indifference to any canon is a table with the measurements of the details of Greek statues. The task has been accomplished by several French savants. The measurements prove that the proportions were most variable. It does not matter whether the head or the foot is taken as a unit, there is no uniformity. That fact was plain to every eye accustomed to observe the niceties of form; but for sceptical people feet and inches alone are convincing. WINCKELMANN, at one time supposed a canon of proportion was accepted, but at last realised how insecure was the evidence on which

rested. He found that what VITRUVIUS said about the correspondence between Doric columns and the human form was absurd, and could only have been derived from some peculiar example which may have existed in his neighbourhood. WINCKELMANN was also of opinion that the observance of a canon was of no great importance. He found that some artists were skilled in proportion, but were incompetent to produce beauty, and he concluded that the ancient artists subordinated proportion to beauty in a degree which was justifiable.

But, in spite of all that has been written and the results of most accurate measurements, it cannot be said that the conviction about the existence of sets of rules among the Greeks has been overcome. The scientific mind believes that when perfection is attained the elements constituting it can be analysed and established for adoption in other cases. The most beautiful building and the finest statue are thought to be alike capable of enclosure within certain triangles or parts of circles, and the mathematician consequently can become a law-giver to the artist. According to one authority, the human countenance itself is made up of "arched or curved brows, circular and globular eyes, angular and pyramidal nose, and linear mouth;" while another investigator says the head and countenance consist of seven angles. It is not realised that a line which to a geometrician may appear as a single curve is made up of several, and of so little importance are right lines, although they may enclose angles, in producing beauty, the Greeks often substituted curved lines, which were long described as being rigid right lines. In other words, the flexible leaden ruler seems to have been utilised in many other ways besides measuring stonework.

THE CANAL PROBLEM.

IN the second half of the eighteenth century it appeared as if a great part of England was to be intersected by canals. The saying attributed to BRINDLEY, that rivers were created to feed navigable canals, was expressive of a general belief. Owing to the success of the Duke of BRIDGEWATER'S undertaking, no less than 165 Acts authorising the execution of similar works were applied for in Parliament. A financial crisis, partly caused by fear of a war with France, checked the advance of canals. The introduction of railways superseded conveyance by means of water, but before STEPHENSON'S revolution the cutting of canals was not considered to be a profitable speculation. They were unable to compete with railways in expedition, and the directors of the new iron roads took care to keep canals in a backward condition by purchasing them wherever possible, or in other ways preventing improvements. There are, it is reckoned, nearly 4,000 miles of canals and canalised rivers in this country, and it has been found that railway companies own more than 1,100 miles of them, and can exert influence over at least an equal length.

When it was found that foreign countries were constructing canals of a kind which were unknown to BRINDLEY, it began to be realised that those means of communication were not entirely obsolete. ROBERT STEPHENSON, as became the leading representative of railway construction, was an opponent of DE LESSEPS'S scheme for the making of the Suez Canal. Elsewhere its advantages were recognised. The work was carried out without the aid of English capital, and was so successful, in a few years it became necessary to widen and deepen the course. In Greece, Russia, Germany, Belgium, America, important works were undertaken, and each of them was a commentary on the wasteful policy which was allowed to be followed in England by the railway companies without any interference on the part of the Government. The construction of the Manchester Ship Canal was evidence of reconversion to a belief in old-fashioned ideas.

Prejudice in England takes a long time to be dispelled. great many people are not convinced that water traffic is adapted to modern needs, and in consequence numerous canals are neglected or are worked under conditions which are of little advantage either to the owners or to the commerce and manufactures of the country. It must be

admitted that the problem of canal utilisation is not easily solved. When most of the waterways were commenced the only means of traction was the canal barge drawn by horses. It was therefore unnecessary, as there would be no disturbance of the water, to make any more provision for the security of the bottom and sides than would be needed in a river with a gentle current. Many canals were ill-adapted for boats propelled by steam. In parts where the sides were lined with stone pitching or concrete there was of course no difficulty. Horse haulage is inadequate if expedition is sought, and on many canals it would be required to expend money liberally if steam or electric barges were introduced.

We have of late years taken foreign practice as a guide, and an application was recently made to the Government on behalf of various Chambers of Commerce in order to obtain reports from France, Holland, Belgium, Germany and Austria about the navigable waterways of those countries. The information sought related principally to the character and cost of improvements, tolls, and the results as regards railways, seaports, and the trade and commerce of each country. The reports having been received have been printed, and are certainly remarkable, especially if we consider what would be the character of similar statements by foreigners on the waterways of Great Britain.

In Austria-Hungary, as with us, river traffic lost the importance it once possessed, and in some rivers there was a complete standstill. Although the Government exercised control over railways, it was found impracticable to convey bulky merchandise of low value at cheap rates. In order to supplement the railways, in 1901 the large sum of 10,000,000/ sterling was voted for waterways. Three millions were assigned for river regulation and seven millions towards the construction of a network of navigable canals. Considering the financial state of the country that is a heavy outlay. It is not possible to measure the results at present. The traffic seems to respond to the efforts made by the State. Of the 3,000 miles of waterway about 1,200 are adapted only for rafts. Most of the river traffic finds its way to the Danube, which owing to recent improvements is open throughout to steamships. Some of the tributaries also can be used by large vessels. In Hungary there has been an increase of nearly 50 per cent. in river traffic. But as cheap rates are charged on the railways much of the traffic which would be expected to go by water is now carried on land. The Danube is free, but to defray the cost of the conservancy works at the Iron Gates a toll has to be levied. It should be mentioned that an exceptional reduction is made in favour of quarried stone, gravel, cement, lime, bricks and wood.

In a quarter of a century between 1875 and 1900 the Belgian Government have expended 16,000,000/ sterling on the improvement and upkeep of navigable waterways, harbours and coasts. There are 1,372 miles of internal waterways in the country, and the State administers the greater part, or about 1,118 miles of them. Tidal rivers are generally exempt from tolls. The State does not derive any interest from the capital expended on the improvement of the waterways, inasmuch as the working and use of this means of transport are left to private initiative. At the most the tolls levied on navigation may be said only partly to reimburse the State for the expenses incurred in keeping the system of navigable waterways in working order. In the course of the twenty years between 1880 and 1900 the extension of Belgian trade has been enormous. The traffic on the navigable waterways has grown from 225,000,000 tons per mile in 1880 to 560,000,000 tons per mile in 1900, being an increase of 150 per cent. Over the State railways, the tonnage of freight transported has increased from 14,000,000 to 40,000,000 tons, *i.e.* has almost trebled. Between 1875 and 1900 the general commerce of the country has grown from 180,000,000/ to 280,000,000/. How much of the increase is to be attributed to the water traffic cannot be determined, but it is claimed that in providing the country with a system of navigable waterways and cheap transport, in multiplying the points of contact between road, rail and water transport, and thus facilitating transshipments, in rendering the seaports easier of access and in stimulating the erection of numerous commercial

and manufacturing establishments, this work of improvement has been one of the principal factors of the commercial prosperity of the country.

There is less certainty in the case of France. During the seven years following the Franco-German war the country expended 9,640,000*l.* on the improvement of waterways and ports. The amount shows the importance attached by statesmen to the works as means to enable France to recover prosperity. Then between 1879 and 1900 the large sum of 18,000,000*l.* was laid out. In consequence, the length of first-class waterways was increased from 906 miles to 2,930 miles, including 401 miles of newly-constructed canals. The Rhône, Saône, Marne and Seine were radically transformed. At the present time the total length of French waterways classed as navigable extends to 7,330 miles of river and 3,045 miles of canal. Other extensions are now in progress. The money was found almost wholly by the State, but in some cases local bodies contributed. One result of the improvements is a reduction of from 20 to 25 per cent. in the cost of transport. There has been an increase in water traffic from 20,000,000 tons in 1878 to 32,000,000 tons in 1898, the river Seine especially having gained.

This would appear satisfactory to all. But M. COLSON, who was formerly a director of the railway department of the French Ministry of Public Works, looks on so much success as illusory. In the first place, he says the net cost of transport is higher by water than by rail. Thus if carrying a ton for a kilometre, or 1,094 English yards, on a waterway costs 1 centime, on a railway it would be six-tenths to eight-tenths of a centime. A railway company could therefore reduce its charges so low as to ruin a waterway. That occurred in the course of the contest between the Midi Railway Company and the Canal du Midi. The latter had to succumb and was leased to its rival. Where the canals are owned by the State the railway is at a disadvantage in the competition. Not only is the canal upheld in spite of its losses, but the railway rates being controlled by Government they cannot be brought below a certain amount. The conclusion drawn by the English official, Mr. O'BEIRNE, is that "on the whole the returns seem to show that the competition of the canals has been injurious to the French railways most affected by it. But it must be borne in mind that this is the result, not of free competition between the two routes, but of Government control exercised in favour of the waterways."

That statement is sure to be taken by the supporters of the railway system as conclusive. But statistics we know are pliable, if not vacillating, and the opposition between the authorities of canals and railways is more intense in France than in England. If there was co-operation between the two, probably there would be less waste on both sides. According to Mr. O'BEIRNE, if the money expended by the Government on the improvement of canals and other waterways had been expended on the enlargement of railways, there would be much saving of public money. The French trader, however, gains, for his merchandise is carried more cheaply than formerly, but whether other people have to suffer by paying increased imposts is a question which is not to be answered by a brief report. The British consuls at seaports are in favour of the canals, although they point out the waste of money and the delay which arise from the general absence of direct communication between the railways and docks.

It is difficult to believe that the efforts which are made in Germany are solely inspired by a desire for the improvement of trade. But there is no doubt commerce and industry are gainers by the attention to canalisation. In the year 1900 there were 8,798 miles of waterways, including rivers, canalised rivers and canals, within the German Empire. The statistics also show there has been a vast increase in the number of steamers and other vessels and a proportionate increase of tonnage. Prussia gives the example of raising and expending money liberally for the improvements. We are told that the Prussian Government have always been of the opinion that an extensive and growing canal system is not opposed to the interests of the State railway system, but that, on the contrary, the two complete one another and should work well together in the interests of the public. The Prussian Minister of Public Works has publicly declared that the assistance of the

waterways was necessary to the railways, in order to be able to deal with the rapidly increasing traffic. That seems to express the common-sense view of the matter. Where there is divided authority, as in France, the endeavour for one system to overcome the other. The competition between French railways and canals resembles that between the railway companies in Ireland, where the interests of passengers and of traders are sacrificed to the enmity between boards of directors. In Prussia it is not possible for public interests to suffer for the satisfaction of individuals. Railways and canals must work together to attain a common end, and that is all that can be desired in England.

Waterways are no modern invention for the Dutch. At the present day it is considered preferable by passengers to use them, like their forefathers, for travelling whenever time admits. For many years there existed a prejudice against the railway throughout Holland. But even the time is sometimes money, and, in spite of opposition, the Government were at last compelled to construct a system of railways. As they were not intended to bring in a large revenue—for the State is satisfied with 1 per cent. on the original outlay—the charges on the lines for the conveyance of goods are lower than would be possible if the proper belonged to ordinary shareholders. It was not until 1878-79 that attention was given to goods traffic on railways. Most of the transport still continues to be borne on the waterways, and it is expected that with the introduction of small and cheap petroleum motors the railways must further suffer. At present a ton of goods can be carried 156 miles on some waterways for 1*s.* 3*d.*, whilst the railway freight for 126 miles is from 4*s.* 7*d.* to 5*s.* per ton. Waterways in Holland must therefore be considered as being worked under conditions which can never prevail in England. In London the railway companies constantly complain of the unfair opposition of the omnibus companies, who can make use of roads which they did not construct. The canals in Holland are like London streets, and it is impossible to invent any ways which can compete with them.

The reports on the whole are unquestionably in favour of giving increased attention to English canals. Something has been done already. The success of the Aire and Calder Navigation, the River Weaver Navigation and the Severn Navigation are sufficient to demonstrate how much benefit can arise at a comparatively small cost. But to insure success by making canals more serviceable than the railways it will be necessary to have some abatement of the jealousy which railway companies display towards the other means of communication. The improvements in hydraulic machinery can remove some of the difficulties which attended the use of locks, and less time will be lost than formerly. In expedition railways are likely to be the more advantageous, although complaints are constantly being suggested that many companies occasionally fail to realise the importance of time. Motor traffic on public roads might be assumed to be a cheap substitute for canals, but the conditions under which the traffic would have to be conducted impose such limitations as to make the advantages of such a system doubtful. Whether the Chamber of Commerce are likely to be of any use in promoting the utility of canals remains to be seen. They have not done much for railways, and their views in general are extremely limited. It would be far more desirable if the railway companies who own canals would imitate the practice of the German Government and employ both classes of property for the benefit of the public, which would eventually result to the profit of the shareholders.

Mr. James White, of Sydney, whose designs for the Queen Victoria Memorial statue to be erected in Melbourne gained the first place in the recent competition, has been commissioned to execute the work, and a premium of 50*l.* has been awarded to Mr. C. W. Jewett, of Brecknock studios, London, N.W.

The Lectures of the Sanitary Institute will commence September 14. In October three lectures will be delivered by Professor Elsey Smith on "Building Materials," "Sanitary Building Construction and Planning; Soil and Local Physical Conditions," "Ventilation, Warming and Lighting."

THOMAS BEWICK.

IN 1753 Thomas Bewick, to whom is owing the revival of wood-engraving in England, was born at Cherryburn, near Newcastle-on-Tyne. His centenary should have been celebrated in 1853, but at that time such commemorations were only admitted for a few men. The Pen and Palette Club of Newcastle-on-Tyne resolved to recognise the 150th anniversary of Bewick's birth by a pilgrimage to Ovingham, where he was buried, and to Cherryburn. Bewick was apprenticed in 1767 to Ralph Beilby, of Newcastle, a general engraver, who undertook anything, from book-plates to clock faces. Bewick's first efforts in wood were diagrams for Hutton's "Treatise on Mensuration;" but though it is known that he endeavoured to improve himself in this line it was in private, for his master had little or no employment of the kind for him. After his apprenticeship he devoted himself however to the art, and in 1775 he received a premium from the Society of Arts for the cut of the "Huntsman and the Old Hound," which appeared subsequently in an edition of Gay's "Fables" published in 1779. After a short visit to London, he entered into partnership with his old master in 1777, his brother John becoming their apprentice. He continued the practice of his art, furnishing the cuts to the edition of Gay's "Fables" and to an edition of "Select Fables" in 1784. In 1785 he commenced the cuts for his "General History of Quadrupeds," for which the descriptions were written by Beilby, and which was published in 1790. The excellence of the work insured its success, and editions rapidly succeeded each other. The merit of the work, however, did not consist merely in the execution of the cuts. Bewick drew all the designs himself; the drawing was in general remarkably correct, and the backgrounds and little vignettes full of the most natural expression, simplicity, feeling and beauty. The success of the "History of Quadrupeds" led immediately to the commencement of a "History of British Birds," of which the first volume appeared in 1797 and the second in 1804. Bewick had now taken pupils, and in this work was materially assisted by them.

At Bewick's grave an address was delivered by Mr. D. Proal Thomson. In the course of it he said that the celebration of the anniversary of either the birth or the death of the notables of a locality was less usual amongst the British people than amongst other nationalities. When the youth of to-day, who had wit enough to appreciate the advantages of living at the beginning of the twentieth century, realised clearly the probable success which followed perseverance in pursuit of an object, and acquired patience in waiting for the always apparently delayed result, and combined with this an ability to profit by the experience of those who had gone before, he was also justified in feeling fairly certain of ultimate success, and that he too would reap a rich reward as a result of his industrious labour. For this reason he had welcomed the opportunity given by that meeting to draw the attention of the youth of Bewick's neighbourhood to the position reached by his most famous of local artists; one who, beginning from the smallest things, nourished and cultivated the gift God had bestowed upon him, and spared no pains until he accomplished his end, with the result that his name was now honoured all over the world. Thomas Bewick was the restorer of wood-engraving to a place in the arts—the artist who was imbued by nature with the power to give artistic expression in works of art, small in size, but perfect in quality; the artist whose knowledge of the beauty of British birds had never been surpassed, and the moralist whose designs drove home a pictorial satire in the only way acceptable at the time. Thomas Bewick was, in fact, one of the premier heralds of the romantic movement which in painting reached its apogee at the close of the eighteenth century. He was one of the first to sound precisely the depths of nature in certain aspects, to reveal the glowing warmth of summer and the bitter cold of winter as shown in his famous tail-pieces, the feathery downiness of a bird's breast, the lithesome beauty of a ferocious animal. Thomas Bewick was a man, above all things, continually searching for and frequently finding the extreme beauty and everlasting charm of nature in a method no one previously had been led to pursue. His artistic achievements, if simple, were the direct results of nature's teaching, and this, with the vital spark of genius he had, had rendered him a personality whose distinction was as great now as it was a hundred years ago. How many men, who are now called Thomas Bewick was when young, had remained in the country where people seemed naturally gifted there were probably many; but none the less did it become them to seek the man who recognised his own talent, and who had cultivated his own corner of the artistic garden in such a way as to reach a perfection not yet surpassed. When Thomas Bewick was born, 150 years ago, and even for 50 years later, the art of nature, as we understand it, scarcely existed. Landscape painting, the last of the varieties of artistic expression that we understood and really admired for its own sake, was known only to the English through Ruysdael and Hobbema, for Claude of Lorraine did not so much paint Nature as he saw her, but rather founded

certain conventionalities—admirable, but still conventional—on his observations. English art knew nothing of transcripts from nature except in Richard Wilson, and Gainsborough painting his glorious landscapes a little later was content to let them be hidden and neglected while his portraits rivalled Sir Joshua Reynolds's, who only once or twice painted a landscape except as a background. The Norwich artists also were just beginning to think about the possibilities of their richly coloured country. Nevertheless, the love of nature was soon to become the most remarkable artistic development of the times; but up to 1785, when Thomas Bewick began to engrave the first block of the "Quadrupeds," there was little movement towards natural expression. Turner was only ten years old, Sir Walter Scott fourteen, and Constable was only nine, and these were to be the most famous exponents of the love of nature in the early part of the approaching nineteenth century. A dozen years after beginning the "Quadrupeds," that was in 1797, when Bewick published the first volume of the "British Birds" (the land birds), some progress had been made, and in 1805, when the second volume (the water birds) was issued, there was a general activity in the appreciation of nature; but a comparison of the history of the time showed that Thomas Bewick's most famous work was already accomplished, when others were only at the beginning of things. Bewick's birds showed a love of natural beauty absolutely unique at the time, and for this reason in itself he was worthy of all honour. He gave the world an epitome of winter in his tail-piece of the snow-clad cottage in the first volume of "British Birds" a dozen years before Turner painted his "Frosty Morning," and fifty years before Theodore Rousseau carried out "Le Givre," both of which were the finest pictorial expositions of cold that had been created. Bewick was drawing and engraving pictures of the banks of the Tyne long before Constable devoted himself to Willie Lot's mill and the locks on the Stowe. And the most beautiful tail-piece of the "Angler" (in the second volume of the birds) was published in the same year as Scott's "Lay of the Last Minstrel," and before his "Lady of the Lake," which has never ceased to make his readers realise the charms of the Trossachs. It would be perhaps too far-fetched to say he anticipated Mr. Whistler in his lithograph of the "Cadger's Trot," drawn in 1823. Yet there was a movement in the horse and a general suggestiveness in the rapidly executed sketch that would have pleased the later-day master who made so magical a lithograph in "The Babies of the Luxembourg." But that Bewick was a competent forerunner of the English pre-Raphaelites, no one with any knowledge of the Tyne-side studies from nature in its minutest parts would dare gainsay. Enough, however, had been said to make good the claim of Thomas Bewick to have been an originator in the first degree. His works were limited, as all beginnings must be, yet it remained true that he was the first to lead artists to nature, and, like the source of a mighty river, to give the premier contribution to what has since attained so large dimensions. "Bewick's Birds" and "Bewick's Quadrupeds" were the three volumes on which the artist's fame most firmly depended. Every Bewick admirer understood and appreciated the merits of these books, as well as of the many other Bewick engravings to be found in various publications, and much time had been spent in cataloguing and describing them. The birds and quadrupeds, what sweet memories they called forth. The cock titmouse perched on the branch, the willow wren about to fly from its luxuriant bank, the tame duck in feathery tones and half-tones, and stately turkey cock, which seemed to move as one looked at it. Then the partridge, the snipe, the geese, the swans, the sandpipers, and, perhaps, most beautiful of all, so at least was the artist's own opinion, the yellow bunting. The quadrupeds were naturally more prosaic in form as well as in realisation—the splendid series of foxes, the dogs, especially the Spanish pointer, the white rabbit, and of the wild animals, the tiger, were the best; and many renewed delights could be found and experienced in looking them over. Yet all these paled in actual interest before the wonderful series of tail-pieces (first begun in the 1784 "Fables"), successfully continued in the "Quadrupeds" of 1790, and culminating in the two volumes of birds of the succeeding years. It was certainly the tail-pieces which most readily appealed to Bewick's admirers. Their quality of humour was more easily understood than the artistic expression of tone in the birds and animals. Their stories were clear to the bucolic intellect, and while most of them had points no ordinary peasant would readily grasp, yet the tail-pieces were undoubtedly less subtle than the other illustrations. Each Bewick admirer present had, doubtless, his own favourites, and no one would grudge any single design a word of commendation. His own favourites were the snow pieces, the little cottage in winter, with the barn and the lean-to shed, the tall tree with the nearly exhausted hayrick beyond, from the birds; the supremely hungry ewe lamb, the starving mother nibbling at an old garden broom, while her little one vainly sought its natural nourishment, from the quadrupeds; and the poachers, also from the birds, following the easily

visible footprints in the snow-clad landscape. Much had been written on these marvellous little pictures, and yet one could come to them with new interest every time they were examined. Their humour might first attract, but it was their resolute truth to nature which retained the interest and power to bring one to look at them again and again. It was to be remarked that the world came very quickly to appreciate the talent of Bewick at its proper worth; of the quadrupeds alone there were 12,250 copies sold in the artist's own lifetime, and the sale of the birds was far larger. Success was properly appreciated by Bewick, and it was pleasant to remember that throughout all his later years he was held in high honour by his neighbours. Many another point of merit and interest connected with Bewick might be discussed, but it was not necessary to do so further. Enough had been said to justify their eulogy on the artist they had met to honour. That day they had, with their own eyes, noted the fidelity of Thomas Bewick to the aspects of nature with which he was surrounded, and with this profoundly impressed on their minds they bowed with humble love and respect to the man and artist who had rendered them so much artistic and intellectual pleasure.

At Cherryburn the visitors saw, still standing behind the house occupied by the artist's descendants, the modest thatched cottage in which Bewick was born. It is now used as a cow-byre, but the brass plate over the doorway indicates that the house is very carefully preserved. People who have seen the artist's engravings of the modest dwelling can recognise it.

ARCHÆOLOGY IN THE ISLE OF WIGHT.

THE members of the Hampshire Field Club held a meeting in the Isle of Wight last week, which is described in the *Hampshire Advertiser*. The director of the excursion was Mr. G. W. Colenutt, F.G.S., local honorary secretary, and St. Catherine's Down was visited. The ancient lighthouse on the summit dates from the fourteenth century. The Rev. Father Davis then read the following paper on "The Hermitage of St. Catherine." Standing on what is known as St. Catherine's Down, we are, according to the latest map published by the Ordnance Survey, at an elevation of 781 feet above the sea-level, the highest and most conspicuous elevation in the island. There is reason to think that in the past ages it did not bear the name of St. Catherine's Down. In a deed of the time of Henry VII, and dated 1535, there is recorded the value of the living of Chale, and immediately following it there is an entry in Latin which it will be perhaps most convenient for me to give in English:—"The Chapel of Halydon. Roger Hall, lately chaplain, receives from the farm called glebe land and from tenths 4*l*." Halydon is good Anglo-Saxon for Holydown, and this, I think, must have been the name of the hill. In the Winchester registers there is a deed of Bishop Woodlock, dated October 1, 1312. In this deed the Bishop states that he admits Walter de Langebereeve to the hermitage upon the hill of Chale, in the Isle of Wight, which is to be built and repaired in honour of St. Catherine, and, continues the deed, "We give him faculties to celebrate the Divine sacrifice in the chapel which is to be constructed." This I think indicates that the chapel was dedicated to St. Catherine, and that it was built on the hill of Chale known as Halydon. According to the register already quoted, Walter de Longberew was admitted to the hermitage on the hill of Chale in the Isle of Wight on October 5, A.D. 1312. A few years later, in 1323, a chapel was erected on this spot by Walter de Godyton, and an endowment was given to it for one priest, who had to say mass for the repose of the soul of Walter de Godyton and of his ancestors. A light was also to be provided at night to warn off ships from approaching too near this dangerous coast. In the inquisition on the endowment of the chapel of St. Catherine on Chale Down Bishop Stratford states that Walter de Godyton also gave an endowment in order that the brightness of a nocturnal light might shine for those who were navigating at night in those dangerous parts of the sea where many dangers often arise for those navigating in darkness. We thus have, if not the history of the commencement of the lighthouse on St. Catherine's Down, the account of its permanent establishment and endowment. Here there shone for over two centuries the light whose warning must have been blessed by many an anxious mariner. Then there came the time of Henry VIII, and the hermitage and the priest and the warning light disappeared, as also did the endowment. The little tower alone has survived. In 1757 the foundations of the hermitage and chapel were excavated by Sir Richard Worsley. The lighthouse is a stone structure of four distinct storeys in height. Externally it is octagonal, but square within. Of the building erected by Walter de Godyton the only remains are the foundations. St. Catherine's Down offers on a fine day a most splendid prospect. The view is of marvellous extent, reaching over the greater part of the island, extending over the New Forest and the hills of Hampshire and the south coast as far as Beachy Head. It is stated

that on a clear day the high lands about Cherbourg are sometimes visible. The distance would be something more than fifty miles. As we look down on the seashore, though at the present time so beautiful and calm, we can easily imagine that it must be a most dangerous coast in stormy weather. Many and many indeed have been the shipwrecks that have taken place in Chale Bay. In the Patent Rolls, under date of 1311, is an account of a ship of Bayonne, freighted with white wine, of the Duchy of Aquitaine, which was sailing to Flanders, and which was wrecked here. A dispute arose about the ownership of the wines and of the ship. A plot was made at Newport by which certain parties conspired to say that the wines were not owned by the claimant. They caused him to be imprisoned at Winchester until, according to law, he was acquitted. A commission, dated from Newcastle, May 1314, was issued by the king to inquire into these proceedings. There was also an inquiry in the King's Court, as appears by the Abbreviation of Pleas, Hilary Term, 1315, as to the treatment of the cargo of the wrecked vessel by some of the landowners and inhabitants of the neighbourhood. Amongst them is mentioned the name of Walter de Godyton, who, if we may judge by his name, was in 1328 the founder of the lighthouse. The name of Goditon has not disappeared from the island. Under its modern form Gotten, it is the name of a farm at a short distance to the north-east of Chale Down. Of another wreck Worsley speaks in his history of the island. Referring to Chale Bay, he says that some years ago it was discovered that the sand under the cliffs was mixed with gold dust; this fact while engaged the country people to wash it in bowls and pans, as is practised in Africa and South America; but from a number of dollars occasionally found there it appears likely that both were the contents of some Spanish ship wrecked in this dangerous bay. The details of another wreck are of special local interest. On August 27, 1836, the West Indian *Clarendon*, 345 tons burden, sailed from Basseterre Road, St. Kitts, for England. She was commanded by Capt. Samuel Walker, had a crew of sixteen officers and men and ten passengers. She arrived off the coast of the Isle of Wight on October 10. During the night a fearful storm arose, and early on the morning of the 11th the *Clarendon* was cast ashore. With the exception of the second mate and two sailors, the crew and all the passengers were drowned. Capt. Walker and some of the passengers and the crew were buried in Chale churchyard. Lieut. Shore, of the 14th Foot, his wife and two daughters were buried at Newport. Amongst the passengers was a Miss Gourlay, the daughter of Capt. Gourlay, RN. Her body is stated to have been washed away and eventually cast ashore at Southsea, opposite her father's residence.

The Rev. G. W. Minns said he had been asked why the hill was named after St. Catherine. Catherine was a name of Greek origin, signifying pure. The saint lived at Alexandria, where with other Christians she was persecuted by the Emperor Masentius, who sent philosophers to argue with her, but she was able to confound them. After that the emperor, full of admiration for her beauty, made advances to her, which she resented, and finally he put her to death by the torture of the wheel, and her body is said to have been translated to angels to Mount Sinai. There were other hills named after Catherine in this county—one at Winchester and another at Christchurch.

Father Davis said that many hills were dedicated to St. Catherine, but there was no historical authority for the tradition just related.

In proposing a vote of thanks to Father Davis for his paper, Mr. Dale said he had disposed of the Papal document which had found its way into Mr. Percy Stone's hands on the Isle of Wight. A survey of 1566 showed a chapel on the hill, and a heap of fagots near, which might afford some evidence as to the method of illuminating the lighthouse. The move was then for Chale Church. At Chale a paper was read by Father Davis as follows:—"The Cartulary of Carisbrooke Priory states that Hugh de Gernon founded a church at Chale which was consecrated on December 1, 1114, by Walter Giffard, then Bishop of Winchester. Up to that time the church would appear not to have definitely belonged to any particular parish. It was claimed by Alwetus, the then priest of Carisbrooke, part of the parish of the church of St. Mary, Carisbrooke, in consequence an agreement was drawn up and signed on the day of the consecration, and in the presence of the bishop, the virtue of which Chale became a distinct parish. Hugh de Gernon endowed the church of Chale, and as a consequence the deed continues, "and the priest of Chale shall do the whole service of the church, both for the living and for the dead in bookes and vestments in defence and repairing, though it should fall to the ground." The question then once presents itself to our minds is what portion of the original church is to be found in the present building? I think, the case so far as one can ascertain, that no portion of the original church has survived, and would seem probable that in the thirteenth century

the first church was replaced by another, of which the pillars in the south aisle are the largest remaining portion. Later on in the next century considerable changes must again have been made. In the north porch there is a holy-water stoup, and in the chancel a piscina, which are apparently fourteenth-century work. The piscina was only put into its present position about thirty years ago. There is also in the south aisle the remains of an entry to a rood-loft, and beside a window in the north wall the remains of a niche. These I think belong to the Decorated period. In the fifteenth century very considerable alterations must have been made. The very fine tower, which is perhaps the most pleasing feature of the church, was then erected, either by the same architect, or after the model of the tower of Carisbrooke Church. The chancel arch and the windows both at the end of the chancel and at the end of the south aisle are modern insertions. The old windows of the church give the south aisle an east window or three lights, but without any tracery, and give to the chancel a square-headed window, also of three lights. In the belfry is a well supposed to belong to the fourteenth century, and on it the inscription "Sancta Margareta," with an "R" below it.

In the Papal registers there are three entries referring to the church of Chale, which our organising secretary, Mr. Shore, has been so good as to send to me. The first is as follows:—"Mandate to the Prior of St. Nicholas Exeter of Petition of John de Andevera, rector of Chale, to receive his resignation of Woggewell, which he presumed to hold after he got Chale, impose on him a salutary penance, and then induct and defend him in possession of the said church of Woggewelle. Dated Id. June Viterbo, 1258." John de Andevera had, and most probably innocently, broken the law which forbids a priest without a Papal dispensation to hold two livings. Woggewelle, take it, is the place now known as Ogwell in the county of Devon, about three miles from Newton Abbot. The church here is very ancient. The Pope also sent to John de Andevera the two following dispensations:—"Dispensation to John de Andevera, rector of Chale, to hold, after first resigning it, the church of Woggewelle, and an additional benefice with cure of souls. Dated Id. of June Viterbo, 1258." The third indult is as follows:—"Indult to John de Andevera, rector of Woggewelle and Chale, in the dioceses of Exeter and Winchester, to hold an additional benefice with cure of souls, and resigning one of them to accept another. Dated Non June om Viterbo A.D. 1258." We have no clue to the reasons why these permissions were given to John de Andevera. They were granted by Pope Alexander IV. According to the taxation of Pope Nicholas in 1291 the church of Chale is worth 20*l.* against the wall of the south aisle is a marble monument erected in 1704 by William Legg, rector of Greatham, near Petersfield, to the memory of his father and mother. Under the west window of the south aisle is a stone inscription stating that John Hieron, now spelt Hearn, was buried May 15, 1648. As you will see going round the church, descendants of his now living in America have in late years been very large benefactors to the church. In the same aisle is the handsome monument to Major-General Sir Henry Worsley. In walking over the churchyard you will notice several small tombstones ornamented with a very curious pattern. In the churchyard you will see the tombstones over the graves of the persons drowned in the wreck of the *Clarendon*.

The visitors then inspected the church, the pseudo-Latin inscription on a tablet under the east window of the south aisle being pronounced by the Rev. G. W. Minns to be a riddle. The brass tablet close to it records that Mr. George Hearn gave to the church in 1898 five windows and two bells, "and who being a native of the United States of America desired thus to commemorate two former rectors of this church, his ancestors, to show his pious reverence for the same and the unity of spirit existing in the Church at home and abroad." The party then proceeded to Chale House, one of the interesting ancient manorial residences which abound in the island. In the Mediaeval barn there Father Davis read the following paper on the Manor of Chale:—

We have at various times visited several of the manors in the Isle of Wight, built mostly in the reign of James I. or at the end of the reign of Elizabeth. But here at Chale we have a manor a portion at least of which dates back to the fourteenth century and to the reign of Edward III. In Domesday Book the name of Chale is given as *Cela*, and this is supposed to be derived from the Danish word "*schiele*," meaning the hollow bowl, a reference either to the shape of the bay or to the bow of the Chinese. The Manor is stated to be in the possession of William, the son of Stur. His daughter and heiress married Hugh Gurnon, into whose hands the Manor passed in the twelfth century. Probably by another marriage it subsequently passed into the possession of Richard de Longford. This was in the reign of Henry II. The Manor was then passed to his son Roger de Longford, who died in the third year of Edward III., 1330, and then passed to his son, John de Longford. This John was made Captain of the Island in the ninth year of Edward III., 1336. The Charter Rolls show

a grant of free warren at Chale to John de Longford in the seventh of Edward (1333). Inside the present house is a large hall now divided into rooms, but which was probably built by John de Longford. The hall was at the north end lighted by a transom window, which still remains. Under the hall was an undercroft which is now also divided into rooms. In 1509 Sir John de Langford, who then represented the family, died. His daughter Anne, his sole heiress, married Thomas Pound, of Southwick, Hants, and sold Chale Manor House to Sir Richard Worsley, the Captain of the Island in the reigns of Henry VIII. and of Elizabeth. Doubtless, before his time many alterations had been made, but of those he is supposed to have made there is one that is very conspicuous. He is supposed to have adapted the undercroft to the purposes of a kitchen, and to have added the immense fireplace which still remains. There have been many subsequent alterations, and in 1845 the old fourteenth-century roof was removed. We shall see in the present house some remarkably thick walls, but of their origin we know nothing. Shortly after John de Longford became possessed of the Manor in the year 1330, there occurred at Chale a most peculiar disturbance. Of the cause of it nothing is known. That it was of a most serious character the following extract from the Patent Rolls, as sent to me by our organising secretary, Mr. Shore, whose absence is much to be regretted, will show:—"Commission of Oyer and Terminer to John de Sponore, John Inge, John de Hampton and Master John de Hildeslee on complaint of John de Langford that Theobald Russell, John de Kyngeston, of the Isle of Wight, John son of John de Glamorgan, Robert Urry, Gilbert de Esteneye, William son of William de Borehunt of Portsmouth, and others broke doors and windows of his Manor of Chale, in the Isle of Wight, carried away his goods and assaulted his servants" (Patent Rolls 7. Edward III. June 30, 1333, dated at York). As it was in the year 1333 that Edward granted the free warren to John de Longford, it is possible that this disturbance had its origin in jealousy on the part of Theobald Russell of Knighton, John of Kingston and Robert Urry. As John de Longford was three years after made Captain of the Island, he was evidently in good favour with the king. On the west side of the house there stands a most beautiful specimen of a Mediaeval barn. The building is supposed to date from between the fifteenth and sixteenth centuries. It is 100 feet in length and 30 feet in width. The walls would appear, except in some minute degree, to be quite unaltered. The timbers of the roof have been replaced, one only of the original principals remaining. It may be on account of this barn that some persons have spoken of this house as the "Abbey House." Chale Manor never was an abbey, and, as far as its history is known, never belonged to any abbey.

The party then, by permission of Mrs Harvey, wife of the occupier, inspected the house, the large Tudor fireplaces and the transom window particularly interesting the antiquarians.

Before separating the Rev. G. W. Minns proposed a vote of thanks to Mr. Colenutt and the Rev. Father Davis for the interest they had given to the excursion.

This was accorded by acclamation.

ANCIENT STATUARY IN CHINA.

UNDER date "Hsiao-chang *via* Te Chou, Tientsin, North China, April 27, 1903," Dr. Sewell S. McFarlane sends the following communication to the Royal Geographical Society:—"In February, during one of my journeys in the south-west province of Chili, North China, I came across a number of stone horses, sheep, lions, &c., some in a fair state of preservation. They were in two parallel rows, and beside them were several 'petrified' Buddhist priests, supposed to be on guard. The people seemed to know nothing about them, and cared less. Upon inquiry among the gentry of the adjoining village, one old gentleman informed me that it was the entrance to a very old subterranean tomb of one of China's prime ministers, who lived under the Han dynasty. This would be about the year A.D. 25. Many years ago a tablet stood there, which they unearthed with the above stone figures, giving full particulars, but the disinterested inhabitants destroyed it 'as it was in the way of their cart track.' How the people came to unearth these huge statues is interesting. During the past generations the severe dust-storms experienced in North China have swept over the district and steadily but effectually buried out of sight the beautiful tomb and all its accompaniments. The inhabitants frequently dig out their land to make mud bricks for their houses, and in this manner the stone figures came to light. It is said there are a great many more of them ere one reaches the actual tomb. Had this been in England these ancient curios would have been excavated and a correct description published centuries ago. But in China the country folk, who simply live from hand to mouth, somewhat take after Gallio, of sacred writ, and 'care for none of these things.'"

NOTES AND COMMENTS.

ALTHOUGH one would give much gratification, we are not likely to have an exhibition of the late Mr. WHISTLER'S works this year. But the Copley Society of Boston, Massachusetts, intend to hold a memorial exhibition of his works next winter. The exhibition will open on Tuesday, February 23, 1904. In order that it may be as complete, representative and worthy of the fame of the artist as possible, the owners of WHISTLER'S pictures in America, as well as those in England and Paris, are invited to lend them for the occasion. For several years the Copley Society has had in view a Whistler exhibition, but it has been necessarily postponed until now. It seems appropriate that the first important memorial exhibition of the works of this eminent American artist, who lived so many years in Europe, should be held in America, and it will naturally be followed by other similar exhibitions in London and Paris. With this in mind it is hoped that many of his best pictures in Europe may be lent for this American exhibition, and that in turn those which are in America may be seen in Europe when the time comes.

THE camera has not been employed hitherto, so far as we know, as a weapon in strikes. The innovation is to be credited to the masons of Geneva. A great many of them are on strike, but, as happens in all countries, the steadiest men prefer to work. The Swiss laws are severe against any interference with the liberty of the subject, and the physical-force policy with which we are familiar in Great Britain dare not be exercised. There is, however, no law against taking snapshots of the operatives who have no liking for idleness and of exhibiting the prints as the portraits of cowards who are disloyal to trade organisations. If the men are sensitive, such records may have a terrorising effect, and in that way the end of the strikers will be attained. But if the experiment is ever tried here it is to be hoped summary methods will be adopted for dealing with the perpetrators.

If there is any part of Paris which should exemplify the latest improvements in illumination it ought to be the site of the vanished Tuileries, the gardens and the Place du Carrousel. The subject has been under consideration for some years, but the lighting is still unaccomplished. The delay is caused by the difficulty which often arises of defining the limits separating the duties of the State from those of the municipality. The Louvre is a Government building, including what remains of the Tuileries; the gardens are also State property; but then the roadways are supposed to be controlled by the Municipal Council. In one part the State denies the right of the municipality to interfere; in another part the latter wish to make the State pay all the expenses. It was supposed a compromise had been arranged, but the feud has been renewed on the question of privilege. The last step is to refer the whole subject to a commission, and in France, as in England, that means the postponing of a settlement for an indefinite period.

ILLUSTRATIONS.

CATHEDRAL SERIES: EXETER—DETAILS OF WEST FRONT.
ON July 3 we published a plate showing the whole west front of Exeter Cathedral. We now give an enlargement of the central division, which will suggest the character of the sculpture. It is not easy to discriminate between a series of ruined statues. But an effort was made by a Mr. DAVEY, who wrote a history of the cathedral with the assistance of JOHN CARTER, the architect, and they prepared the following list. The series is intended to be commenced on the left. In the upper row are:—Samuel, Samson, Jephthah, Gideon, Barak, Deborah, Noah, St. Matthew, St. John, St. Jude, St. Bartholomew, St. Matthias, St. Philip, St. Andrew, St. Peter, King Richard II., King Athelstan, St. Paul, St. John, St. James the Greater, St. Thomas, St. James the Less (modern), St. Simon, St. Luke, St. Mark, St. Augustine, King Ethelbert, St. Birinus, St. Boniface, Kynigils, Cwichelm, Kenwalch, Kentwald, Caedwalla, Ina, the last six being kings of Wessex. In the lower row following the same order are:—Canute, Edgar, Ethelred, Justice, Fortitude, Discipline, Edward II., Henry III., two

unknown bishops, Richard I., Henry II., Stephen, Henry I., William I. (modern), Robert of Normandy, William II., a king unknown, two bishops, John, Edward I., Edward III., Black Prince, Godfrey de Bouillon, Stephen, Count of Blois, Guy de Lusignan, Ethelwold, Alfred, Edward the Elder. The authors of the list admit that some of these names are doubtful. In the plate the upper row begins with Jude and ends with Simon, and the lower row with a figure of the Conqueror. Over the central doorway are St. Peter, Richard II., Athelstan and St. Paul. The early monastery of Exeter was dedicated to St. PETER. King ATHELSTAN was said to have founded a monastery for Benedictines about 932. The name of St. PAUL does not appear to have been connected with the monastery, but he was the usual pendant to St. PETER, and on that account may have been introduced. The introduction of RICHARD II. in so prominent a position may excite some surprise. The king was not remarkable for devotion to the Church. He reigned from 1377 to 1399. Now THOMAS BRANTYNHAM was consecrated Bishop of Exeter in 1370 and he died in 1394. If, as some inquirers believe, the sculpture was executed during his episcopacy it would be customary to give a prominent position to the reigning sovereign.

COTTAGES, HIGH STREET, BRIGHTON.

IN most Sussex towns the "High Street" is the leading thoroughfare, and in the older villages is also the most picturesque. Neither of these descriptions could be hitherto applied to High Street, Brighton, but the owner of a great part of the street (Mr. C. SCRASE, DICKINS, & CORTHURST) is about to rebuild on one side of the street in a manner which will go some way towards justifying the latter appellation. Our view illustrates this intended rebuilding the proposed houses being, with their tiled roofs, stone mullioned windows and other characteristic features, a very great improvement on the commonplace old cottages now occupying the site. The architects responsible for the design are Messrs. CLAYTON & BLACK, of Brighton.

HOUSE AT EAST GRINSTEAD.

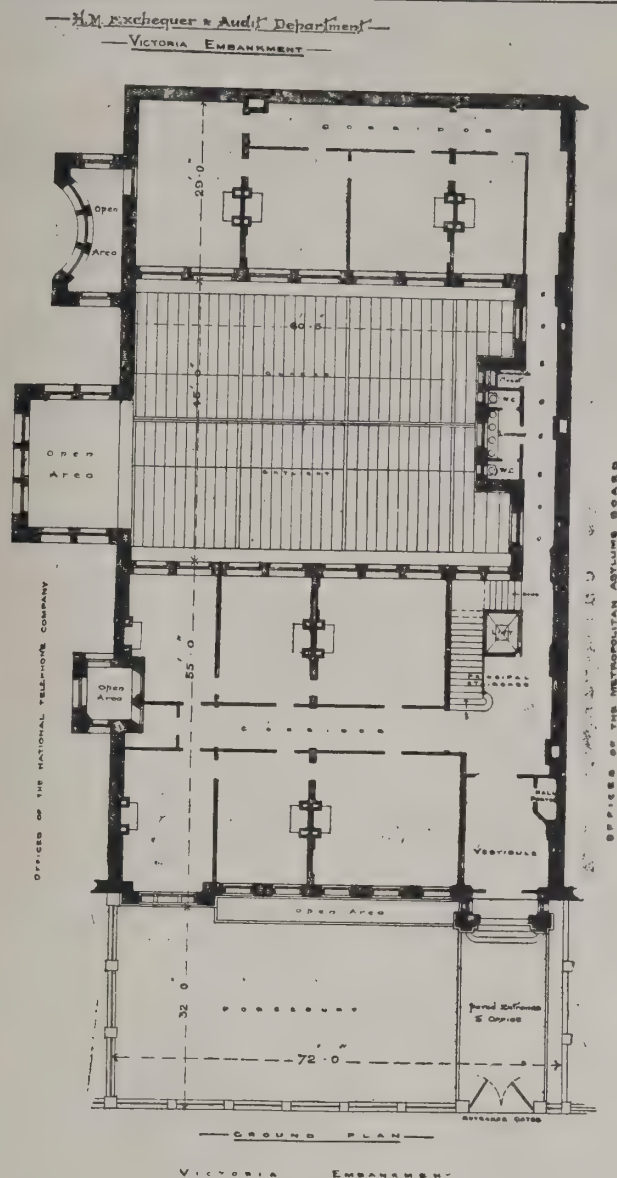
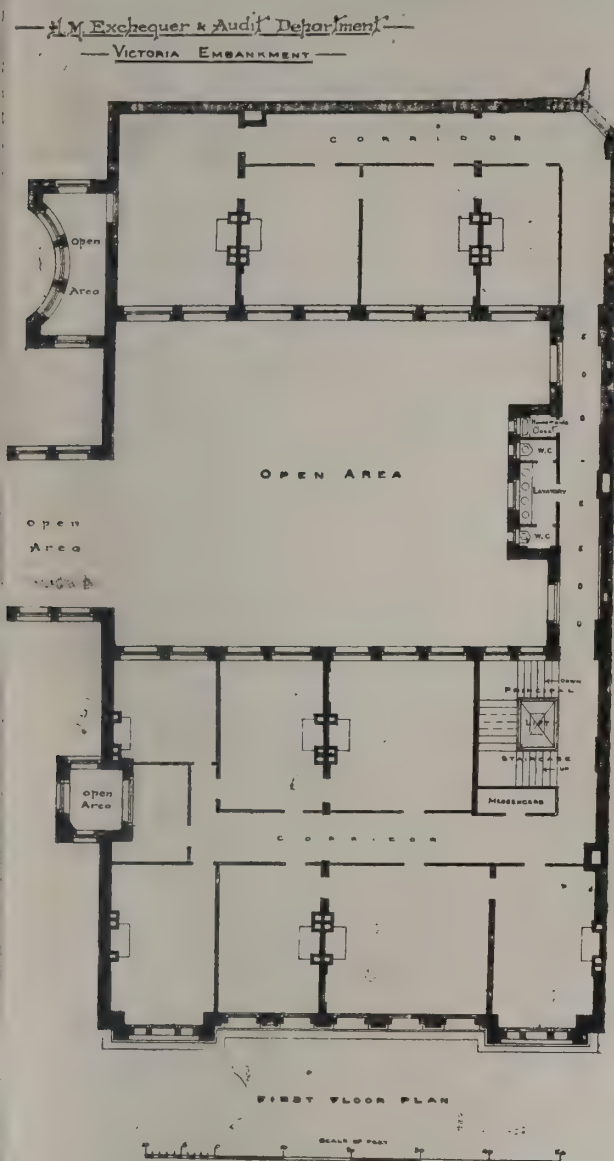
THIS house was erected for Mr. F. C. POYNTER, M.P., just outside the town of East Grinstead. The facing bricks were of a russet brown colour, with worn burnt headers specially selected from the Nut Hatch brick-kiln. The stone dressings, &c., were of Hackenden stone obtained in the neighbourhood, and the roofs covered with stone heeling brought from Wiltshire. The external woodwork was of English oak cut from old beams and built solid. The contractor was Mr. CHARLES RICE, of East Grinstead.

PROPOSED PRINCIPAL GATE TO ST. HUGH'S MONASTERY, PARKMINSTER, SUSSEX.

THE Monastery of St. Hugh, Parkminster, Sussex, is the largest in the world, and belongs to the Carthusians (Grande Chartreuse). It was designed about thirty years ago by the French architect, M. NORMAN. The buildings are in the Romanesque style and the church is simple but grand. In the design for the entrance Romanesque is adopted, with the exception of the arch of the carriage entrance, which is Florentine. The lodge lies on the right-hand side of the proposed new gates. Since the expulsion of the Carthusian Order from France a good many of the monks have been transferred to Parkminster and also to Italy, Austria and Belgium.

RESIDENCE AT HOVE.

THIS detached house for the Rev. DAVID DAVIES occupies a position which commands a close and uninterrupted view of the Sussex county cricket ground. The new road in which it stands will, when the remaining and adjoining houses are built, complete the circle of residences (mostly occupied, it is to be supposed, by cricket enthusiasts) which enclose this, the finest run-getting ground in England. The house, with the specially designed interior fittings, is being carried out under the direction of Messrs. CLAYTON & BLACK, architects, of Brighton.



A view of the building was published last week.

SALE OF CITY CHURCHES.

PARLIAMENTARY paper has been issued comprising the number of churches in the City of London pulled down or condemned during the period from August 2, 1894, to December 31, 1902, the gross sum realised by the sale of the churches, the items of expenses, such as solicitors and auctioneers' charges, and the cost of the removal of the bodies buried within the church, and the net sum produced. It also includes the new churches built out of the proceeds, their situation and cost, and the purposes to which the parochial endowments have been applied. Four churches are mentioned in the return, viz. St. Michael, Wood Street, St. Michael, Bassishaw, St. Bartholomew, Moor Lane, and St. George, Botolph Lane. The gross result of the sale of St. Michael, Wood Street, was £31,617. 4s. 9d. (which included £117. 4s. 9d. as the price paid for the fittings); the charges, about which the return gives no details, amounted to £670. 9s. 7d. The church erected out of the proceeds is St. Andrew and St. Michael, East Greenwich, where £14,783. 15s. 6d. has been paid for the church and parsonage house, further sums being still required of the capital sum. The parochial endowments of St. Michael, Wood Street, passed to the united benefice of St. Andrew and St. Michael, East Greenwich. Out of the proceeds of the sale of St. Michael's the following were also made:—Small compensations to the organ-blower and sextoness for the loss of their offices; £2,000. transferred to the Union of Benefices Fund; the induction fees and first-fruits of the first incumbent appointed to the united benefice; £4,000. for a parsonage for the united benefice; £600. for maintaining the old burial-grounds of St. Mary, Staining, and St. Olave, East Street; £1,000. for improving St. Alban's, Wood Street; £5,043. 15s. for the purchase of India 3 per cent. stock to

provide an income of 150*l.* for the incumbent of St. Andrew and St. Michael, East Greenwich.

The church of St. Michael, Bassishaw, was sold for £36,014*l.* 17s. 2*d.*, less £773*l.* 6s. 9*d.* for "charges." The new church of St. Michael, Edmonton, was erected at a cost of £10,000*l.* The parochial endowments were transferred and annexed to St. Lawrence, Jewry, with which the parish of St. Michael, Bassishaw, was amalgamated. The following further appropriations were made in this case:—£4,000*l.* transferred to the Union of Benefices Fund for defraying the cost of the removal of human remains from St. Michael's; £4,000*l.* for a parsonage for the united benefice of St. Lawrence, Jewry, &c.; £500*l.* for improvements to St. Lawrence Church; £2,000*l.* for a parsonage for the new church of St. Michael, Edmonton; £12,000*l.* for erecting the church of St. Aldhelm, Edmonton, and for completing the church of St. Peter, Lower Edmonton.

The price realised by the sale of St. Bartholomew, Moor Lane, was £20,420*l.*, the "charges," as far as at present known, being 30*l.* Of this sum £9,000*l.* served to build the new church of St. Bartholomew, Stamford Hill. The endowments were partly annexed to St. Giles, Cripplegate, the mother church of the united parishes, and partly went to provide a pension for the ex-incumbent of St. Bartholomew; the latter portion will ultimately provide an income for the new benefice at Stamford Hill. The following additional appropriations were made:—£4,252*l.* 4s. 6*d.* to provide part of the ex-incumbent's pension and to be used for other purposes on his decease; £736*l.* 13s. 4*d.* to provide compensation to the church servants, of which £666*l.* 13s. 4*d.* will ultimately be available for other purposes; £2,000*l.* to provide a parsonage for the new church at Stamford Hill.

No details can as yet be given in regard to St. George, Botolph Lane. Sir A. de Bock Porter adds that in these cases the cost of removing and reintering bodies is, under section 22 of the Union of Benefices Act, 1860, defrayed out of a special fund. The sum expended in the case of St. Michael, Wood Street, was £936*l.* 2s. 4*d.*, and in that of St. Michael, Bassishaw, £2,444*l.* 2s.

CHRIST CHURCH AND THE SEE OF OXFORD.*

Diocese of Oxford.

IN the reign of King Cynegils, A.D. 634, Birinus came to England, having first expressed to Pope Honorius his intention to "scatter the seeds of faith" among the Pagans. He commenced his mission amongst the West Saxons, and soon after converted the King and many of his people to Christianity. Bede records that Cynegils gave to the Bishop, for the establishment of a see, the City of Dorchester, the Roman Durocena and the modern Dorchester. Here Birinus built his Cathedral, and by his pious labours called many to the faith. He died in 650, and was buried in his Church. In 705 the large diocese of Wessex was divided into the two sees of Winchester and Sherborne, Oxford being assigned to the former. About a century later Dorchester was re-established as a Mercian see and remained so until 1087, when Remigius of Fécamp, who had been appointed Bishop by the Conqueror, transferred the seat to Lincoln, where he built a new Minster on the site of an earlier Church, which he called the Church of the Blessed Mary of Lincoln, connecting with it a foundation of secular canons. The Bishop did not live to see the consecration of his Cathedral, which took place in 1092. Upon the creation of six new bishoprics by Henry VIII., two were taken from the diocese of Lincoln, one being bestowed, by letters patent granted in 1542, on Oxford. Robert King, the last Abbot of Oseney, was appointed the first Bishop of Oxford with his seat in the Church of St. Mary at Oseney Abbey. At the dissolution Oseney met with the same fate as the other monasteries, and in 1546 Henry transferred the see to St. Frideswyde's Church, which, together with Wolsey's foundation, he reconstituted as his College and Cathedral. Henry granted Gloucester Hall, now Worcester College, to Bishop King for his Palace, which he occupied for about three years, when he took up his residence in the house in St. Aldate's Street, near the Trill Mill stream, known as "Bishop King's Palace," where he died in 1557. He is supposed to have built the house, his arms and those of Edward VI. appearing on the richly decorated ceilings. The half-timber and pargetted front in Rose Place was rebuilt in 1628 and is a good specimen of this style.

Oseney Abbey

was founded in 1129 by Robert d'Oily the younger as a house of Augustinian Canons Regular, and incorporated as a Church and College by Stephen in 1149. The magnificent pile of buildings, for which it became so renowned, was erected about 1247. It was designed on a sumptuous scale, and was one of the finest Abbeys in the Kingdom. The Church was dedicated to the Blessed Virgin Mary. It had double aisles, was 352 feet long by 100 feet wide, and in it were no less than twenty-four altars. There were two lofty towers, one at the crossing and the other at the west end, the latter containing the beautiful peal of bells now at Christ Church, "Great Tom" being in the central tower. In 1542 Henry VIII. created the new see of Oxford and made the Abbey Church the Cathedral of the diocese, but it only retained the dignity for four years, when the Abbey was dissolved and the see removed to Christ Church. The buildings seem soon to have fallen into ruins, for we see them represented as roofless in Aggas's map (1566). There is now nothing left but a stone doorway and a chamber with a fine old timber roof, which has apparently been shortened at each end. During some alterations in the mill now standing on the site, a short time ago, some of the foundations were exposed and several very fine carved capitals and mouldings were found. A few are left on the spot, but I understand the best specimens were removed to the Ashmolean Museum.

Christ Church Cathedral.

The history of the Cathedral dates back to the eighth century, when a Prince named Didan who lived at Oxford had, by his wife Safrid, a daughter called Frideswyde. Her father built her a Church within the City of Oxford which he dedicated to the honour of the Holy Trinity, the Virgin Mary, and All Saints. He also "erected other edifices adjoining to the Church," and settled lands upon the Nunnery. Frideswyde, who was a woman of great piety, took the veil, induced "twelve virgins of noble extract to follow her," and here she lived doing good work and performing many miracles. Some time after the death of Frideswyde the nuns were removed, the buildings being occupied and the work carried on by a body of Secular Canons. At the massacre of the Danes by the West Saxons, which King Ethelred II. had commanded to take place on St. Brice's Day, 1002, those living about Oxford sought refuge in the tower of St. Frideswyde's Church. After some resistance they were burnt in the tower, and at the same time the roof and other portions of the Church were destroyed. In 1004 Ethelred commenced the restoration of the building, and of his work a great deal may now be traced. Prior to the

Norman Conquest the Seculars were suppressed and the Priory granted to the Benedictine Monastery of Abingdon, subsequently to Roger, Bishop of Salisbury, and finally it was restored in the reign of Henry I. to the Canons Regular of St. Augustine. During this time the buildings became in a very ruined condition. The first Prior was Guimond (1120-4), and probably he restored the roofs and some of the other dilapidations. Sir G. G. Scott ascribes the Norman doorway of the Chapter House to him. During Guimond's time a school was founded in connection with the Priory, the buildings occupying a position in about the centre of the present great quadrangle. Inns and Halls were subsequently acquired, notably Vine Hall and Peckwater Inn, that now form part of the College buildings. Robert of Cricklade, the next Prior (1141-80), completed the restoration, the later Norman work, including the presbytery and clerestory, being probably some of his work. He had the relics of St. Frideswyde translated "from an obscure place on the north side of the choir." They were again translated in 1289 by Robert de Ewelme, the Prior, the beautiful marble tomb now in the Lady Chapel being made for the purpose. At the Reformation (1538) this was demolished, but portions were recovered from various places and set in their present position. The upper part, which was of wood, utterly lost. The Priory was suppressed by Wolsey in 1540, who obtained a Bull from Pope Clement VII. for the purpose, and in the following year the Church of St. Frideswyde became the Chapel of his new foundation, Cardinal College. He made way for the building of his great quadrangle he ruthlessly sacrificed three bays of the nave. In 1546 Henry VIII. recreated the foundation under the title of "The Cathedral Church of Christ in Oxon," and made it the site of the new created See of Oxford. Since then it has served the double purpose of Cathedral and College Chapel. The building suffered a great deal at the hands of Brian Duppa, who was Dean from 1629 to 1638. He removed the old stalls to the Latin Chapel and replaced them with high seats backed with panelling of oak, for which he sacrificed the monuments on the pillars. He paved the choir with black and white marble and other parts with stone slabs, removing the old memorial-stones many of which were lost or destroyed. Ant. Wood says "having most of them Saxon inscriptions on them." He removed away the beautiful Gothic tracery from the windows, substituting others of two lights, removed the priceless old glass of the Priory Church, representing stories from the life of St. Frideswyde, and the Arms of the Benefactors, and inserted Dutch glass, by Abraham Van Ling. The side Chapel, separated by stone screens and closed the west end of the choir with an organ-loft. Little or nothing more was done to the Cathedral until 1856, when Dean Liddell commenced his restorations that have been so well carried out. Under the direction of Mr. John Billing, Duppa's high pews and panelling were replaced by the present stalls, and the gallery and organ-loft were removed. In 1870 Sir G. G. Scott was consulted, and in his able hands the building was restored to its present admirable condition. At the east end he took out the great window that Duppa had altered from a five-light to a three-light, and substituted the present wheel window, with intersecting arcading, and two round-headed windows below, carrying out the original design of Robert of Cricklade as far as was possible from conjecture and traces of original work that he discovered. The other windows were restored in the same manner. Among other restorations and improvements the lantern storey of the tower was opened and the bells removed to the new belfry constructed by Mr. Bodley in 1870 over the hall staircase. At the same time a new bay was added to the nave, forming an ante-chapel, and the western porch leading from Tom Quadrangle was thrown down under the direction and from the designs of Mr. Bodley.

The best view of the exterior is to be obtained from the garden of the Professor of Pastoral Theology. From here the tower and spire and the north transept, with its two pinnacles and turrets, are well seen. The lower storey of the tower is Norman, the belfry and spire being Early English. The spire is particularly interesting as being perhaps the earliest in England. The Latin Chapel, with its four fine Decorated windows and buttresses, is most picturesque. Passing to the east end, we see the three Saxon arches discovered by Mr. Park Harrison in the centre one being partly concealed by a flat Norman buttress. In front of these he also discovered, by excavating the foundations of three apses into which the arches would have led. These are now covered up, but Mr. Harrison made careful plans of them, which have been published with a paper he read before the Royal Archaeological Institute in 1887. The south side is the Cathedral cemetery, where repose the remains of Dr. Liddell and his daughter Edith, Phillip Edward Pusey, son of Dr. Pusey, Mrs. Paget, wife of the Bishop of Exeter, Dr. Moberley. The beautiful flamboyant tracery in the window of the Lady Chapel is best seen from here, also the east end of the Chapter House. The slype passing under the vestry in the south transept leads from the cemetery to the cloisters.

* A paper read by Mr. Frank E. Spiers before the members of the Upper Norwood Athenæum.

On entering the Cathedral by the new western porch the first impression is that you are in a building of great architectural beauty and interest, but of unusual proportions, and you feel what has been lost by Wolsey's destruction of the three western bays of the nave. The nave is probably the work of Robert of Cricklade, the restoration having been commenced by him after the Pope's Charter had been secured in 1158, though it may have been commenced by Guimond, the first Prior of the Augustine Canons Regular. The clerestory windows are probably Prior Robert's. The roof of the nave is sixteenth century, that of the transepts being a little earlier. The tower is Transitional, and, it will be noticed, is not square. The east and west arches are round, the north and south being pointed. The choir has four bays and a presbytery. It is probably of the same period as the nave, excepting that, according to Mr. Park Harrison, two of the capitals are far older than the others, and by their weathered appearance and careful comparison of details in Saxon MSS. with the carving in these capitals, he puts them down as part of Ethelred's restoration in 1104. He also points out a capital in the south choir aisle as Saxon and attributes one of the clerestory windows in the South Transept to Ethelred. These statements are disputed by high authorities; I therefore give them for what they may be worth as it is an interesting question. The tracery of the choir is deeply recessed with delicate lantern pendants, and is said by Fergusson to be the best example of its kind in England. In the east wall of the north choir aisle and the Lady Chapel we find the only visible remains of St. Frideswyde's Church. Here are the two built-up arches, with indications of a centre arch covered by a pillar, already alluded to as having been discovered by Mr. Park Harrison. In the apse to which the southernmost of these arches led, it is conjectured the remains of St. Frideswyde were first laid, and that this is the "obscure place" in which they remained until their translation in 1158 by Robert of Cricklade. The Latin Chapel was for some time used for the lectures of the Regius Professor of Divinity until Dr. Liddell had it refitted as a chapel. The west bay formed part of the north transept aisle, the second bay is thirteenth century, the third and fourth having been added in the fourteenth century, when the vaulting was put up. Some of the stalls belonged to the Priory church, and were removed from the choir by Dean Duppa. There are also some that it is supposed were made for Wolsey's chapel, bearing the Cardinal's hat. The Jacobean pulpit formed at one time the Vice-Chancellor's seat in the choir. The altar table was until 1890 in the presbytery. When the chapel was being refitted an arched recess was found in the north wall that may have been the tomb of the founder, or more probably an Easter Sepulchre. The south choir aisle is of Ethelred's time. St. Lucy's Chapel, which is now used as a baptistery, is Norman, the east window being decorated with rich flamboyant tracery. The font is the first ever used in the cathedral, and was placed here in 1882. It is of Rosso-antico marble with a lofty cover of oak elaborately carved from designs by Mr. Bodley. The vaulting of the aisles of the nave and transept is twelfth century. The reredos was presented anonymously in 1881; it is in red Dumfries sandstone with figures in Rosso-antico marble carved by Brindley from designs by Mr. Bodley. The centre subject represents the crucifixion. The high altar is of cedar wood, the beautiful embroidered super-frontal being the work and gift of Dr. Liddell's daughters. The silver gilt alms dish and the candlesticks are dated 1661, and the Bible and Prayer-Book 1634. The lectern is a very handsome specimen of brasswork and is the gift of the Rev. T. Vere Bayne and the Rev. H. L. Thompson. The pulpit and canopy of carved oak is of good Jacobean design. The organ screen, which is now at the west end of the nave, is the same that Dean Duppa erected, and contains an organ of fine tone, built by Willis & Son in 1884. As I have described earlier in my paper, the shrine of St. Frideswyde was destroyed during the Reformation (1538). While the restorations of the Cathedral by Dr. Liddell were being carried out, various portions of the marble shrine were recovered, many of them lining a well in the Cathedral grounds, others built into the walls and in many other places. These were collected and have been very carefully fitted together. The restored shrine now stands on the south side of the Lady Chapel, and there is sufficient to show it must have been of great beauty. The carving, which represents the flowers and plants of the neighbouring country, which Frideswyde loved so well, is exceedingly delicate and effective. The watching chamber is of the fifteenth century. It is not known for what purpose it was constructed. Probably a watching chamber for guarding the precious jewels on St. Frideswyde's shrine. Some imagine it may have been intended as a third shrine of the Lady Saint. It is a beautiful specimen of Perpendicular work, the lower part being of finely carved stone forming an altar tomb and canopy, on the tomb being the matrices of two brasses. The upper chamber is of wood most delicately carved. Other monuments in the Lady Chapel are to the memory of Elizabeth Lady Montacute,

Alexander de Sutton, Prior of St. Frideswyde's 1294 to 1314, Sir George Nowers (d. 1425) and Robert Burton (d. 1639). In the south choir aisle, to Bishop King (d. 1677), Bishop Mackarness, Prince Leopold, and a brass to Stephen Pence (d. 1587). In the south transept, to Viscount Brownker (d. 1445). In the south nave aisle, to Dean Corbet (d. 1688) and James Zouch, Monk of the Priory 1503. In the nave, to Dean Aldrich (d. 1710), Bishop Berkeley (d. 1753), and Dr. Pusey (d. 1882). In the ante-chapel, to Dean John Fell (d. 1684), the only Dean of Christ Church who became Bishop of Oxford, and Dean Gaisford (d. 1855).

The oldest glass in the Cathedral is in the east window of St. Lucy's Chapel; it dates from early in the fourteenth century and is very fine. Other fourteenth-century glass spared by Dean Duppa is in three of the side windows of the Latin Chapel. One of the most interesting windows is in the south choir aisle representing Bishop King, with a view of Osney Abbey in the background, attributed to Van Ling. At the west end of the north aisle is the only window put up by Dean Duppa that is left. It is of very rich colouring and represents Jonah sitting under his gourd, with a view of Nineveh in the background. The east windows of the Lady Chapel and the north and south choir aisles are by William Morris from designs by Sir Edward Burne-Jones. That in the Lady Chapel is to the memory of Frederick Vyner (d. 1870), and represents Samuel, David, St. John and Timothy; in the north aisle is the "St. Cecilia" window, presented by Dr. Corfe in 1873, and in the south aisle the "St. Catherine" window, in memory of Edith Liddell (d. 1876). In the Latin Chapel is "St. Frideswyde's" window. This is from one of Burne-Jones's earliest designs, and is very rich and beautiful in effect. It represents scenes from the life of the Saint, and was carried out by Powell of Whitefriars. Another of Burne-Jones's early works is at the west end of the south nave aisle, and represents "Faith, Hope and Charity." It is to the memory of Edward Denison, the founder of the Oxford settlement in the East-end of London. Clayton & Bell are responsible for the glass in the wheel window at the east end given by Dr. Liddell, and the two round-headed windows given by Sir John Mowbray. Also the half-window in the south transept in memory of Dr. Liddon, the large window in the north transept and several windows in the aisles. The glass in the clerestory windows of the two transepts is by Henry and Alfred Gerenté (1854), and was removed from the former east window.

Christ Church.

Cardinal Wolsey obtained from Henry VIII., in July 1525, the Royal license to establish a college of learning and piety at Oxford. He had in the former year acquired the Papal authority for the suppression of twenty-two religious houses for the benefit of his Foundation, one of them being the Priory of St. Frideswyde in Oxford, and upon the site of the Priory he founded "Cardinal College," dedicating it to the Holy Trinity, the Virgin Mary, St. Frideswyde, and All Saints. The foundation-stone was laid on July 15, 1525, by Dr. John Longland, Bishop of Lincoln, Oxford being then in the diocese of Lincoln.

The plan designed by Wolsey for his buildings took the form of a large quadrangle, 264 feet long by 261 feet wide. On the south side he built the Refectory, or great Hall, the grandeur of which is perhaps only surpassed in this country by Westminster Hall. The other buildings were devoted to lodgings for the Dean, Canons and Scholars, with an entrance gateway on the west side. Wolsey apparently never intended that St. Frideswyde's Church should be the Chapel of his College, for he commenced building what would have been a magnificent Chapel, occupying nearly the whole of the north side of the quadrangle, but the walls never rose higher than about 7 feet from the ground. The Kitchen, an important part of the establishment in those days, was built at the back of the Hall. The Chapter House and Refectory of the Priory were preserved, and the domestic buildings were utilised for various purposes of his College. The three western bays of the Cathedral and the west side of the Cloisters were unfortunately sacrificed by Wolsey, to make room for his new buildings, as well as the parish Church of St. Michael's at the south gate and portions of the old city wall.

Wolsey gave an elaborate code of Statutes to his College, and liberally endowed it with his own private wealth and funds obtained by the suppression of the Monasteries. Dr. John Higdon, President of Magdalen, of which College Wolsey had been a Fellow, was appointed the first Dean, and temporarily lodged in the rooms of the Prior of St. Frideswyde. On Wolsey's disgrace in 1529 his College was forfeited to the Crown, and soon afterwards dissolved.

Henry refounded the College by letters patent dated July 18, 1532, under the title of "King Henry VIII's College in Oxford," as a religious foundation, comprising a Dean and twelve Canons; apparently it was not devoted to learning. On May 20, 1545, the Dean and Chapter surrendered the foundation to the King, and on the same day the Commissioners also received the surrender of the Cathedral Church

of Christ and the Blessed Virgin Mary at Oseney, that had three years previously been created the see of the Diocese by Henry VIII.

The foundation of Christ Church dates from November 4, 1546, when it was created under letters patent of the King, who united with it the Episcopal See and designated it "Ecclesia Christi Cathedralis Oxon.; ex fundatione Regis Henrici Octavi." It thus became a Royal Foundation. Richard Cox, who had been nominated to the Deanery of the Cathedral at Oseney four years earlier, was appointed the first Dean, and Wolsey's buildings were conveyed to him and eight Canons with an endowment of 2,200*l.* per annum, the Dean and Chapter to maintain Professors of Theology, Hebrew and Greek—to be appointed by the King—one hundred students, and such officials and servants as were necessary for the College and Cathedral. In 1664 an additional studentship was created under the bequest of William Thurston, making the number one hundred and one. The establishment in this form remained more or less the same until 1858. Dean Cox was a strong supporter of the reformed religion, and was deprived of his position by Queen Mary. It was under Richard Marshall, his successor, that the degradation of Archbishop Cranmer took place on February 14, 1555, "in a yard outside the Cathedral," probably the Cloister garth.

An important event in the history of Christ Church took place in 1567, when Queen Elizabeth issued a statute ordering that three of its studentships should in future be assigned to boys educated at the Royal Foundation of St. Peter's, Westminster. This has always had a most beneficial influence upon the College, many of its most distinguished men having been Westminster students, including no less than sixteen of its Deans.

All regulations for the government of the College were made from time to time by the Dean and Chapter, no regular code of Statutes having been given by the Royal Founder.

In 1642 Lord Saye and Sele, acting under the instructions of the Parliamentary party, seized all the College plate he could lay hands on, and later the Chapter gave the remainder of their plate to be coined into money for the King's use. Christ Church was thoroughly loyal to the King; John Fell, who was Dean from 1660 to 1686, wrote "Most of the academicians exchanged the gown for the military coat and square cap for the helmet. . . . Out of the hundred students twenty were officers in the King's Army, and the rest, almost to a man, were indefatigable in protecting the dwellings of the inhabitants."

As previously stated, few changes took place in the establishment until 1858, when Dr. Liddell was at the Deanery. At this time the reforms introduced by the Oxford University Commissioners came into operation, and important alterations were made in the government of the College. By the Christ Church ordinance dated June 5, 1858, two Canonries were suppressed and the number and title of studentships were altered to 28 senior and 52 junior students, 21 of the latter to be from Westminster. Later, by the Christ Church Oxford Act, 1867, the senior students were recognised as part of the governing body—a position similar to that of Fellows in other Colleges—in conjunction with the Dean and Canons. In 1882 a further titular alteration was made, when the senior students were termed Students, and the junior Scholars.

The main entrance to Christ Church is in the centre of the west front in St. Aldate's Street. The gateway, lower part of the tower, the buildings to the south and a portion of those to the north were built by Wolsey. The gateway arch has groined vaulting with shields bearing, among others, the arms of Henry VIII., Charles I., Charles II. and Wolsey. Samuel Fell (Dean 1638-48) completed the building of the west front and commenced the north side of the great quadrangle, substituting the present Canon's residences for the Chapel, of which Wolsey had laid the foundations, but his work was stopped by the Civil War. John Fell, who was appointed Dean (1660-86) after the Commonwealth, completed the work his father had commenced in the quadrangle. He formed the present terrace by excavating the centre area, making use of the earth removed, for the formation of the celebrated Broad Walk, planting on either side seventy-two elm trees, some of which still survive. In the centre of the quadrangle he placed a fountain, where, prior to the Reformation, had stood a cross, from the steps of which Wyclif is said to have preached. The base of this cross is now preserved in the gallery over the vestry of the Cathedral. In 1659 Dr. Anthony Radcliffe gave the historic figure of Mercury that took the place of the globe and serpent of Dr. Fell's fountain. The beautifully proportioned tower over the gateway was added by Dr. Fell in 1682 from the design of Sir Christopher Wren. In it he placed the celebrated bell "Great Tom," which originally hung in the central tower of Oseney Abbey. From there it was removed, at the Dissolution, to the Cathedral, where it remained until Dr. Fell had it recast and hung in what has since been known as "Tom Tower." It is 7 feet 1 inch in diameter, and weighs over seven tons. It was first rung on May 29, 1684, and from that time it has continued

to toll every evening at nine o'clock, one hundred and one—number of students at that time in the foundation—and tolling has been the signal to undergraduates of the closing of all the College gates.

Dr. Liddell (Dean 1855-91), who did so much to add to the æsthetic appearance of Christ Church, slightly lowered the terrace of the great quadrangle, exposing the bases of the shafts of Wolsey's structure. He had the buildings refaced with Taynton stone, and made a special feature of showing the springing of the arches projected by Wolsey to form a cloister round the quadrangle. He also replaced the balustrade seen by Dean Fell with the present battlements, restoring Wolsey's design. In some of the staircases on the west side may be seen the original oak stairs and doorways, with Wolsey's devices in the spandrels above. Dean Liddell built the tower over the Hall staircase, from the designs of Mr. Bodley, in which he placed the well-known peal of Christ Church bells, twelve in number, seven of which came from Oseney; he also added the parapet and pinnacles above the Hall.

The approach to the Hall is by a grand staircase, the vaulting of which is an exceedingly fine specimen of the tracery, springing from a slender clustered column in the centre. Christ Church is indebted to Dean Samuel Fell for the beautiful vestibule. The name of the architect was Smith, but more concerning him is not known.

The Hall, completed by Wolsey in 1529, is a noble apartment 115 feet long, 40 feet wide and 50 feet high. It has a fine hammer-beam roof with lantern pendants, and is wainscoted with oak panelling decorated with shields bearing the arms of the Royal Founder, Wolsey, Oseney Abbey, the University &c. Some of the original glass remains in the west window. The roof was partly destroyed by fire in 1720, caused by a burning on the central hearth of boughs that had been used for the Christmas decorations, by which the louvre was ignited. The present roof was then put up, following Wolsey's design, but without the louvre, and the fireplaces were inserted. George I. gave one thousand pounds towards the cost. An exceedingly interesting collection of portraits adorn the walls, the following deserving special attention:—Henry VIII. (Holt), Queen Elizabeth (Zuccheri), Cardinal Wolsey (Holt), Archbishop Markham (Reynolds), Bishop Corbet (Vanderpool), Dean Aldrich (Kneller), George Canning (Lawrence), Bishop Hooper (Hogarth), John Locke (Lely), Dr. Pusey (Richman), Archbishop Robinson (Reynolds), Lord Mendip (Gibson), Chief Baron Skynner (Gainsborough), Dean Liddell (Watts), W. E. Gladstone (Millais), Dr. Liddon (Herkness), and John Wesley (Romney). Christ Church Hall has been honoured by the presence of Royalty on many occasions. In 1533 Henry VIII. was entertained at a grand banquet; Queen Elizabeth witnessed stage plays in 1566 and 1592; Charles II., Queen Anne and George III. were all entertained here; and in January, 1644, when Parliament met at Oxford, Charles I. opened the Session in Christ Church Hall, and in 1681 the House of Lords sat in the Hall. The large Lecture room adjoining the Hall was erected in 1829.

The kitchen is a room of grand proportion 40 feet square. It was the first part of his College finished by Wolsey. It remains almost in its original state, excepting that the huge fireplaces he placed at the sides have been modernised, and the addition of chimneys. The old gridiron that used to occupy a place in the centre, under the louvre, is preserved and hung upon the walls.

The old Monastic Refectory was converted by Wolsey into a Library. Part of the interior was fitted up by Dean Aldrich (1767-76) as lodgings for the Westminster student body, a portion overlooking the Cloisters being retained for the purposes of the Allstreet Library, containing a very valuable collection of theological works. On the south side may still be seen the old open-air pulpit built into one of the buttresses, now closed up.

The Cloisters belonging to St. Frydeswyde's Priory, built in 1499; the western side was demolished by Wolsey to make room for his College. They were very carefully restored in 1871 by Dean Liddell, who threw open the north side, which had been enclosed and used as a muniment room, and refaced the vaulting and the tracery of the windows. He also had the earth excavated to expose the shafts of the buttresses, the same time bringing to light the foundations of some of the Monastic buildings.

The Chapter-house on the east side of the Cloisters entered by a fine Norman doorway with zigzag moulding, the interior is a very perfect specimen of Early English, the building having been destroyed by fire in 1190. It is an oblong room of four bays with vaulted and groined ceiling. At the east end is an arcade of five arches, pierced for windows. The foundation-stone of Wolsey's College at Ipswich (dated 1529) is inserted in the east wall. On the south side is a staircase leading to a very comfortable room above, with good Jacobean panelling, in which the meetings of the Chapter are now held. It contains interesting portraits of Henry VIII., Elizabeth I., Mary, Dean Samuel Fell, Dean Aldrich and Peter Martineau.

The Anatomy School to the south of the Hall was erected by Dean Gregory in 1766 from the designs of Mr. H. Keen. It is now used as a chemical laboratory.

The Meadow Buildings facing the Broad Walk were built by Dean Liddell in 1863-65, from designs by Mr. Thomas Deane, of Dublin, on the site of the old chaplain's lodgings and Fell's buildings. The floral embellishments were carved by workmen trained under Mr. Ruskin, and are very good in design. Cyril Jackson, who was Dean from 1783 to 1809, having in view the necessity that would some day arise for new buildings, initiated a building fund that by Dr. Liddell's time had attained to a considerable amount, and with this fund the Meadow buildings were erected.

The archway known as "Kill-Canon" leading from the great quadrangle to Peckwater was made by Dr. Samuel Fell, who sacrificed a portion of his garden for it. Above the archway facing the quadrangle is a statue of Dean John Fell, and on the other side of Dean Liddell.

Henry Aldrich (Dean 1689-1710) rebuilt the north, east and west sides of Peckwater quadrangle in 1706 from his own designs, the greater part of the cost being defrayed by a bequest of Dr. Anthony Radcliffe, a Canon of Christ Church. This quadrangle occupied the site of Vine Hall and Peckwater Inn, given to the Priory of St. Frideswide in the reign of Henry III.

The Library, completing the quadrangle on the south side, was commenced in 1716 from designs by Dr. George Clarke, of All Souls College, but was not completed until 1761. It was originally intended to have an open piazza on the ground level, but this was enclosed to form a gallery to hold the collection of pictures bequeathed to Christ Church by General Guise, who died in 1765. In the vestibule is the seated figure of Dean Cyril Jackson, by Chantrey, and on the staircase a fine statue of John Locke by Rysbrack. The Library is a fine proportioned room, 142 feet long by 30 feet wide, with a coved ceiling decorated with rich mouldings. The book-cases and galleries are of Norwegian oak. There are many valuable illuminated MSS. and other rare and interesting works, among them Wolsey's "Lectionary," 1528, a MS. of Wyclif's Bible and of haucer, and Cavendish's "Life of Wolsey," 1554-57. The library contains upwards of 50,000 volumes. Among the treasures may also be seen the Cardinal's hat belonging to Wolsey and also his chair. Among the pictures in the gallery

may be mentioned "The Nativity" (Titian) and "Christ bearing His Cross" (Mantegna), both from Charles I.'s collection; "Portrait of Vezali" (Tintoret), "Diana and her nymphs" (Giorgione), "Marriage of St. Catherine" (Paul Veronese), two portraits by Vandyke, a fine Triptych, "Madonna and Child" (attributed to Raphael), and "Portrait of General Guise" (Reynolds). There are also paintings by Margaritone, Giotto, Filippo Lippi, specimens of the earliest Italian masters given by the Hon. W. T. H. Fox-Strangways, and fragments of Raphael's cartoons given by Mr. Crackerode. Probably the most highly treasured works in the collection are the original drawings by the great masters, including Titian, Leonardo da Vinci, Masaccio, Domenichino, Annibale Carracci, and others.

The rebuilding of Canterbury quadrangle, including the gateway, was commenced in 1773 and completed in 1778, from designs by the elder Wyatt, excepting the south-west portion, which was erected in 1783, Richard Robinson, Archbishop of Armagh, contributing the funds for the purpose. These buildings occupy the site of Canterbury College, founded by Archbishop Islip in 1363 for training the monks of Christ Church, Canterbury, and were given to the College by Henry VIII. Richard was at one time Warden of the old College, and Sir Thomas More was a student there.

In conclusion, I have to express my indebtedness for valuable information I have obtained from the following works:—Ant. Wood's "City of Oxford," Ingram's "Memorials of Oxford," "Early History of Oxford," by James Parker; "Christ Church," by Rev. H. L. Thompson, M.A. (College histories); "Oxford, the Cathedral and See," by Rev. Percy Palmer, M.A. (Bell's Cathedral Series); "Recent Discoveries at Oxford Cathedral," three papers, by J. Park Harrison; "The Colleges of Oxford," by Andrew Clark, M.A.; "Oxford," by G. W. Seignior (series of Historic Towns); "Oxford," by Rev. Edward Blyden (Diocesan Histories), &c.

THE LATE JAMES HENRY COOK.

As briefly mentioned last week the regretted death of Mr. James Henry Cook, architect, of Liverpool. We are now enabled to add further particulars of a career that was full of still more success if it had not been prematurely ended. He was the eldest son of Alderman Thomas Cook, formerly mayor of Birkenhead, and who has been long distinguished in Liverpool as an architect and surveyor. Having intended to become also an architect, James Henry Cook was apprenticed to the late Colonel Walker, who had a large practice

in the city. Having completed his indentures, he became associated with his father, in whose business he assisted for many years. He obtained a silver medal for measured drawings from the Royal Institute of British Architects.

Some twelve years ago he crossed to America, and during his eight years' stay in that country he acquired knowledge that stood him in good stead afterwards. While in America he assisted some of the most prominent architects in New York and Philadelphia. Perhaps the most important work with which he was connected was that of the World's Fair at Chicago, in which he assisted the late Richard Morris Hunt. In Philadelphia he was also associated in several undertakings with Mr. Frank Miles Day. About four years back he returned to England and became connected with the business carried on by his father at 12 St. George's Crescent, Liverpool, the alderman retiring from the architectural department altogether, and leaving that entirely under the control of his son, while he devoted all his energies to valuing. During the last few years Mr. Cook has been brought before the public eye by obtaining the third premium in the Dock Board contest for the new offices which are to be built upon a portion of the old George's Dock site, while again the design he prepared in the recent Liverpool Cathedral competition was admired. Five of the competitors in the latter contest were selected to compete and eight others were highly commended, Mr. Cook being one of the latter and the only Liverpool man to be so honoured. Among his works in Birkenhead are the additions to the Oxton Road Congregational church, and some fairly large contracts which he carried out for Messrs. Buchanan, in the form of an extension to their large mills on the Dock estate and the construction of a large grain silo. He also designed a house for Mr. Thomas Gilton in Budworth Road, while his practice in Liverpool extended to Seaforth, where about two years ago a Congregational church built to his design was completed. Other works were warehouses for Messrs. MacCombish & Co. and Messrs. Robinson & Co., new stabling for Messrs. Edmondson & Co. and Messrs. Pelling, Stanley & Co., a lecture-hall at Chadwick Mount Church, additions and alterations to Liverpool Jewish baths, new offices for Messrs. Powell & Sing, additions and alterations to Dr. Given's house, to Rake Lane Church, Wallasey, and a new house for Mr. A. Lilwall at Hoylake. As recently as June 1 last he formed a partnership with Mr. Otis D. Black. Mr. Cook was in indifferent health towards the close of last year, and he spent six months in Switzerland, deriving considerable benefit from his stay in that grand country. About a fortnight ago alarming symptoms developed, and he was confined to his bed until the end. Illustrations of some of his buildings, as well as articles by him, have appeared in *The Architect*.

ADVANCED AMERICAN PRACTICE.

SOME months ago two young New Yorkers who made up an architects' firm that has a record of winning, entered a competition to design a "model village" for the housing of boys and girls, waifs of the street, says a writer in the *New York Times*. Nearly 100 separate structures would be necessary, and these were to be spread over a tract of rolling country 277 acres in extent. Five architectural firms were invited to submit designs. In commissions—it having been decided to spend something like 1,500,000 dols.—between 70,000 and 80,000 dols. would go to the winner, a notable prize. Besides this, the honour and repute of success would be great.

The manner in which the successful competitors secured the award, and the amount of preliminary work done in order to secure this result, furnish a typical example of what architectural practice has developed into to-day, and show what great business concerns modern architects' offices have become. It has often been said with much shallowness that all the equipment and capital the novelist requires is a table, a pen, some ink and paper; and also it is generally considered that an architect's needs are merely an office, a few pictures and books, drawing paper and colours, and with these any building can be designed. The actual conditions are, however, very different.

By the terms of the competition 500 dols. was to go to each of the five contesting firms towards the cost of preparing their drawings. The winning architects, however, before they made their designs invested literally thousands of dollars in preliminary work. For months before pen or pencil was put to paper they were collecting material on every hand. Only the barest idea of what they would eventually design was then in their minds. First, they realised information must be gathered as to a hundred different conditions.

Not content with the topographical and other details furnished them, they studied these 277 acres on the ground itself, traversing them personally and sending their men over them.

Nor were their own studies and those of their office force sufficient. Every point of view must be considered thoroughly, and thus they sent up a landscape gardener, a surveyor and an electrical expert. These men thrashed out with thoroughness the problems submitted to them, and they made elaborate reports and recommendations, which were all gathered together and gone over by their principals. Slowly the plan began to evolve itself in these architects' minds.

After some weeks the investigations gradually narrowed themselves down. The questions of plumbing, lighting, ventilation, power, grading and beautifying had been considered. The preliminary work was well-nigh over, and the practical necessities having been considered, it was possible to take up the details of architectural design and actual building construction, which heretofore could only be considered generally and roughly. The "model village" had now to be given substance. But the extended studies had themselves worked out the full problem thoroughly.

On a floor of one of the rooms of these offices given over especially to this purpose a topographical map of this site among the hills was laid out. With all the accumulated matter from the experts and their own memoranda, aided by their most expert designers, these architects worked for some days over this. They had now determined very nearly what buildings would be required to fulfil the competition's conditions, and had settled upon their size, general design and character.

Precisely on scale and of the proper shape each building was cut out of pasteboard. With these buildings in miniature, over the map on the floor a serious game of design of much practical value was played. Day after day these men, as their other duties allowed them, would retire into this room and move these flat strips of pasteboard up and down over the topographical floor map, arranging them in every conceivable position and combination, until at last the final plan suggested itself.

It is seldom, of course, that such a great and complicated piece of design comes before an architect. Most frequently it is but a single building with which he has to deal, and not a proposition involving acres of ground. Yet the principle and the problem are the same. The art end has come to be but a fragment of the work involved, though an important fragment, the shell that must harmoniously combine with all else, yet is but one of a dozen considerations.

In fact, the days when the architect was, before all, a man whose chief merit was that he could make a charming design, afterward fitting the interior and the planning generally to this exterior, have long since passed and gone. One of the most distinguished architectural firms of the country, a concern that is famous for its artistic designs, and does its greatest work on fine residences, libraries, splendid public buildings and structures generally of the monumental order, has but one of its three partners who pays any attention to design. This man, too, spends vastly more time in the securing of important contracts than he does in actually drawing or planning. A second of the partners concerns himself entirely with the problems of construction, supervising his engineers and experts. The third partner handles the firm's finances, which are as great and as complicated as those of a large mercantile house, an expenditure of thousands of dollars a week being necessary to keep things running and pay the dozens of men employed.

So remarkably, indeed, has architecture developed that recent years have seen an extraordinary phase of it. Latterly there has come into the building field one enormously big construction company and several others very nearly as large. These enterprises concern themselves solely with the putting up of commercial edifices. They are highly capitalised, and have large funds to draw upon. Expert financiers and engineers make up their chiefs of staff, and each company is compactly divided into departments, precisely as is a manufactory. With the exception that the product is in each case a big building built on its own site, instead of one of a thousand articles made under one roof, these companies are purely and simply combinations of manufacturers.

Relatively the architecture here is a minor detail. It is the engineering problems, the work of actual stone, brick and steel construction, that stand out most prominently. Much of the architecture is purchased on order for the individual structure, as any expert service would be. In some cases, indeed, for buildings of this nature an architect is not needed. So simple are the problems in that direction that some of the members of the construction company's staff can easily take them in hand. When they are rather beyond this the company merely engages an architect to design the exterior. The architect has simply to make the front. In all its details otherwise the building has been laid out. He gets his fee and the building goes up successfully. It has been a case of the experts engaging the architect instead of the architect the experts.

Commercial building construction has not cut seriously into the profession of architecture, however, though it has had an influence in making the modern architect's office more than

ever a business place. Despite the multiplication of construction demands, the gaining of every inch of rentable floor space possible, the placing of highly developed systems of ventilation, plumbing, heating, chutes, electric wires (which now, according to the very best methods, must be carried in special pipes), the designer is yet all powerful, and the firm that lacks on the first rank is hopelessly behind in the race. But nowadays the designer must be an engineer too, almost an expert in electricity, materials, steel frames, heating and pipes of all sorts and interior decorations. He can hire experts, but he has got to know enough about all these subjects to get the meat out of their reports. He must be a sufficiently good business manager to finance his firm when it is carrying along half a dozen big jobs. One little item alone in his expense is that first-quality draughtsmen will cost him 40 dols. a week. It would be difficult to carry an architect's office through in time of rush of big work without a number of these.

One of the biggest prizes of the past year among the architects was a huge Government building. Design in this case was all-important. It was not a towering skyscraper, where cubic foot of space was the first consideration, and the practical details, after being settled, had then to be given a touch of beauty, but a structure in which beauty must be the starting-point. Two men, each less than forty years of age, made up a team that set out to win it, and did eventually win. The decision being reached that they should compete, one of these partners took his grip one afternoon and went out into the country. No word from the office, it was agreed, was to reach him; he was to be lost to the world. In four days he was back with a number of sketches. The building that was afterwards approved lay before them in the rough.

And then the work was just begun. The little sketches were like an author's notes for a novel—they but suggested the way. Hundreds of detail plans had to be drawn, sets of calculations in line and dot, masses of black and red ink, all worked up to the final series of plans that were submitted. Ornamental studies, taking weeks of care, had to be prepared; there were drawings of floors in detail, of great halls, of steel and stone construction, laid out to the veriest point.

What investment in actual money, to say nothing of time, preliminary work of this sort costs the modern architect it would be difficult to say, but a thousand dollars here and there would be but a fraction. One architect of the practice calculated the other day that fully 50 per cent. of his fees would have to go in actual working expenses—that is, his office took in during the year 50,000 dollars in commissions there would be but 25,000 dollars of it clear profit, and only if the office had been administered on a most careful basis.

"And let me tell you," said this architect, "50,000 dollars in commissions means 1,000,000 dols. worth of building done during the year. It has to be a pretty good firm to get that quantity—a firm that is fortunate and has some sort of reputation for being successful in big things."

Of course, no living man with anything of an architectural practice could spare the time required to-day to design a plan out the elaborate interiors made necessary by modern tendencies. What the big architect does is simply to train. He trains men into his way of thinking, his way of looking at a problem of decoration. As he gets the opportunity he does this and that over. The understudy works it out, precisely the man himself would have done. "Organisation is the most important thing to-day," a certain architect of New York recently in conversation. "To succeed you must build up an organisation. The real science of architecture in these days is just that. You know just what is to be done; you can just do it all. Now, when you have ten or twenty men working for you, you carry out the work precisely in that manner, there is your organisation. All it needs is to be started; directed by you. Architecture has come to be too big to be carried out otherwise."

And now the architect is coming into a field, that of the decoration. In its entirety this includes not only the treatment of the walls, but hangings as well, and often floor coverings and furniture. Not only are many more beautiful houses being built than formerly, but these are increasing in comparative beauty, and the city house is steadily growing more magnificent. Besides this, business buildings are demanded more and more in the way of decorative adornment within, and banking institutions especially are making use of ornate finishings and furnishings.

For the architect to get the best effect for his building must take into consideration all of these. Much of it is his own design, all of it he must at least supervise and see through from the beginning to the end. What he actually does in practice to-day is to plan out colour schemes and effects for each of the rooms, especially if this be a commercial establishment. Directly under his supervision the walls are handled, and frequently the hangings. In the interior as well as exterior comes to be his own.

There are some people, however, who think the honours and emoluments of the modern architect are too great, even considering his duties and the many expenses of carrying on his business. An interesting contention is brewing between government officials and the American Institute of Architects. The Government, it is understood, is to claim that for the new big Government buildings to be erected very speedily in Washington the architect's fee is excessive. It has been suggested that officers of the Engineers corps of the army superintend the erection of these buildings, and that the architects' work be concluded with the making of their plans. In other words, this means that architects should be engaged merely for architectural matters, and that the construction should be put in the hands of Government employes.

TESSERÆ.

Erasmus at Canterbury Cathedral.

THE visit of Erasmus to Canterbury is alluded to by all historians. He entered the cathedral by the south porch, where he observed the statues of the three knights who were Thomas à Becket. In the nave he noted certain books tied to the pillars, and amongst them the gospel of Nicodemus. Iron railings separated the nave from the space which was between that and the choir. Many steps ascended to this space, and under them a vaulted passage led to the north part of the transept, where he was shown the small ancient wooden tomb of the Virgin. From this place he was conducted down a crypt and shown the skull of St. Thomas and his ordinary ornaments. Then he returned and went to the choir, where on the north side he was shown a multitude of relics and examined the tabula and ornaments of the altar and the riches beneath, the presence of which Midas and Cræsus would have envied beggars. He was then led to the sacristy and the vestments, candlestick, &c., were shown to him, together with the staff of St. Thomas, his pallium and sudarium, which were specially exhibited by special favour. After this he was taken to the upper part of the church behind the high altar, where in a chapel, probably the corona, was the image of St. Thomas gild decorated with precious gems. In the next place the shrine was opened for his inspection, the prior pointing out with a white wand each jewel in succession and mentioning its name, value and the donor. Then he returned to the crypt and was shown the chapel of the Virgin and its riches, and finally was again brought to the sacristy to see an old black chest filled with rags which had once belonged to Becket. He then took his leave.

Mediæval Rome.

The city of the Cæsars had sunk to its lowest degradation at the end of the eighth century; its old habitations had been destroyed, even the course of most of its streets obliterated; the remains of antiquity were confined to the bare walls of palaces and temples, and a few other monuments of unusual length and solidity. Of these remains a list is given by a biographer of the next age. It includes the baths of Alexander, Commodus, Trajan, Sallust, Diocletian and Constantine; temples of Jupiter and Minerva; the Roman Forum and that of Trajan; the three circuses; the arches of Severus, Titus, Theodosius and Valentinian; the Flavian and Antonine amphitheatres; the Capitol, the Septizonium, the tomb of Nero, and another pretending to be that of Pontius Pilate; the theatres of Pompey and Marcellus; the Trajan and Antonine columns; a Nymphaeum, an obelisk, several remains of aqueducts and porticoes, together with various specimens of ancient sculpture. These monuments, it will be observed, for the most part exist, but the demolition of the ancient city had already advanced at this period almost to the point at which it has now arrived a thousand years later. A change, however, now occurs in the history of Rome. The Popes, acknowledged masters of the venerable city, attempted every interval of domestic tranquillity to repair the most serious injuries she had suffered. The Aqua Virgo was made to convey water to the dwellings about the Pantheon, and Claudia to those which encircled the Lateran. A new wall was rising under the protection of St. Peter's, which Leo VI. fortified in 846 and gave it the name of the wall of Leonina, now the Borgo. Rome had become a cluster of towns, one of which grew up around each of her imperial sanctuaries, and from this time her records teem with tales of the building of new churches, and even the restoration of old ones. The papal city had itself become an antiquity. The strongest monuments of the old city still existing were seized by the barons and converted into castles. Even the monasteries sought to protect themselves by similar means. Thus the convent of St. Gregory on the Esquiline had its outposts in the Septizonium and the Arch of

Constantine, while other religious houses made use of the columns of Trajan and Antonine for belfries. In the twelfth century the noble family of the Frangipani had possession of many ancient buildings, such as the Colosseum, the Circus Maximus, the Septizonium, the arches of Titus and Janus; the Orsini occupied about the same time the mole of Hadrian and the theatre of Pompeius; the Colonna the mausoleum of Augustus and the Baths of Constantine; the Savelli maintained themselves in the theatre of Marcellus and the tomb of Cæcilia Metella; the Corsi had fortified the Capitol and were in possession of the basilica of St. Paul. The Pantheon was defended as a fortress for the Pope. We may suppose that the defiant attitude assumed by the holders of these places of strength provoked mutual hostilities, but they were preserved at least from natural decay by the pains taken to fortify them. We can trace, however, some of the damage inflicted upon them in the struggle between the popes and emperors, and we may guess at more. Rome was attacked more than once by the Emperor Henry IV. In the siege of 1082 the portico of St. Peter's suffered injury; in the following year that of Hadrian's mole, or Castle of St. Angelo, was destroyed. The assaults were generally directed against the Transtiberine portion of the city, and in 1084 the Borgo was overthrown. At the same time the long colonnade which connected St. Paul's beyond-the-Walls with the city was demolished. Thus far the injury inflicted had lighted chiefly on objects comparatively modern, but the emperor now penetrated the walls and made a furious attack on the Capitol, which caused the ruin of many ancient remains. The outrages of the imperialists, however, were far exceeded by those of the Normans and Saracens, who recovered the city for Pope Gregory VII. under Robert Guiscard. These savage allies burnt their way from the Flaminian Gate to the Antonine column, and they assaulted with barbarian violence both the Capitol and the Colosseum, and laid waste the area of the city from thence to the Lateran. The greater part indeed of this space was at this time uninhabited, and even uncultivated. The remains of the several borgos were thus separated by desert tracts; and William of Malmesbury in writing of this lamentable period could describe Rome as "quite a small city." At the end of this century, under Innocent III., it is said to have contained only 35,000 inhabitants. In the thirteenth century the violence of the nobles was brought in some degree under the control of the municipal government, and the senator Brancalone caused the demolition of 140 baronial "towers." These were perhaps for the most part turrets of brick erected on the summit of the ancient monuments, but their destruction extended in many cases, as we are specially assured, to the monuments themselves; the extent, however, of the demolition has probably been exaggerated—at least, the check it inflicted was incomplete and transient. We continue to hear again and again of the feudal castles in Rome; as many as forty-four existed, it is said, at a much later period in a single borgo.

Thorwaldsen as a Sculptor.

Thorwaldsen is considered by his admirers the greatest of modern sculptors, and many have not hesitated to place him far above Canova and to compare him with the antique. This is, however, hardly the rank he will hold with posterity; his style is uniform to monotony, though many individual figures are bold, solid and of beautiful proportions. His *beau idéal* appears to have been something between the Antinous and the Discobolus of Nanydes, as it is sometimes called; but as his subjects are seldom heroic, he seldom required more than a moderate expression of heroic vigour or robust strength and activity: in this respect and in execution generally he was much surpassed by Canova, but still more so in the grace of the female form, in which Thorwaldsen certainly did not excel. His females are much too square in the frame, the head and shoulders being generally heavy; and in no instance do we find in his female figures, in full relief, that beautiful undulation of line and development of form characteristic of the female, which is displayed in the antique, in the works of Canova and in those of some other modern sculptors, as, for instance, the Ariadne of Dannecker. Basso-relievo was a favourite style with Thorwaldsen, and a great proportion of his works are executed in this style. Of this class some of his minor works are the most expressive; but the principal are the Triumph of Alexander and the Procession to Golgotha, which is the frieze of the cathedral church of Copenhagen, immediately below the numerous group of John preaching in the Wilderness, in full relief, in the pediment; in the vestibule are the four great prophets; Christ and the Twelve Apostles are above and around the altar. The Triumph of Alexander, of which there is a copy in marble in the palace of Christiansburg (the first marble copy was made for Count Somariva's villa on the lake of Como) is a long triumphal procession in two divisions, one meeting the other. In the centre, Alexander, in the chariot of Victory, and followed by his army, is met by the goddess of Peace, followed by Mazæus and Bagophanes with presents for the conqueror. The subject is taken from the

work of Quintus Curtius. Much of the frieze is symbolical; perspective is nowhere introduced. The whole arrangement is beautiful, especially that portion which comes from Babylon, comprising the General Mazæus with his family; female figures strewing flowers; Bagophanes placing silver altars with burning incense, musicians and attendants leading horses, sheep, wild animals and other presents for the conqueror; next to these are symbolic representations of the river Euphrates and the peaceful occupations of the Babylonians. The human figures of this work are admirable, as is also the management of the costumes; but the horses are below mediocrity both in design and modelling, especially that of Alexander himself, Bucephalus, which is led following the chariot of Alexander. It is a complete distortion. None of the horses of Thorwaldsen are successful. The colossal animal of the Poniatowski monument at Warsaw, and that (of smaller proportions) of the monument to Maximilian of Bavaria at Munich are heavy and graceless, and wanting in the finer characteristics of form which belong to the horse. The works of Thorwaldsen do not display extraordinary power or fertility of invention—Flaxman's distinguishing faculty. Flaxman's outlines belong not the less to the province of sculpture from the circumstance of their not having been executed in marble. Most of them are designed and well adapted for basso-relievo.

Columnar Notation.

Simple as are the plans of Grecian temples, there are many terms required to express their varieties in regard to the application of columns, besides those denoting the number of columns in front, that is, beneath the pediment. Thus, if there were columns only in front, the building was termed *prostyle*; if at each end, *amphiprostyle*; if there were also colonnades along the sides, it was said to be *peripteral*, that is, with wings (aisles) or colonnades quite round it. When there were two rows of columns, one behind the other, it was termed *dipteral*. Again, where a range of columns was placed between antæ, forming the extremities of walls at right angles with such colonnade, it was said to be in *antis*. This was generally the case with the pronaos, the vestibule or inner portico behind the columns in front. According to the number of columns in front, porticoes are said to be *tetrastyle*, that is, with four columns; *hexastyle*, with six; *octastyle*, with eight; *decastyle*, with ten; and *dodecastyle*, with twelve, the greatest number that can very well be brought beneath a pediment; and even of these two last the examples are exceedingly rare. If instead of columns at the angles there were antæ, then the number of columns alone was reckoned as before, and would dominate what would be equivalent to a portico containing two more; thus a *distyle* in *antis*, *i.e.* two columns between two antæ, would be equal to a *tetrastyle*, as in both there would be three intercolumns; a *tetrastyle* in *antis* would be equal to a *hexastyle*, and so on. By means of this simple mode of numerical notation, a couple of words suffice to explain in the concise manner what even a long description may leave doubtful; for instance, when we say that a portico is *hexastyle Ionic*, we clearly specify the order and the number of columns in front; and it is upon this latter circumstance that so much of particular character depends.

Illuminated Manuscripts.

The ornamental and initial letter decorations of MSS. are almost infinite, and but very few of the names of these decorators have been preserved. Some of the arabesque and floral decorations are extremely elaborate and beautiful, and there are also many classes of initial letters which display extraordinary ingenuity, skill and patience. The red ink or minium, cinnabar, was long used very sparingly by the Greeks of the Lower Empire; it was the sacred *enkauston*, and was at one time used only by the emperor or for his name to imperial rescripts, as confirmed by Leo, A.D. 470. This continued until the thirteenth century. The custom was imitated in the West by Charles the Bald in the ninth century, but was not continued by his successors. Gold and silver letters were common in the earlier centuries, sometimes written on vellum of a purple or rose colour. Julius Capitolinus, in his "Life of the Emperor Maximinus the younger," mentions a present to the emperor from his mother of the poems of Homer written on purple vellum in gold letters; this was at the beginning of the third century. By the end of the fourth century such MSS. of devotional books became common, but in other classes of literature they were still rare. The Codex Argenteus of Ulphilas, in gold and silver letters on purple vellum, of the year 360, is the most ancient specimen extant of this magnificent description of calligraphy; other early specimens are the Book of Genesis in the library at Vienna, the Psalter of St. Germain des Près, and the fragment of the New Testament in the Cottonian library in the British Museum (Titus, c. xv.)—all of the fifth and sixth centuries. Eddius, the biographer of Wilfrid, archbishop of York, mentions a copy of the Gospels of this description, which that prelate presented to his church; this was in the seventh century. In later times

only parts of MSS. were thus richly executed, as the titulus. In some Greek MSS. the vellum was burnished with gold on both sides where it was to be written upon, and was then richly ornamented with coloured arabesques or borders. The more beautiful MSS. of the eighth, ninth and tenth centuries are executed in the gold letter on white vellum. The Harleian copy of the Gospels, and the Bible and "Hours" of Charles the Bald, at Paris, are among the finest examples of this kind of writing extant. The Charter of King Edgar to a new minster, or Hyde Abbey, at Winchester, in the year 960 (MSS. Cott. Vesp. A. viii.), is the only remarkable instance that occurs of gold writing in England. Prefixed is a portrait of Edgar between the Virgin and St. Peter. This MS. is much damaged, and the ink has fallen off in many places. In the fourteenth century gold and silver writing became comparatively common. When MSS. were written altogether in capitals, the initials were in general not larger than the other letters. The large illuminated initials are said to have commenced first among the Greeks about the close of the seventh century. In subsequent centuries large initials were usual, and they gradually became more complicated and elaborate down to the twelfth century, when they attained a degree of size, ornament and intricacy that they have not in these respects been surpassed. These letters are ornamented with all kinds of fanciful figures, composed of men, animals, birds, fish and flowers. Montfaucon, in his "Palæographie," gives a complete alphabet from MSS. of the ninth and tenth centuries, of what the Benedictines call, from their illustration of the text, "Lettres Historiées." They occur most frequently in Visi-Gothic and Franco-Gallic MSS.

The Roman Insula.

This term bears two distinct significations. It originally denoted a mass of building, consisting of one or of several houses surrounded on all sides by streets or lanes, and completely detached from other buildings. Even where an insula contained only one regular mansion there were frequently shops in different parts of the ground storey, as is common in Roman and Neapolitan palaces in modern times. Such a mass of building was frequently raised to the height of several storeys and laid out in lodging-houses for the accommodation of single individuals or of small families belonging to the middle or lower classes, these individuals and families living completely apart, but still under the same roof, as in the place in the flats of a Scotch "land" or the "étages" of a French hotel. Hence the term is employed to denote a set of lodging-house or set of apartments, and the person employed by the proprietor to exercise a general superintendence of the whole of the separate insulæ which were included in a large insula was named "insularius," his duties being proportional to those of a concierge in French establishments of a similar nature. A mass of building containing not only a mansion called the House of Pansa in Pompeii, but a number of shops and small lodgings, was an insula in this sense; where the lodgings had no communication with the House of Pansa they were termed insulæ in the second sense.

GENERAL.

The Gold Medal offered for works shown in the International Exhibition of Art in Venice has not been awarded, and there will be a second contest. Forty-five works have been submitted to the judges.

The Caissons for the new bridge at Bâle are now being laid. The old bridge over the Rhine, part of which dates from the beginning of the thirteenth century, has to be superseded owing to its inadequacy to sustain the increased traffic.

The Mafeking Town Council have decided to light the town with electricity, for which purpose a loan of 6,000 £ has been raised.

A Committee has been formed in Paris in order to make arrangements for the erection of a memorial to Arthur Holmes, the English composer, who long resided in Paris.

A Competition confined to German architects has been arranged for a Stadthaus in connection with the Rathhaus in Bremen. The prizes offered are one of 8,000 marks, one of 6,000, two of 3,000 and two of 2,000 marks. The plans are to be sent on or before December 31.

The Louvre has been enriched among other pictures by the *Defeat of the Cimbræ* by Decamps and the *Portrait of Delacroix*.

The International Society of Sculptors, Painters and Gravers shipped from Liverpool to Philadelphia last week a collection of works by its members, numbering about 100, for exhibition in the various American academies and galleries, including Philadelphia, Pittsburg, Chicago, Boston, New York &c., and the collection will be shown in the St. Louis Museum during the Exhibition next year.

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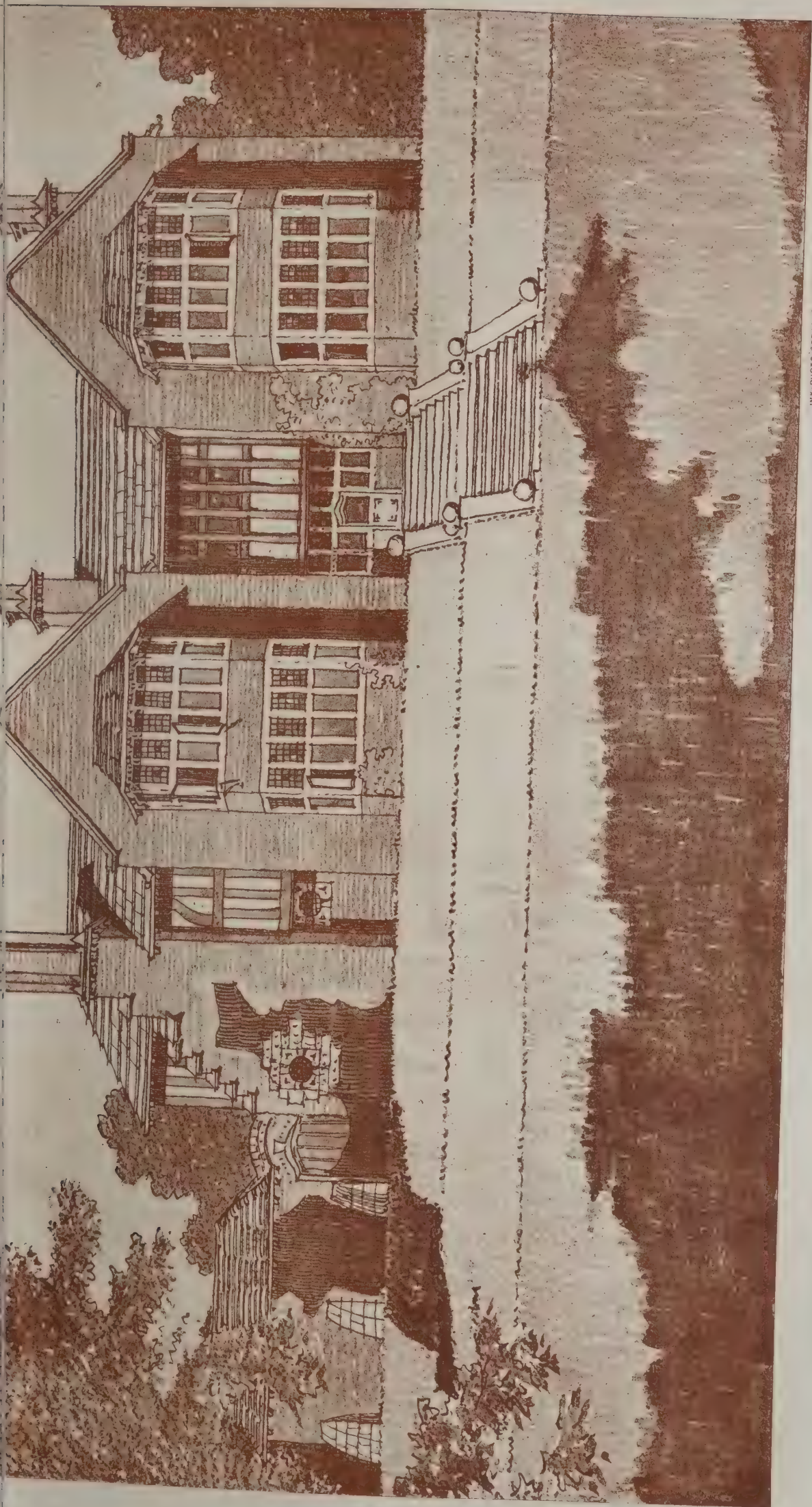


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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

AYLESFORD.—The Maidstone Town Council invite designs and estimates for a stone single-span bridge over the Medway at Aylesford, Kent. Premium 100 guineas offered for design named premier place. Details can be obtained on application to the Town Clerk, Maidstone.

BLACKPOOL.—Aug. 31.—Competitive drawings are invited for new offices to be erected at the corner of Sefton Street and Market Street, Blackpool. The architect whose design is selected will be appointed to carry out the work. The competition is limited to architects having offices and practising in the water area of the Fylde Water Board. Mr. C. H. Wright, 34 Victoria Street, Blackpool.

BRIGHTON.—Nov. 9.—Designs are invited for a new hospital. Premiums of 50l., 30l. and 20l. will be paid to the first, second and third premiated designs respectively. Mr. J. R. Holmes, hon. secretary, Brighton and Hove Hospital Committee, 76 West Street, Brighton.

HEYWOOD.—Sept. 14.—Competitive designs are invited for a library building to be erected in Church Street at a cost of 4,500l. Premiums of 30l., 20l. and 10l. will be awarded for designs adjudged of sufficient merit and placed first, second and third in order respectively. Mr. J. Ainsworth Settle, Municipal Buildings, Heywood, Lancs.

HOWDEN.—Sept. 12.—Plans and estimates are invited for improving and extending the sewerage of the contributory place of Howden. The successful competitor will be awarded a sum of 15l. and the usual commission for superintending the execution of the works. Mr. Henry Green, clerk.

IRELAND.—Sept. 30.—The Great Southern and Western Railway Company offer a prize of 20l. for the best design and specification of workmen's cottages, built either semi-detached or in terraces. Mr. Francis B. Ormsby, secretary, Knightsbridge Terminus, Dublin.

LEYLAND.—Sept. 26.—Plans are invited for the laying-out and development for municipal and other purposes of about 11,902 square yards of land in Church Road and Sandy Lane, Leyland, Lancs. A premium of 15l. 15s. is offered to the author of the plan considered to be the best design. Mr. M. H. Wilkinson, surveyor, 21 Towngate, Leyland.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75l. for design placed first, and one of 25l. for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100l., 50l. and 30l. respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

SCOTLAND.—Sept. 22.—Competitive plans are invited for the erection of a hospital and offices. Conditions of the competition and full particulars may be obtained from Mr. J. E. Shaw, clerk to the Lunacy Board, County Buildings, Ayr.

CONTRACTS OPEN.

AMBLE.—Aug. 27.—For the erection of a house and shop in Queen Street, Amble, Northumberland. Mr. E. D. Richardson, 7 Gibson Street, Amble.

AYLESBURY.—Sept. 1.—For repairing, painting and decorating the town hall. Mr. J. H. Bradford, surveyor, Town Hall, Aylesbury.

BATLEY.—Sept. 4.—For additions to the town hall. Messrs. Walter Hanstock & Son, architects, Branch Road, Batley.

BATLEY.—Sept. 5.—For the erection of an approach tower to the Independent Methodist chapel, Cambridge Street, Batley. Mr. O. J. Kirby, borough surveyor, Branch Road, Batley.

BEDLINGTON.—Aug. 25.—For the erection of twenty-six cottages at the Dr Pit, Bedlington. Mr. Weeks, Bedlington.

BERMONDSEY, S.E.—Sept. 3.—For the construction of offices, &c., at the town hall, Spa Road. Mr. R. J. Angel, borough surveyor, Town Hall, Spa Road, S.E.

BERMONDSEY.—Sept. 8.—For the erection of buildings in connection with extensions to the dust-destructor house, electric light station, boiler-house, &c. Mr. R. J. Angel, borough surveyor, Town Hall, Spa Road, S.E.

BIRMINGHAM.—Aug. 25.—For additions to the head post office at Birmingham. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

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BIRMINGHAM.—Sept. 16.—For the erection of engine and boiler-houses, including seatings for five Lancashire boilers and the construction of a new flue, adjoining the present pumping station at Monument Lane, Edgbaston, Birmingham. Mr. Edward Orford Smith, town clerk, Council House, Birmingham.

BRISTOL.—For the erection of the Bell inn, Two Mile Hill. Messrs. C. & C. Thompson, architects, Athenæum Chambers, Nicholas Street, Bristol.

BRISTOL.—Aug. 31.—For the erection of one or two ware-houses at Cumberland Basin. Mr. W. W. Squire, engineer, Engineer's Office, Underfall Yard, Cumberland Road, Bristol.

BRISTOL.—Sept. 10.—For the erection of school buildings in Hanham Road, Kingswood, near Bristol, to accommodate 900 children. Mr. John Mackay, architect, Richmond Place, Kingswood, near Bristol.

BURNLEY.—Aug. 24.—For the erection of a Wesleyan church, Manchester Road, Burnley. Messrs. Waddington, Son & Dunkerley, architects, Mansfield Chambers, St. Ann's Square, Manchester.

BURTON-IN-LONSDALE.—Aug. 31.—For the erection of a Wesleyan Sunday school and classroom at Burton-in-Lonsdale. Mr. Robt. Richardson, Halfway House, Cantsfield, Kirkby Lonsdale.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CANNOCK.—Sept. 7.—For the construction of an iron and wood infectious disease isolation hospital, comprising administration and mortuary blocks and wards to accommodate sixteen patients. Mr. Herbert M. Whitehead, surveyor, Penkridge, near Stafford.

CANNOCK.—Sept. 8.—For certain works at the workhouse, Cannock, Staffs, in connection with (a) rebuilding and additions to the laundry and washhouses, and (b) the provision and fixing of steam engine and laundry machinery. Mr. Ashton Veall, architect, 84 Darlington Street, Wolverhampton.

CARLISLE.—Sept. 1.—For the erection of twelve houses in Margery Street, Carlisle. Messrs. Johnstone Bros, architects, 39 Lowther Street, Carlisle.

CHESTER.—Aug. 31.—For the erection of twelve cottages on part of the Tower Field Gardens, Dee Basin Road, Chester. Mr. J. H. Dickson, deputy town clerk, Town Hall, Chester.

COLWYN BAY.—Aug. 24.—For the erection of isolation hospital, including pavilion and ward blocks, administrative building, laundry and outbuildings. Mr. Jos. H. Roberts, clerk, Council Offices, Station Road, Colwyn Bay.

DERBY.—Sept. 1.—For the erection of tramway-car shed and depôt on the Osmaston Road. Mr. John Ward, borough surveyor, Babington Lane.

EARITH (HUNTS).—Aug. 31.—For reconstructing the woof flooring, painting ironwork and other works at the Earith suspension bridge over the Hundred Foot River, close to Earith Bridge station (G.E. Railway). Mr. Herbert Leet, county surveyor, Huntingdon.

EASINGTON.—Sept. 2.—For erecting panelled brick wall with gate, about 55 yards long, including stubbing-up hedg, on site, and also coal-house, ashpit and pantry, at Guardian new offices, Easington, Durham. Messrs. Farthing & Dunn, architects, Shakespeare Chambers, Newcastle-on-Tyne.

EPSOM.—For the foundations of the Tenth County lunatic asylum (Long Grove), to be erected near Epsom, Surrey, by the Asylums Committee of the London County Council. Mr. G. T. Hine, architect, 35 Parliament Street, S.W.

GOLDTHORPE.—Aug. 27.—For the erection of a boys' school and caretaker's house at Goldthorpe, Bolton-upon-Deerne. Mr. Geo. Dickinson, clerk, School Board, Bolton-upon-Deerne, Rotherham.

GRIMSBY.—Aug. 24.—For the erection of an underground sub-balancing station in Riby Square, and a fan-house, &c., for the electricity works, Doughty Road. Mr. W. A. Vignol, borough electrical engineer, Grimsby.

GUILDFORD.—Aug. 31.—For the erection of an underground convenience for both sexes in North Street. Mr. C. Mason, borough surveyor, Tuns Gate, Guildford.

HALIFAX.—Aug. 27.—For the erection of official administrative block, comprising board-room, section-rooms and appurtenances at union workhouse, Gibbet Street. Mr. Clement Williams, architect, 29 Southgate, Halifax.

HALIFAX.—Sept. 2.—For the erection of offices and factory boundary wall and railings at the Skircoat Road Tramway Electricity depôt. Mr. James Lord, borough engineer, Halifax.

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HANLEY (STAFFS).—Aug. 26.—For the erection of a 16-bed pavilion and two single-bed wards, additions and alterations to administrative block, additions and alterations to boiler and engine-house, &c., additions to covered ways, erection of two cottages near hospital, and the provision of a Lancashire boiler and steam fittings and appliances, provision of a cooking apparatus, additions to electric light, &c. Mr. Elijah Jones, architect, Albion Street, Hanley.

HASTINGS.—Sept. 11.—For the erection of superintendent's lodge at the Hastings borough cemetery. Mr. P. H. Palmer, borough engineer, Town Hall, Hastings.

ILKLEY.—Aug. 26.—For the erection of the north abutment and wings of bridge over the river Wharf at Ilkley, Yorks. Mr. James B. Fraser, 8 Park Square, Leeds.

IRELAND.—Aug. 26.—For additions and alterations to Armagh Road Presbyterian church, Portadown. Mr. Thomas Houston, architect and civil engineer, Kingscourt, Wellington Place, Belfast.

IRELAND.—Aug. 26.—For additions and alterations at the Cork Clubhouse. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Aug. 29.—For the erection of cycle works, howroom and dwelling-houses at St. Lawrence Gate, Drogheda. Mr. F. H. Tallan, architect, 356 Kildare Street, Dublin.

IRELAND.—Sept. 14.—For the erection of four cottages and the conversion of single rooms into a dormitory at the Armagh District lunatic asylum. Mr. R. H. Dorman, Court House, Armagh.

KENDAL.—Aug. 28.—For the erection of two semi-detached villas at Sedbergh. Mr. Stephen Shaw, architect, Highgate, Kendal.

LANCASTER.—Aug. 22.—For putting in a new shop-front and other works at premises in Cheapside. Mr. T. Cann Hughes, town clerk, Town Hall, Leicester.

LEEDS.—Aug. 24.—For rebuilding block of office premises, Albion Street, Leeds. Messrs. Thos. Winn & Sons, architects, 2 Albion Street, Leeds.

LEICESTER.—Aug. 26.—For the enlargement of the head post office at Leicester. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, W.

MANCHESTER.—Aug. 31.—For the erection of a car-repairing works and permanent-way buildings, Hyde Road, Manchester. Mr. J. M. M'Elroy, general manager, Tramways Department, 55 Piccadilly, Manchester.

NEWARK.—Aug. 24.—For the erection of new infirmary buildings and appurtenant works at the premises of the Guardians in Bowbridge Road, Newark. Mr. Arthur Marshall, architect, King Street, Nottingham.

NEWCASTLE-UPON-TYNE.—Sept. 7.—For the erection of senior and junior departments (in two blocks) at Forsyth Road, West Jesmond, for the Newcastle-upon-Tyne School Board. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

NEW MALDEN.—Aug. 31.—For the erection of new public offices, fire station, stabling, &c., at New Malden, Surrey. Mr. William Hope, architect, Seymour Road, Hampton Wick.

NUNEATON.—Aug. 25.—For the erection of an infirmary and laundry. Mr. Harry Quick, architect, 64 Hertford Street, Coventry.

PORTSMOUTH.—Sept. 18.—For the erection of two additional manual instruction centres. Mr. Alfred H Bone, architect, Cambridge Junction, Portsmouth.

PUDSEY.—For reseating and redecorating the Wesleyan chapel, Church Lane, Pudsey. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

SALCOMBE.—Aug. 31.—For taking-down and rebuilding portion of east end of Salcombe Church, Devon. Particulars may be obtained at the Vicarage.

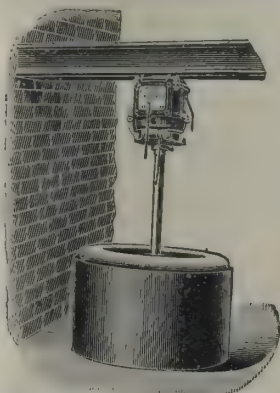
SANDOWN.—Sept. 4.—For the erection of new coastguard buildings at Culver Cliff, near Sandown, Isle of Wight, consisting of houses for five men, outbuildings, &c. Particulars may be obtained at the Director of Works Department, Admiralty.

SCOTLAND.—Aug. 24.—For the rebuilding and extending of business premises, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SCOTLAND.—Aug. 24.—For the erection of the Carnegie public library, Montrose. Mr. J. Lindsay Grant, architect, Manchester.

SCOTLAND.—Aug. 25.—For the erection of a new school at Fort William. Messrs. L. & J. Falconer, architects, Fort William.

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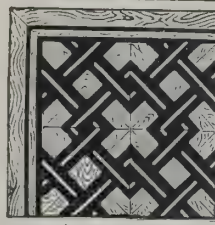
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SCOTLAND.—Aug. 25.—For the erection of the Renfrewshire combination poorhouse at Crookston. Messrs. MacWhannell & Rogerson, architects, 51 West Regent Street, Glasgow.

SCOTLAND.—Aug. 25.—For alterations and additions to North Public school, Peterhead. Mr. Arthur Clyne, 123½ Union Street, Aberdeen.

SCOTLAND.—Aug. 31.—For the erection of new waiting-rooms, &c., on down-line platform, Eassie station, for the Caledonian Railway Company. Mr. J. Blackburn, secretary, 302 Buchanan Street, Glasgow.

SCOTLAND.—Aug. 31.—For the erection of hotel at Turnberry. Mr. James Miller, architect, 15 Blythewood Square, Glasgow.

SELY OAK.—Aug. 24.—For the erection of a boiler-house at the workhouse, Selly Oak. Messrs. C. Whitwell & Son, architects, Temple Row, Birmingham.

SENNEN COVE.—Aug. 31.—For the erection of a private hotel at Sennen Cove, Land's End, Cornwall. Mr. Henry White, architect, Penzance.

SIGFORD.—Sept. 1.—For the erection of three cottages at Sigford, near Ashburton, Devon. Mr. Andrew Warren, architect, Buckfastleigh.

SLOUGH.—Aug. 24.—For the erection of a manager's house at the Slough Gas and Coke Company's works, Uxbridge Road. Mr. R. Martin, Castleview, Slough.

SWAFFHAM.—Aug. 29.—For the erection of an Oddfellows' hall at Castleacre. Mr. James Spencer, secretary, Castleacre, Swaffham, Norfolk.

THORNTON-LE-FYLDE.—Aug. 31.—For the erection of air-compressing station, caretaker's cottage, &c. Mr. Arthur Hindle, 44 Abingdon Street, Blackpool.

WALES.—For the erection of a lavatory and urinal at the L'ethrddu and Treorky cemeteries, Pentre. Mr. W. J. Jones, surveyor, Council Offices, Pentre.

WALES.—Aug. 24.—For the erection of about seventy houses near the Rhydd, Tredegar. Mr. W. S. Williams, architect, Tredegar.

WALES.—Aug. 24.—For the erection of about 146 roods of dry stone wall between Little Salkeld and the village of Win-skill, Penrith. Mr. Thomas Watson, surveyor, Kirkoswald.

WALES.—Aug. 24.—For taking-down and rebuilding portions of the east and south walls of chancel, with buttresses, inside lining, &c., and putting in new foundations and making good east window of St. Mary's parish church, Builth Wells, Breconshire. Mr. Telfer Smith, architect, Builth Wells.

WALES.—Aug. 25.—For the erection of a new branch post office at Barry Dock, Cardiff, for the Commissioners of H.M. Works and Public Buildings. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—Aug. 26.—For the erection of a school at Troedyrhiw for 400 boys. Mr. J. Llewellyn Smith, architect, Aberdare.

WALES.—Aug. 27.—For the erection of the Crown inn at Blaenauwgwent, Abertillery, Mon. Mr. R. L. Roberts, architect, Abercarn.

WALES.—Aug. 28.—For the erection of a house at High Street, Treorky. Mr. W. D. Morgan, architect, Victoria Chambers, Pentre, Glam.

WALES.—Aug. 29.—For the rearrangement of the inside of the Hermon chapel, Dowlais, new galleries, seating, &c. Mr. Arthur O. Evans, architect, Pontypridd.

WALES.—Aug. 31.—For the erection of twenty-nine (or more) houses at Rowles Square, Rhymney, Mon. Messrs. J. Llewellyn Smith & Davies, architects, Aberdare.

WALES.—Sept. 2.—For the erection of an infant school in Carnetown, Abercynon, to accommodate 250 children. Mr. A. O. Evans, architect, Post Office Chambers, Pontypridd.

WALES.—Sept. 3.—For the erection of a school, senior mixed department, to accommodate 360, at Treallaw, Ystrad-y-fodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

WALES.—Sept. 4.—For the erection of mercantile marine office at Barry Docks. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—Sept. 14.—For the erection of two new departments for boys and girls at Penygraig, Ystrad-y-fodwg. Mr. Jacob Rees, Hillside Cottage, Pentre.

WALES.—Sept. 14.—For the erection of public offices in Morgan Street, Pontypridd. Mr. Henry T. Hare, architect, 13 Hart Street, W.C.

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WHICKHAM.—Aug. 31.—For the erection of Council offices, &c., at Whickham, Durham. Mr. Thomas Lambert, clerk, U.D.C., Town Hall, Gateshead.

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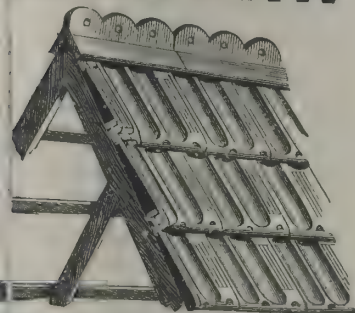
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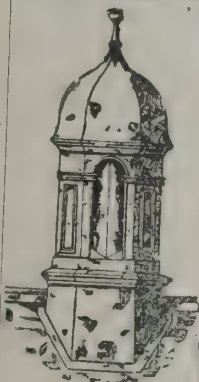
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Cheetham	946	0	0
Harris	847	0	0
Johnson	798	0	0

MAIDSTONE.

For painting and general repairs at the Wrens Cross, Maidstone, Chatham, Tonbridge, Lydd and Whitstable police stations. Mr. F. W. RUCK, county surveyor, 86 Week Street, Maidstone.

Tonbridge police station.

Spiers & Perrott	£225	10	0
H. Cruttenden & Son	214	11	0
Allcorn Bros.	190	0	0
Barden & Head	186	0	0
J. R. Foord & Son	183	9	4
T. J. Collins & Son	172	15	0
H. J. Smith & Son	171	10	0
M. Batchelor	170	0	0
Goodwin & Jeffery	164	0	0
J. Gosby	158	9	6
W. E. Coveney	154	10	0
C. Munn	150	0	0
W. J. SHRUBSOLE, Maidstone (accepted)	149	14	4

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For Index of Advertisers, see page x.

MAIDSTONE—continued.
Wrens Cross, Maidstone.

Spiers & Perrott	£365	0	0
Cruttenden & Son	339	0	0
Allcorn Bros.	340	0	0
J. R. Foord & Son	317	18	0
R. Avar	315	0	0
Cook Bros.	309	10	0
Barden & Head	297	0	0
T. J. Collins & Son	290	15	0
H. J. Smith & Son	288	0	0
M. Batchelor	284	10	0
Goodwin & Jeffery	260	15	0
J. Gosby	257	19	9
C. Munn	253	0	0
W. E. Coveney	248	7	0
W. J. SHRUBSOLE Maidstone (accepted)	240	11	0

Chatham.

Spiers & Perrott	87	0	0
H. Cruttenden & Son	77	5	0
Allcorn Bros.	74	0	0
W. E. Coveney	71	5	0
H. J. Smith & Son	69	0	0
T. J. Collins & Son	67	14	0
Foord & Webb	67	0	0
J. Gosby	66	19	9
J. R. Foord & Son	66	3	6
Barden & Head	59	0	0
M. Batchelor	57	0	0
Goodwin & Jeffery	55	0	0
WYVER, NICHOLLS & Co., Maidstone (accepted)	48	18	2

Lydd.

Spiers & Perrott	85	0	0
T. J. Collins & Son	71	10	0
H. J. Smith & Son	69	15	0
J. R. Foord & Son	69	14	7
W. J. Shrubsole	66	4	10
M. Batchelor	60	10	0
J. Gosby	60	9	0
W. E. Coveney	60	6	0
C. Munn	60	0	0
J. B. Goble	55	10	0
Wyver, Nicholls & Co.	53	10	8
GOODWIN & JEFFERY, Maidstone (accepted)	53	5	0

MAIDSTONE—continued.
Whitstable police station.

Dewell & Co.	£39	0	0
Spiers & Perrott	36	0	0
M. Batchelor	25	0	0
Goodwin & Jeffery	25	0	0
W. E. Coveney	24	10	0
W. J. Shrubsole	22	14	7
J. R. Foord & Son	21	3	0
C. Munn	21	0	0
J. Gosby	19	9	2
Church & Co.	18	18	6
Wyver, Nicholls & Co.	17	4	10
H. W. WYBORN, Deal (accepted)	16	15	2

NORWICH.

For the erection in the grounds of the Norwich workhouse of a nurses' home. Messrs. MORGAN & BUCKINGHAM, architects and surveyors, Norwich

F. R. Hipperson	£2,810	7	0
J. S. Smith & Son	2,475	0	0
Severidge	2,434	0	0
Anderson & Son	2,365	0	0
Chapman	2,327	0	0
J. Evans	2,300	0	0
Scarles Bros.	2,288	0	0
Boddy & Son	2,287	10	0
J. J. Howes	2,245	0	0
W. Utting	2,227	0	0
J. Burton	2,115	0	0
W. J. HANNANT, Norwich (accepted)	2,072	0	0

PRESTON.

For rebuilding New-in-Pendle bridge.

E. HAWLEY, Ridgmont, Burstwick, Hull (accepted)	£3,168	0	0
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ROCHDALE.

For steelwork in the roofs, stanchions and lintels for the new car shed at Bridgfold.

G. TAYLOR & Co., New Islington Ironworks, Ancoats, Manchester (accepted)			
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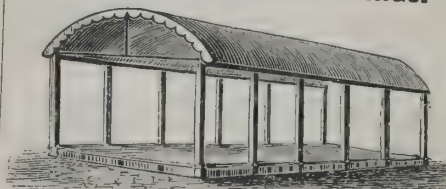
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IRONWORK.
TANKS & CISTERNS.
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REIGATE.

For additions to electric-lighting station, Wray Common Road.
Mr. F. T. CLAYTON, engineer, Municipal Buildings,
Reigate. Quantities by engineer.

Elsey & Sons	£2,226	14	10
S. Jeal	2,220	0	0
NIGHTINGALE & SONS, Reigate (accepted)	2,023	0	0

SALFORD.

For painting and decorating the Regent Road, Greengate and
Pendleton branch libraries.

J. CAIN & SONS (accepted)	£115	5	0
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SANDBACH.

For street works in Foundry Street and New Street, Elworth,
near Sandbach. Mr. ALFRED PRICE, architect, Elworth,
Sandbach.

T. Rowlands	£1,000	0	0
H. Wardman	747	15	0
S. Hutton	693	0	0
T. Tucker	650	6	9
BENNIE & THOMPSON, Warrington (accepted)	605	13	4

SEVENOAKS.

For the construction of covered sewage tanks, filter-beds, man-
holes, alterations to existing sewage works, provision of
pumping machinery, &c, in connection with the sewage
disposal works of Edenbridge, Kent.

G. BELL, Tottenham, London, N. (accepted)	£4,801	0	0
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SHREWSBURY.

For the erection of a covered cattle sale ring. Mr. W. CHAPPLE
EDDOWES, borough surveyor.

E. H. Nicholas	£1,280	0	0
G. Bullock	1,093	0	0
Hadley & Son	1,086	11	8
A. G. Roberts	1,053	19	0
J. Gethin & Co.	1,037	0	0
T. Morris & Sons	1,020	0	0
H. PRICE, Shrewsbury (accepted)	996	0	0

STEPNEY.

For pulling-down and clearing away 1 to 5 Ball's Buildings,
Ratcliff. Mr. W. JAMESON, borough engineer.

J. C. Base	£35	0	0
C. Griffiths	31	17	6
T. York	25	0	0
W. BUTLER, 131 Chrisp Street, Poplar (accepted)	14	12	6

STOURBRIDGE.

For the erection of a free library and technical institute in
Hagley Road and Church Street. Mr. FREDERICK
WOODWARD, architect.

A. Simmonds	£10,150	0	0
T. Rowbottom	9,790	0	0
J. Barnsley & Sons	9,666	0	0
W. Sapcote & Sons	9,489	0	0
G. Goodwin	9,487	0	0
J. & A. Brazier	9,450	0	0
H. Willcock & Co.	9,360	0	0
F. Lindsay Jones	9,162	0	0
H. Dorset	9,117	0	0
W. Hopkins	9,100	0	0
Giles & Son	8,995	0	0
J. Mallin	8,990	0	0
Dallow & Sons	8,885	0	0
Gowing & Ingram	8,775	0	0
C. Griffiths	8,817	0	0
Smith & Pitts	8,750	0	0
T. Hardy	8,645	0	0
G. H. Marshall	8,600	0	0
Hadley & Son	8,568	0	0
A. H. Guest	8,472	0	0
J. GUEST & SONS, Stourbridge (accepted)	8,440	0	0

TRURO.

For reclamation works below Boscawen Bridge. Mr. MEASHA
LEA, city surveyor.

Relf & Son	£1,035	4	0
C. & J. Harris	960	1	0
J. Colliver	753	5	0
H. Tippet	705	0	0
J. CLARE & SON, Truro (accepted)	681	0	0
G. Miners	675	9	0

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322 Fawcett Road, SOUTHSEA.

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Chapel Street, St. Philips M

SUNDERLAND.

For the erection of St. Mary's new vicarage, Tyne Dock. Messrs. JOSEPH POTTS & SON, architects, 57 John Street, Sunderland. Quantities by architects.

Jas. Young	£2,100	0	0
Storey	2,100	10	0
Robertson	2,000	0	0
W. B. Cooper	1,997	10	0
J. B. Stott	1,980	0	0
Hall	1,960	0	0
Jas. Armitage	1,950	0	0
W. D. Allison	1,929	8	0
Stephen Sheriff	1,869	11	0

WALES.

For the erection of a boys' school, and for additions to and alterations of the existing schools in Pill Street, Cogan, Penarth. Mr. G. A. BIRKENHEAD, architect, Caledonian Chambers, Cardiff. Quantities by the architect.

W. Thomas & Co.	£8,948	0	0
E. R. Evans & Bros.	8,495	0	0
D. W. Davis	8,000	0	0
E. Turner & Sons	7,888	0	0
Blacker Bros.	7,845	7	0
J. S. Shepton	7,700	0	0
JOHN JONES, Penarth (accepted)	7,203	0	0

For the erection of an Independent chapel at Penyffridd, Rhosgadfan, near Carnarvon. Mr. ROWLAND LLOYD JONES, architect, 14 Market Street, Carnarvon.

Chapel and schoolroom.

Jones Bros.	£1,765	0	0
W. J. Griffith	1,750	0	0
W. Owen & S. Roberts	1,511	0	0
W. & R. Jones	1,510	0	0
D. Jones & Son	1,450	0	0

Chapel only.

Jones Bros.	1,327	0	0
W. J. Griffith	1,300	0	0
W. Owen & S. Roberts	1,177	0	0
W. & R. Jones	1,160	0	0
D. JONES & SON (accepted)	1,150	0	0

WALES—continued.

For rebuilding 31 St. Mary Street, Cardiff. Mr. EDWIN SEWARD, architect, Cardiff.

D. W. Davies	£4,675	0	0
W. Williams	4,280	0	0
Knox & Wells	4,250	0	0
W. Symonds & Co.	4,152	0	0
Lathey & Co.	4,128	0	0
F. Small	4,080	0	0
E. Turner & Sons	4,056	0	0
Beames & Nephew	4,048	0	0
W. Thomas & Co.	3,997	0	0
E. R. EVANS & BROS, Gwenneth, Cathays (accepted)	3,800	0	0

For street works in Jersey Road, Blaengwynfi. Mr. W. P. JONES, surveyor, Cymmer, Port Talbot.

M. Thompson	£1,075	15	9
BARNES, CHAPLIN & Co., Cardiff (accepted)	1,036	0	0

For the erection of dwelling-houses, &c., at Pant-y-Bryngwyn, Llanrug. Mr. ROWLAND LLOYD JONES, architect, 14 Market Street, Carnarvon.

Seven houses.

W. & R. Jones	£1,950	0	0
Jones Bros.	1,610	0	0
W. D. Williams	1,500	0	0
W. Roberts & R. E. Jones	1,399	0	0
H. Jones	1,281	0	0
W. J. Griffiths	1,250	0	0

Three houses.

W. & O. Pritchard	670	0	0
Roberts & Williams	618	0	0

Repairs to four old houses.

Jones Bros.	834	0	0
W. Roberts & R. E. Jones	784	0	0
W. & O. Pritchard	760	0	0
Roberts & Williams	740	0	0
W. J. GRIFFITH, Carmel (accepted)	660	0	0

WEST BROMWICH.

For sewerage works in Brickhouse Lane, Ebenezer Street and Dial Lane. Mr. ALBERT D. GREATOREX, borough engineer.

W. CUNLIFFE, Kingston-on-Thames (accepted).

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WATFORD.

For street works on Park Road and Station Road, Radlett, in the parish of Aldenham. Mr. E. LAILEY, surveyor.

Free & Sons	£1,760	0	0
H. Williams	1,746	8	8
Goodchild & Jeffery	1,738	5	0
H. Brown	1,490	0	0
BRACEY & CLARK, Leavesden Road, Watford (accepted)	1,451	0	0

WEDNESBURY.

For sewerage and street works in Wharfedale Street, Oakeswell Street, Corporation Street. Mr. E. MARTIN SCOTT, borough surveyor.

J. White, jun.	£3,602	19	7
G. Law	3,203	14	8
W. B. Clark	3,158	16	1
Fitzmaurice & Co., Ltd.	2,609	19	1
F. J. Smith	2,393	3	0
G. Trentham	2,133	19	4
Thompson & Co.	2,130	9	4
Currall, Lewis & Martin	2,010	5	11
J. OWENS, Wolverhampton (accepted)	1,689	10	0

For the construction of storm-water sewers with manholes, gullies, connections, &c., in Wharfedale Street, Oakeswell Street, Corporation Street. Mr. E. MARTIN SCOTT, borough surveyor.

J. White, jun.	£590	15	10
Fitzmaurice & Co.	465	13	10
Thompson & Co.	450	2	4
W. B. Clark	428	0	8
G. Law	407	8	6
Currall, Lewis & Martin	403	12	4
G. Trentham	403	0	0
F. J. Smith	358	11	6
J. OWENS, Wolverhampton (accepted)	349	10	0

WINCHAM AND PLUMBLEY.

For the erection of a girder bridge to carry the roadway over the Smoker Brook, Leonard's Lane, Wincham and Plumbley.

G. Blackshaw	£246	0	0
S. Appleton	165	0	0
T. Rowland	148	7	10
J. DALE, Northwich (accepted)	143	6	0

Received too late for Classification.

IRELAND.

For painting Ballynure dispensary buildings and medic officer's residence.

R. Simms	£25	0
J. Myers	21	10
R. FOULIS, Larne (accepted)	15	7

For rebuilding Diamond National school, Ballyclan, Antrim. H. CHRISTIE, Fountain Street (accepted) . . . £93 0

MACCLESFIELD.

For taking-down the several properties, clearing site, &c., proposed new street from Chestergate to King Edward Street.

G. Roylance & Co., Ltd.	£465	0
W. Bettany	248	0
B. Cooke	245	0
GORTON & WILSON, Macclesfield (accepted)	205	0

THE work of constructing the Linlithgow new sewage scheme, which was commenced about twenty months ago, now practically finished. But for a considerable portion of the sewer in the Lady's Park, skirting the loch at the west end of the burgh, having been damaged through a subsidence in February last, the scheme would have been completed early in the spring. Last week the works were inspected by the members of the Town Council, the engineers and the contractors. The scheme consists of sewers throughout the burgh and sewage-disposal works on the "septic" tank method, with contact-beds or filters. The disposal works are situated on about 4 acres of ground along the west side of the Mains Burn, which has its outlet in the river Avon, about 400 yards below the works. The tank is divided in two divisions, so that if necessary the one can be thrown out of operation for cleaning or repair while the other is keeping the contact-beds supplied. There are two large contact-beds over which the effluent is passed by distributors for the purpose of aeration. A part of the ground for the works consists of open porous sand and gravel, and this has been converted into land filters, which take the effluent from the contact-beds, and so complete the final stage of purification of the sewage before the effluent passes into the stream adjoining the works. It is expected that the entire scheme will cost about 14,000*l*. The engineers are Messrs. Warren & Stuart, Glasgow.

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TWO SIDES OF PRINCIPAL GATE TO ST. HUGH'S MONASTERY,
PARKMINSTER, SUSSEX.

RESIDENCE AT HOVE.

ELECTRIC NOTES.

THE accounts of the lighting committee of the Brighton Town Council for the year ended March 31 show that the year's working of the electric-light undertaking has resulted in a net profit of 7,984%, upwards of 3,000% of which will be applied to the relief of rates.

CONSIDERABLE progress is now being made with the electric-power station at Chelsea, where the electricity is to be generated which is to provide when ready the motive power of the rejuvenated District Railway. The main building is to be 453 feet long and 175 feet wide, and the somewhat unusual course is being adopted of placing the boilers on two floors one above the other, so that ground area is economised. The height of the building is thus being made 140 feet. Strength is insured by the adoption of the American steel-frame building system of construction, with brick and terra-cotta screens all round, and with a roof and floors of concrete. The amount of steel in the buildings alone is 5,800 tons. The arrangement is that the coal will be received by lighters in a creek alongside the works or by rail, and will be discharged by 1-ton grab cranes on to conveyers and elevators to the stores at the top of the building. From here it is to be distributed by the same means to each of the 80 Babcock & Wilcox boilers to be installed. These are to be operated by chain mechanical stokers, and are being fitted with superheaters. The boilers are to be in groups of eight, so that each group

will supply steam under normal conditions to one of the steam turbine generator sets. Each of these turbines will rotate at 1,000 revolutions per minute three-phase generators of 5,500 kilowatt capacity, but capable of being overloaded to the extent of 50 per cent. without any danger and for a period of two hours. The voltage is to be 11,000. Thus the capacity of the station will be 55,000 kilowatts, with a possibility of touching 80,000 kilowatts. The daily consumption of coal is expected to be 800 tons, and storage capacity is provided for 15,000 tons. The switchboard is to be on three gallery floors, and in connection with it there will be 23 sub-stations. A line of 64 ducts is being constructed to carry the feeders to the nearest point on the District Railway at Earl's Court.

BUILDING AND BUILDERS.

A CHURCH HALL is being erected at Haswell, and the foundation-stone was laid on the 8th inst. The building adjoins the east end of Haswell Church, and will cost 8000l., exclusive of the site.

THE foundation-stone has been laid of a new town hall, municipal offices, public library, recreation-rooms and estate offices at Stornoway. The whole will be included in an imposing building, which it is estimated will cost 10,000l. to erect.

THE health committee of the Liverpool Corporation have passed a resolution approving of an arrangement with the London and North-Western Railway Company with regard to the provision of a new outfall sewer in continuation of Dale Street, Garston, under land upon which the company propose to construct works, and instructing the city engineer to cause a sewer to be constructed at a cost not exceeding 6,545l.

WORK has been started in connection with the rebuilding of Bow Bridge. The enterprise is being carried out as a joint improvement by the London and the Essex County Councils, and, in view of the forthcoming electrification of the East London tramways, will be pushed on with all speed. The new bridge will be some 8 feet wider than the existing one, will have easier gradients, and will cost nearly 10,000l.

THE institute known as the Brixton Polytechnic has just been taken over by the London County Council with the object of transforming it into a building trades instruction centre. It is expected that the Brixton Technical Institute, which it will



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henceforth be known as, will be opened early in November. Instruction in practical building work and in general building trade subjects is to be the chief item in the curriculum of the new institute. A principal has already been appointed, and arrangements are rapidly being pushed forward for the reception of the students.

COOKHAM REGATTA, which took place on the 13th inst., was marred by the sudden death, just before the close, of Mr. George Lacey, a well-known local builder, who had been engaged in booming the course for the ladies punting. He was in the act of returning to the raft in a punt when he fell forward on his knees. Dr. Weaver pronounced life to be extinct.

SUCH few remains as survive of Fotheringhay Castle are being zealously guarded by the Peterborough Archaeological Society, a necessary work, as it has been found that, coincident with the increasing number of visitors attracted to the historic spot of late years, the mounds have been gradually disappearing. A design has been selected for an enclosing railing, resting on a plinth of granite, with the Scottish thistle and crown dominant. It will be sufficiently open not to obstruct the view. The site on which the castle stood belongs to Lady Wantage, who has most readily acquiesced in this form of preservation.

THE work of removing the debris on the west side of the National Gallery, Trafalgar Square, has been effected, and a source of danger to the national institution from fire removed. A space or court about 25 feet wide divides the adjacent houses, some of the walls of which have been strengthened and stuccoed, whilst the masonry holding the railings enclosing the turf laid soil and tropical plants has been extended many feet towards Pall Mall East. To completely isolate the famous gallery it will be necessary to remove a small block of premises in the north-west corner.

TRADE NOTES.

A LARGE clock has just been erected on the public hall, Bourton-on-the-Water, Gloucs, by Messrs. John Smith & Sons, Midland Clock Works, Derby. It has been made to the designs of Lord Grimthorpe, and has all the latest improvements.

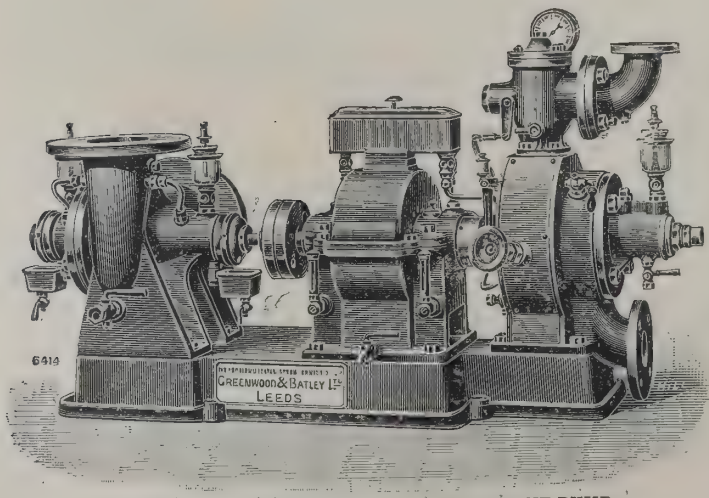
MR. JOHN TANN, of "Anchor" safe fame, is justly proud of the following letter from Messrs. Dardagan Bros., of Salisbury Umfali, Gwelo, Selukwe, Camperdown, and Yankee Doodl mines, Rhodesia, B.S.A., bearing testimony to the fire-resisting quality of a safe of his manufacture:—Dear Sir,—You will be interested to know that our store premises in this township were totally gutted by fire on May 25 last, and that our books and papers were in one of your "Anchor" reliance safes and although the safe was buried in a seething mass of fire, the books, cheque forms and papers came out practically untouched. The first stamp [stamps were attached] is an ordinary one issued here, the second was taken out of the safe after the fire, and you will see that except for being slightly oxidised from the intense heat, it is none the worse for its baking. Owing to our having our books intact in your safe, our claim was passed after an examination of the accounts by the insurance company without demur.—Yours faithfully, per pro Dardagan Bros., Thos. J. Sowter, General Manager.

MESSRS. MANLOVE, ALLIOTT & CO., LTD., Nottingham have just completed an important contract for the erection of combined refuse destructor and power plant for the Corporation of Nottingham, at which the steam-power raised from the burning of refuse is utilised for generating electricity for propelling part of the tramcars running in the city. A similar plant is in course of erection by the same firm, also for the Nottingham Corporation, which will then have three installations put up by Manlove's; while they are erecting destructor installations for the Corporations of Birmingham, Eastbourne, Wolverhampton and Liverpool. At this last-named city between 15,000 and 20,000 Board of Trade units will be generated per day (when the new installation is in full work) from steam raised from refuse burned in destructors built by Manlove, Alliott & Co., Ltd. Cambridge is another example of what can be done with refuse in properly designed destructors and power plants. Here the steam is employed to drive the pumping-engines, which are frequently called upon to raise over 3,500,000 gallons of sewage per day to a height of 50 feet, and deliver it to the sewage farm which is over two miles away. Brentford destructor is on the same lines as the Cambridge plant, and gives equally good results at the sewage pumping-station. The same remark applies to the destructors and power plants at Southampton and Stafford. This firm has brought out a new destructor for small towns, the first of which is erected at Loughborough, and is capable of burning over 100 tons of refuse per day.

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ton of refuse per hour, so its capacity is according to the number of hours it works, thus:—10 tons per day, 10 hours' work; 20 tons, two shifts 10 hours each. We understand that orders for several of these plants, for Grantham, Newmarket, &c., have been placed recently. A large sewage pressing-plant has just been successfully completed for the Bradford Corporation, and unique results are being obtained. From their engineer at Shanghai the firm have received satisfactory reports of work being performed by the pair of compound Corliss pumping-engines, developing 225 horse-power, and supplying 6,000,000 gallons per 24 hours of drinking-water to the inhabitants of Shanghai. In the laundry machinery department, they have in course of manufacture a very large plant for the Admiralty.

VARIETIES.

To meet the growth of Welsh Congregationalism in West Denbighshire a new church has been erected at Llangollen, and opened for public worship. The church cost 3,100*l.*, and will accommodate over 550 persons.

At a meeting of Dundee engineers it was decided not to submit to the proposed reduction of 1*s.* per week on their wages. The feeling of the meeting was that the present state of trade did not warrant any decrease, and the decision of the men to resist a reduction was unanimous.

THE first portion ready for occupation of the new naval barracks at Portsmouth was taken over by the Admiralty on Monday. Within a short time the whole of the buildings will be occupied. The barracks are the largest in the world, and the officers' quarters make a fine pile of buildings. One peculiarity of the barrack accommodation is that the men living in them will not sleep in beds but in hammocks slung from the ceiling, as aboard ship.

A SPECIAL meeting of the Hamilton Town Council, called in terms of a requisition and motion, was held on Tuesday, Provost Keith presiding, to consider the proposal to proceed with the erection of a town hall and municipal buildings at an early date. A month ago the matter was before the Council, when the proposal, not receiving the requisite two-thirds majority, was dropped. At Tuesday's meeting Treasurer Kemp, seconded by Bailie MacHale, moved in terms of the motion. The previous question was moved by Councillor Cassells, and seconded by Councillor Brown. After some

discussion, the motion to proceed was carried by ten votes to two. Three members being absent, it was afterwards agreed to meet a month hence, in terms of statute, to confirm the resolution.

THE tower of St. Margaret's parish church, Arbroath, has just been completed. The plans were prepared by Mr. T. S. Robertson, architect, Dundee, who designed the church, which was finished in 1879. In the completion of the tower the early English style, which is characteristic of the edifice, will be carried out. The tower, as it has stood for nearly twenty-five years, has a height of 48 feet. The addition measures 48 feet, so that the height of the completed spire will be 96 feet from the ground. Messrs. Ramsay & Gordon, builders, Arbroath, have secured the contract.

PROFESSOR HALSEY C. IVES, chief of the art department of the International Exhibition to be held in St. Louis next year, has appointed Messrs. Edwin A. Abbey, J. McLure Hamilton and John S. Sargent, with Mr. Joseph Pennell as hon. secretary, to act as a committee of selection for the United Kingdom, and as a jury to decide upon the works submitted to them by American artists living and working in this country. By the death of Mr. Whistler (chairman) the committee is deprived of a member whose advice and assistance had been most useful in the earlier stages of their work. A regulation has been adopted by the art authorities of the exhibition to the effect that "American artists residing in a foreign country will be admitted only as exhibitors in the United States section." Further information will be supplied upon application to the hon. secretary at 14 Buckingham Street, Strand.

NEW CATALOGUE.

MR. C. D. PHILLIPS, of Newport, Mon, is issuing an illustrated descriptive catalogue of his well-known patent lock-jaw roofing tiles, &c. The object which Mr. Phillips claims that he has attained by this invention is the production of a roofing tile that shall form a perfectly weather-resisting roof, and be impervious to wind, rain or snow, at the same time combining all the points necessary for an economical, ornamental and efficient roof. In order to attain this object, on each of the four sides of the tile a system of grooves with corresponding tenons is formed, so that each tile locks into others on each side, top and bottom, the bottom of top tile butting against or locking into its corresponding lower one. The tiles in process of manufacture undergo a very great pressure, which effectually

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closes the pores of the clay, making it dense in texture, practically non-porous and everlasting in wear, and of great strength; it also has the effect of giving the tile a beautiful smooth surface, and in fact perfecting its construction in all parts. Half-tiles of each pattern are made similar in every respect, and lock in the same manner, so that in every alternate course a half-tile is used, which forms what is called a "break-joint" throughout the roof. At the present time only two patterns are being made, viz. the "single" grip and "double" grip, the latter having a double grip, with two grooves and tenon joints instead of a single one. The single grip, it is said, makes the lightest roof of any tile in the market, for the area covered, its weight being about 600 lbs. per square of roofing, at a cost of 15s. 9d. per square at the works; the double grip is somewhat heavier, but is rapidly growing in favour on account of its further security, and being rather more architectural and massive in appearance, it is usually preferred for roofing mansions, public buildings and other prominent structures; its weight is about 800 lbs. per square, at a cost of 19s. per square at the works. Among the designs shown in this catalogue are, in addition to the above, a variety of fancy ridge and weather tiles, hip covers, weather boards, finials, &c.

LONDON WATER COMPANIES' CLAIMS.

When the Court of Arbitration appointed under the Metropolis Act of last Session meet on October 25 next they will, says the *Standard*, have before them the claims of the eight metropolitan water companies, amounting to 50,000,000*l.*, in addition to their debenture stock being taken over by the newly-created Water Board. On Tuesday the Water Board deposited with the Court of Arbitration their answers to the claims of the East London and the New River Companies, from which a fair idea can be formed of the views which will be laid before the Court by the water companies and the Water Board respectively as to the value of the water undertakings. An analysis shows that the total claims of the eight companies amount in the aggregate to about 50,000,000*l.*, in addition to their debenture stocks. It appears that the total aggregate of the companies' ordinary capital (representing the whole sum expended by them on their undertakings from their origin until about the year 1886) is 10,323,000*l.* Since that date the companies have not been permitted by Parliament to augment their ordinary capital, and all money required for further works has been raised by debenture

stock charged upon the undertakings. These debenture stocks amount in the aggregate to about 10,000,000*l.*; the whole of which is to be transferred to and taken over by the Water Board. The claim of the companies is thus, in effect, that the Metropolitan ratepayers should relieve them from the 10,000,000*l.* debenture stock liability, and pay, in addition, about 50,000,000*l.* in respect of works. The claim of the East London Waterworks Company, which will be first presented to the Court, shows that the capital of the company consists of—Debenture stock, 2,051,000*l.*; and of ordinary share capital, 1,720,000*l.* The debenture stock of 2,051,000*l.* is transferred to and taken over by the Water Board, and in respect of their nominal capital of 1,720,000*l.* the East London Company claim sums amounting in the aggregate to 7,214,000*l.* The reply of the Water Board is generally to the effect that over and above the 2,051,000*l.* charged, which they take over, they are not prepared to offer any further sum of money in respect of the undertaking. The capital of the New River Company comprises the following:—Nominal share capital, 2,019,000*l.*, and the debenture stocks amount to about 2,250,000*l.* As in the case of the East London Company, the debenture stock of 2,250,000*l.* is transferred to and taken over by the Water Board, and in respect of their nominal share capital of 2,019,000*l.* the New River Company claims under various heads an amount of 11,666,000*l.* The main point of the answer of the Water Board is that the sources of water supply which the company are entitled to bring into account for the purpose of their claim will be wholly insufficient to meet the demands of the population of their district. Finally, the Water Board indicate that in addition to the liability involved in taking over the debenture stocks of the company (which, as already stated, will amount to about 2,250,000*l.*), they are willing to pay in respect of the undertaking of the company the sum of 3,000,000*l.*, a figure more than sufficient to repay the company the whole of the money which has been expended by them upon the undertaking.

DEMOLITION OF CITY BUILDINGS.

THE great nuisance arising from the demolition of buildings in the City without proper protection to the public has been the subject of an inquiry by the streets committee of the City Corporation, whose members have been assisted with suggestions by the Royal Institute of British Architects, the Surveyor



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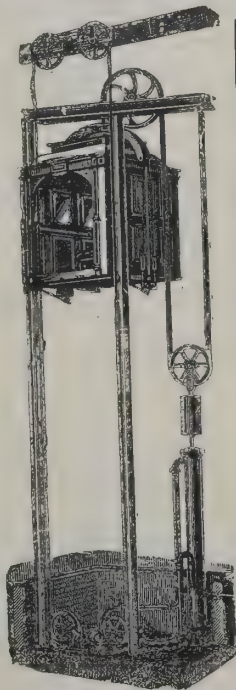
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Institution and the Institute of Builders. The result has been the formulation of new by-laws, under which it is insisted that in the future before any demolition takes place all windows and other openings in the external walls shall be close boarded. Canvas or boarded screens, mats and other suitable appliances must be used whenever required, and so placed as to reduce the nuisance arising from the escape of dust. Rubbish, lime or mortar must not be shot or allowed to fall from floor to floor into any basement within 20 feet of the public way between 10 A.M. and 6 P.M., except on Saturdays, when it will be permitted after 3 P.M. Further, no materials arising from the demolition of buildings shall be basketed, wheeled or loaded into carts or carted away between 10 A.M. and 6 P.M., except on Saturdays, unless proper provision has been made for the protection of the public from dust. Any person who commits a breach of the new by-laws will be liable to a fine of 5s. for each breach.

EASTON'S EXPRESS ELECTRIC LIFTS.

THE money which is wasted in England on what may be called circularising is incredible. If those documents were limited in size to four pages of note-paper, or the postal two ounces, no great loss would be incurred by the senders. But there seems to be a competition still worse than those for buildings, in which the game is who can produce the largest and costliest volume without the least chance of remuneration. For specialists, and particularly architects, make a rule that all such presents are to be cleared from their offices before the working hours begin. It is well to have descriptive catalogues of products and manufacturers always ready, but prudence dictates that they should not be despatched to busy people until application is made for them. Demand should precede supply. The public in general are imitating the example of professional men, and costly examples of printing and design are ruthlessly condemned to the dustbin. They have become so numerous that in many districts the collectors consider them to be inferior to rubbish and decline to remove them with the ordinary domestic debris. Why should an unoffending occupant of a house have to pay tips in order to be clear of such incumbrances? Is it any wonder there is a prejudice against that class of stuff? It has been produced too abundantly, and as obsolete it is despised. The inventiveness of Messrs. Easton & Co., Ltd., already exemplified in many

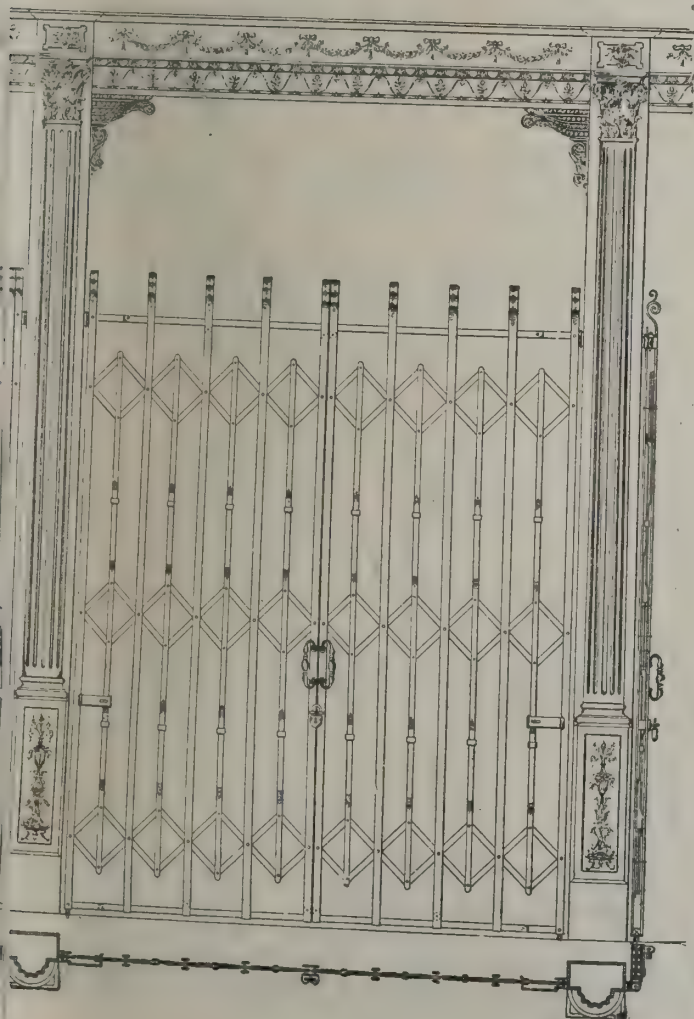
fields, has produced one novel substitute which deserves grateful recognition. They have taken the time-table which is most used in London and have supplied a substantial but artistically designed cover, which on one side has an announcement of their Express Electric Lifts. The combination of green, red, white and black in the composition is pleasing. The idea will bear imitation. Why should not enterprising manufacturers supply similar covers for one's favourite journal or French novels, of which the yellow exteriors deteriorate more quickly in England than abroad? Even Mr. Balfour would not object to adopt so handsome a protection for his favourites. The cover to the time-table is, besides, peculiarly appropriate, for it recalls the long and honourable connection of Easton & Amos, Easton & Anderson, and Eastons, Limited, with railways, not only in England, but in most parts of the world. Besides, what is an electric lift but a miniature railway with a perpendicular instead of a stiff gradient, and having driving gear, brakes, locking apparatus and everything needed for expedition and security? Messrs. Easton's are not only of English design, but entirely of English manufacture. They are widely appreciated, for among recent contracts received by the company are lifts for the London County Council, the Admiralty, War Office, H.M. Office of Works, the Midland Grand Hotel at Manchester (nineteen lifts). Orders have been given by many members of the aristocracy and many leading architects all over the British Isles. Easton's electric lifts are being shipped to South Africa, Australia, China and other British Colonies at the moment, and wherever they are used they realise all that is promised.

CRYSTAL PALACE SCHOOL OF ENGINEERING.

SIR FORTESCUE FLANNERY, M.P., presided, on Friday, the 7th inst., at the award of certificates to the successful students of this school, on the close of the summer term, and among those present were Mr. J. W. Wilson, principal; Mr. Maurice Wilson, vice-principal; Mr. Botham, assistant manager Crystal Palace Company; Mr. J. Boraston, and the three examiners, Mr. H. C. H. Shenton, Mr. Grote Stirling and Mr. William Pollard Digby, who were old students of the school.

The Vice-Principal read the names of the students who had gained certificates.

The Chairman said the very favourable reports of the examiners indicated that the school was continuing to do



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its share in the great national work of technical education. We had a rude awakening a short while ago by seeing our markets flooded with the productions of other countries, and some of our trades seriously injured by foreign competition, and Englishmen began to look about to see how such a state of things could be remedied. The first and most important step towards that end was obviously to improve the technical education, not only of our artisans, but also of those of the higher grades who would have to direct those artisans. He did not think the injury that had been done to our trade could be exaggerated. In his own daily work, he was sorry to tell them, he had had to sanction, within the last few months, German manufactured plates worked into British-made boilers, and German forgings worked into the shafting of British-built engines. The reason he had to do so was simply this, that if he had objected to the German-made boiler-plates and shafting it would have been impossible for the British contractor to have competed successfully with the German contractor for the whole of the work instead of only a part of it. It was a startling fact that the British manufacturer or contractor could not compete with the German and American unless he incorporated German material into the work he had to execute, and it ought to convince everybody of the importance and urgency of thorough technical instruction in our schools. The German method, system of organisation and technical training were remarkable, and he believed their success was as much due to that as to the superior scientific and technical knowledge in the case of many of their leading managers and engineers. We were now moving in the right direction, however, and he was sure we should overtake the Germans in regard to technical knowledge, but whether we should do so with respect to organisation and method he was not quite so sure. Technical education was now being carried out in the country on the right lines, and we should soon feel the benefit of it. In that school they were marching with the times, and he thought the directors were very wise in adding an electrical branch to the curriculum, for no engineer could now be competent without a knowledge of electricity. He was glad to note the steady progress in adaptability which had been made in the school during the last few years, and congratulated the Principal on its success.

Votes of thanks having been passed to the examiners and the chairman,

The Principal stated that the school now contained over 100 students, as many as could be accommodated. During its

existence 1,600 students had passed through it, and a large proportion of them were now occupying good positions in all parts of the world.

DOVER HARBOUR.

THE new harbour works which are being carried out at Dover by Messrs. S. Pearson & Sons include over two and a half miles of pier and breakwater and will make Dover the largest artificial harbour in the world. The sheltered area, capable of receiving the largest warships and Atlantic liners, will be 685 acres, or considerably over a square mile of water space. Dover intends to make a bid for Transatlantic traffic, though the works will take ten years to complete, London will have to put her house in order if her docks are to maintain their position. The work of building the enfolding semicircle of breakwaters, including a pier 320 feet wide, with a comfortable station for continental traffic, is made extremely difficult by the great rise and fall in the tide, the strength of the current and the heavy traffic of the port for shipping and mail boats are continually coming and going. Yet the vast seawalls are being built with the exactness and care of a neat Thames-side villa. There is none of the tumbling of stone rubble into the water until a mountain has made reaching to the surface, as in the case of the breakwater at Plymouth. A steel staging is erected over the water, grabs "grabs" excavate the bottom till the solid foundation rock is reached, and then men go down in diving bells 17 feet by 17 feet and make a level bottom. After this the "Goliaths" or steam masons pick up the great blocks of artificial stone, some of them weighing 40 tons, and lower them into the water, where they are fixed in position and cemented together by divers. Those which will face the water are faced with granite, which was built in the side of the mould before the concrete was poured in. It seems as though the Government in projecting this great national harbour contemplates building for eternity.

THE LONDON TRAFFIC COMMISSION.

THE sub-commission of six members who have been deputed to investigate all the systems of traction and transport in the United States will sail on September 18 for New York.

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their secretary (Mr. Lynden L. Macassey) will leave on August 28 to make the necessary arrangements. The commissioners are expected to return about the middle or end of October. They will visit, among other places, New York, Boston, Philadelphia and Chicago. The most important of their duties will be to look closely into the comparative merits of subways and tube railways. On their return the commission will resume their sittings in November. Up to the present time they have been concerned mainly with the evidence of the London County Council, which is not yet quite finished, and they will proceed with witnesses from the municipal borough councils and other local authorities in the vicinity of London who are interested in the question of metropolitan transit. Afterwards they will receive evidence from the great railway companies and tube railway companies. The commission do not intend to report on the locomotion in London until they have personally examined into the means of transit which exist in the great cities of America and Europe. The report will probably be presented to Parliament at the close of next year. The commissioners visiting the United States are Sir David Barbour (chairman), Lord Ribblesdale, Sir Francis Hopwood (permanent secretary of the Board of Trade and formerly secretary of the Railway Department), Sir John Dickson-Poynder, M.P., Mr. George Gibb (general manager of the North-Eastern Railway), Sir George Bartley, M.P., and Mr. Lynden L. Macassey, secretary.

IMPORTATIONS OF IRON AND STEEL.

In a letter to the *Times* Mr. M. Deacon, C.E., writes:—
A few simple examples of the effect upon the British iron and steel trades of the free admission of foreign manufactured goods into this country may be interesting to your readers and of some value in the general consideration of the question.
Several years ago the import of American manufactured goods commenced in real earnest, pig iron being imported into Liverpool and Manchester at prices which defied competition by English makers. American steel billets and bars for manufacturing into black-plates, tin-plates, corrugated sheets, bars, angles and tees were freely imported at lower prices than similar materials could be made by English makers.
The result of this was that in some districts, especially in South Wales, some steel works had to be closed, whilst others

ran on very short time, large numbers of men were thrown out of employment, and others received only one-half the necessary wages to keep themselves and their families in the ordinary comforts of life.

The occurrence of the American boom, which is now on the wane, fortunately put a temporary stop to the import of these goods, with the result that during the last four or five years employment in the iron and steel trades of this country has much improved, and the workmen have been able to earn better wages.

The benefit derived from the cessation of American imports was, however, counteracted to a great extent by the influx of German iron and steel goods which immediately followed. At the present time, steel ingots, billets and bars are being imported from Germany into South Wales at prices fully 5s a ton less than the cost of production in England. This has resulted in a scarcity of orders to the English maker, and consequently in a considerable reduction in the weekly earnings of steel workers. German bar iron is imported into the heart of the country, and actually competes with the commoner classes of Staffordshire iron in its own county.

The bar-iron trade is and has been for some time so depressed that many mills are only running from three to four days a week, and the workmen have consequently to go so much short in their wages.

Cast-iron pipes manufactured in France are being imported into this country, especially into the south of England, at prices which defy competition by the English maker, and they have even been successful in penetrating into the Midland counties at prices lower than local manufacturers are able to quote.

The ability of our foreign competitors to beat us in our own markets is attributable in the case of (a) America, to their richer and cheaper iron ores, their more cheaply worked coking coals and the more modern plants which they have generally adopted, in the full knowledge that their natural resources warrant the expenditure; (b) Germany, Belgium and France, to the lower wages and longer hours which their workmen are contented to receive, to the low railway rates, and in some instances to the bounties granted on exported goods and to the fact that this country is used as the dumping ground for their surplus productions at prices under cost, for the purpose of reducing their costs to a low figure, in order that they may make a profit in their home markets.

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What will be the position when the United States' enormous production can no longer be consumed in their home markets? I venture to predict that it will prove to be such a severe blow to the trade of this country, that the eyes of the British public will be opened to the fact that it is at last time to depart from our conservative methods and to apply their reasoning powers to the existing and probable future condition of things, rather than rely upon methods which were adopted under totally different circumstances and which no longer exist.

VALUATION OF BUILDINGS.

A DRAFT report has been prepared by the Lord Advocate, as chairman of the select committee directed to inquire into the Valuation Acts as relates to rateable property. It states at the outset the committee found that considerable materials for the matters under consideration already existed in the evidence led before and reports made by the Royal Commissioners on Local Taxation.

In considering the question the committee were of opinion that it would be well to have before them the system of valuation which obtains in England and Scotland, and accordingly they examined Mr. Adrian, of the Home Office, and Mr. Henry, the assessor of Glasgow.

The subject of the valuation of rateable property naturally divides itself into two branches. First, the principles of valuation, and second, the machinery by which valuation is to be effected. As regards the principles of valuation, the committee do not think that there is much room for doubt. What is wanted to be discovered is the annual value of any hereditaments, or, as it is often expressed, the letting value. Where there is a free market there can obviously be no test so good as the rent which is actually paid for the subjects. After arriving at this value there will then fall to be made such deductions as are necessary to be subtracted before you can arrive at the actual beneficial value as enjoyed by the owner. The words in which this principle may be expressed somewhat vary, but it is probably sufficient to quote the definitions which have been given in England, Scotland and Ireland to see that the feeling of Parliament in all cases has been substantially the same. In England, for example, the most elaborated system is to be found in the Metropolitan Valuation Act of 1869. There gross value is defined as meaning "annual rent which a tenant may reasonably be expected taking one year with another

to pay for a hereditament if the tenant undertook to pay the usual tenant's rates and taxes and tithe commutation rent charge, if any, and if the landlord undertook to bear the cost of the repairs and insurance and the other expenses, if any necessary to maintain the hereditament in a state to command that rent," and "rateable value" was at the same time defined as meaning "the gross value after deducting therefrom the probable annual average cost of the repairs, insurance and other expenses as aforesaid."

In Scotland the 6th section of the Act for the Valuation of Lands and Heritages provides that "in estimating the year value of lands and heritages under this Act, the same shall be taken to be the rent at which one year with another such lands and heritages might in their actual state be reasonably expected to let from year to year, and where such lands and heritages consist of woods, copse or underwood, the year value of the same shall be taken to be the rent at which such lands and heritages might in their natural state be reasonably expected to let from year to year as pasture or grazing land; and where such lands and heritages are bona fide let for a yearly rent conditioned as the fair annual value thereof with the gross sum or consideration other than the rent, such rent shall be deemed and taken to be the yearly rent or value of such lands and heritages in terms of this Act, provided always that such lands and heritages be let upon a lease the stipulated duration of which is more than twenty-one years from the date of entry under the same, or in the case of minerals more than thirty-one years from such date of entry, the rent payable under such lease shall not necessarily be assessed as the yearly rent or value of such lands and heritages, but such yearly rent or value shall be ascertained in terms of this Act irrespective of the amount of rent payable under such lease. . . ."

In Ireland the valuation of houses and buildings in the Valuation Act is "the net annual value," that is to say, the rent for which, one year with another, the same might in its actual state be reasonably expected to let from year to year, the probable average cost of repairs, insurance and other expenses (if any) necessary to maintain the hereditament in its actual state, and all rates, taxes and public charges, if any (except tithe-rent charge), being paid by the tenant.

All these definitions, though variously expressed, obviously seeking the same result, and the committee are of opinion that really no other principle is possible where you are dealing with valuation which is to be the basis of rating from year to year.



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So far as the application of this principle to lands and buildings in town are concerned, the committee see no greater difficulty in applying the criterion of actual rent (or, where actual rent is either not got, or from various reasons does not represent the true annual value, the rent as supposed to be paid by the hypothetical tenant) to the circumstances of Ireland than has been found in its application to England and Scotland.

Turning now to the machinery by which valuation is effected, the first fact that confronts us is that the Irish system as it exists, differing in this respect from both the English and Scotch, is a centralised system, the whole business being done by a Government department conducted by Government officials.

The first point that arises is whether the centralised system should be continued or something else should be substituted in its place. We have come unhesitatingly to the conclusion that it would not be wise to disturb the existing system in this main feature. To those in search of a theoretically perfect system of valuation there is little to be got from the example of England, with its system of valuation differing in various parts of the country, and differing as regards the various practices. In point of fact the English system is not properly a system of valuation at all. As is pointed out by Mr. Adrian, in England the system of valuation is always determined by the statute authorising the taxation.

By a system of valuation proper the committee understand a valuation which is arrived at as a basis of taxation, but which has nothing to do with any particular taxing statute. The possible exception to this in England is to be found in the Metropolitan Valuation Acts, which provide for valuation for wider purposes than is done in other parts of the country, but those Valuation Acts apply only to London, which is obviously a very peculiar and unique subject, and we do not think that their provisions, with, among other things, a quinquennial revaluation, would be at all apposite or desirable for Ireland.

In Scotland the system of valuation is theoretically better, and in practice works exceedingly well. But in Scotland the system, although not theoretically centralised, in practice is almost so. The assessors who manage the whole valuation, although appointed by the local authority, are quite independent of that local authority so soon as appointed, and the temptation to take the Government assessor is so great that in practice the large body of the assessors in Scotland are comprised of Government officials. They meet yearly and

compare notes, and it may be said without hesitation that the practice in Scotland is just as uniform as it is under the centralised department in Ireland. Further development in Scotland, as has already been said by the Royal Commission on Local Taxation, is likely to make the system rather more than less centralised.

Further, the Irish system, as it is, has worked well so far as the Department is concerned. Many of the witnesses made suggestions, but few had the hardihood to suggest that the central department should be abolished altogether, and those who did, who recommended that local authorities should be the valuation authority, seemed hardly to realise that valuation practice at the present is a matter outside their professional experience, and undoubtedly must be entrusted to some practical person. On the whole the testimony as regards the way in which the Irish Valuation Department did its work in the past was decidedly favourable.

Some of the witnesses while agreeing that such anomalies had crept into the valuation of buildings in Ireland as to call for a new valuation, objected to any revaluation which would have a tendency to raise the total valuation, upon the ground that imperial contributions would thereby increase, and that that would be an infringement upon the state of the financial relations between Great Britain and Ireland. Sir John Barton in his evidence gave somewhat substantial reasons for thinking that the difference in the matter of income tax would be but small, but quite apart from this we consider that these considerations, even upon the assumption that such would be the result, are beyond the scope of this inquiry. If the inequity of the financial relations of Ireland to Great Britain be assumed, we think it is obvious that the correction lies in a graduation of the tax or taxes, but not in an attempt to put the system of valuation on any other than its only true basis.

THE NEW CODE AND OLD BOARD SCHOOLS.

THE borough education committee of Kingston engaged Mr. T. J. Bailey, architect to the London School Board, to report upon the repairs, alterations or improvements which are necessary and may be reasonably required by the Corporation education committee in order to render them in a fit state for the proper carrying on of elementary education. He wrote:—

As requested, I submit a detailed report in each of the

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seven cases, showing the present condition of the buildings and what I consider necessary to be done in order that the new education committee may have proper buildings in which to carry on the work, bearing in mind the clause 85, sub-section (2) of the Provisional Code, 1903, which states:—"The school premises must be healthy, properly constructed and arranged for teaching, lighted, warmed, cleaned, drained and ventilated, supplied with suitable offices, and contain sufficient accommodation for the scholars attending the school."

On the question of accommodation the Provisional Code states:—

"Subject to the conditions laid down in the body of this article being fully satisfied, schools already on the annual grant list will as a rule be regarded as accommodating the number of scholars for which they have been hitherto recognised by the Board, provided that in no case there shall be less than 80 cubic feet of internal space and 8 square feet of internal area for each unit of average attendance."

But this is manifestly only provisional and tentative inasmuch as it is at so much variance with the Code for new buildings, which requires as follows:—

"It is important to remember that the accommodation of every room depends not merely on its area, but also on the lighting, the shape of the room (especially in relation to the kind of desk proposed), and the position of the doors and fire-places."

"Both schoolrooms and classrooms must have independent entrances. Every room should be easily cleared without disturbance to any other room."

"The accommodation of a school for older scholars is based upon the number of children who can be seated at the desks, provided that a minimum of 10 square feet of floor space per child is obtained."

"A space in which the children (infants) can march and exercise should be provided. A corridor intended for this purpose should not be less than 16 feet wide."

"The accommodation of an infants' school is based upon the number of children who can be seated at the desks, provided that a minimum of 9 square feet of floor space per child is obtained."

As it must be considered that if the Code for new buildings requires only what is necessary for proper teaching in respect of healthy conditions, absence of overcrowding, proper ventilation and separation of classes, this method of calculating the accommodation is much more necessary to be observed in old

buildings, where the various points have not been so studied or observed as in new buildings planned and constructed according to modern lights and in accordance with the modern code.

Bearing these points in mind, I do not consider that the attached suggestions for improvement are at all unreasonable, inasmuch as by the Provisional Code quoted the schools will continue—at least for a time—to give accommodation to at least 25 per cent. more in the graded departments and 12½ per cent. more in the infants' departments, than the Code allows for in the buildings.

I attach a sketch plan in each case showing in red ink the numbers that I consider the schools could properly accommodate and the suggestions I would make by way of adapting the buildings, where feasible, for the purpose, although they nearly all come short of the Code requirements. In the case of the public schools (boys and girls' departments), I find myself unable to make any suggestion for improving these buildings, their general plan and arrangements being of such a nature, and their age and condition such, that money spent upon improvements, which could never be satisfactory, would be completely wasted.

With regard to the sanitary appliances of all the schools, generally they are in very bad condition. Some are of modern erection (one only just in process of construction), but I am bound to express a general condemnation in view of the laws of the borough, and in face of which the whole—even the best of them—may be condemned and ordered to be reconstructed at any time on the initiative of the medical officer or borough surveyor. The drainage of the various schools I have not been in a position to report upon, but, judging from the condition of the office blocks, I should be very suspicious of the older cases, and would suggest, in view of the possibility of a condemnation and order to reconstruct at any time, that the medical officer and sanitary surveyor of the borough be requested to report on their efficiency.

ELECTRIC ACCUMULATORS.

The following letter has been issued from the Home Office—
Home Office, Whitehall: August 10, 1903.

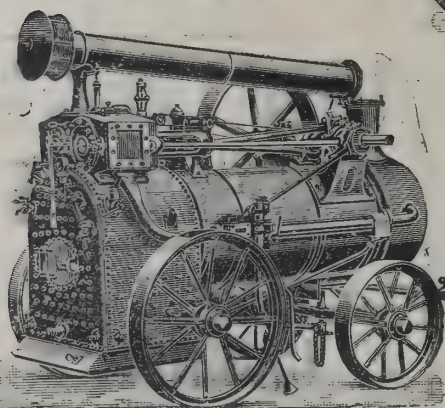
Sir,—Adverting to the letter addressed to you from this department on August 25 last, stating that the Secretary of State proposed to make regulations under Section 79 of the

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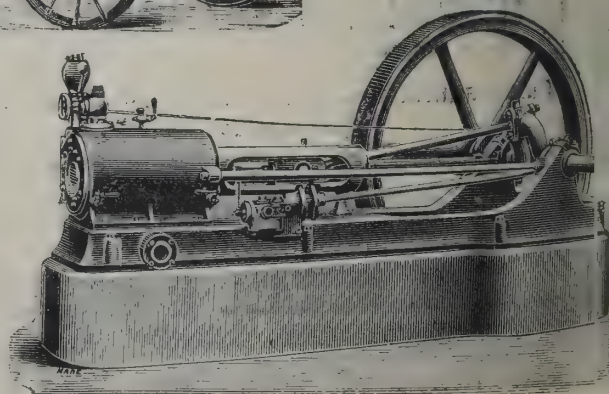
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Factory and Workshop Act, 1901, for the manufacture of electric accumulators, and to the further letter sent to you by the Chief Inspector of Factories in June, I am directed by the Secretary of State to transmit to you the enclosed draft of such regulations. The regulations proposed to be made have been communicated to the manufacturers concerned, and modifications have been made to meet as far as possible the objections taken to some of them. These modifications have been embodied in the enclosed printed copy, and the Secretary of State understands that the trade generally are satisfied that the regulations are reasonable, and will be prepared to carry them out.

In accordance with the requirements of the Statute, the regulations are now formally issued in draft, and I am to add that they are subject to further consideration. If objections of substance are taken to them by the employers, by the workpeople, or by any persons affected by the regulations, these objections will, under the Statute, be the subject of full inquiry by a competent person appointed by the Secretary of State, and the report of the person holding the inquiry will be considered by the Secretary of State before the final regulations are made. At the inquiry, employers, owners, occupiers and workpeople, and all others concerned, will be entitled to a full hearing. If, therefore, any person desires the rules to be further considered, he should lodge objection in accordance with Section 80 of the Factory Act, and in pursuance of that Section the Secretary of State gives the following notice:—

"That he proposes to make regulations dealing with the manufacture of electric accumulators, in accordance with the enclosed draft, copies of which may be obtained on application to the Factory Department, Home Office, London, or at the local office of the inspectors of factories, and that any objections with respect to the draft regulations by or on behalf of any person affected thereby must be sent to the Secretary of State within forty days from this date. Every such objection must be in writing, and must state (a) the draft regulations or portions of draft regulations objected to; (b) the specific grounds of objection; and (c) the omissions, additions or modifications asked for."

It should be understood that, as was stated in the letter of August 25, 1902, the regulations will be in substitution for the special rules for electrical accumulator works made under the Factory Act of 1891, and it will be observed that they are to come into force on October 1 next.—I am, sir, your obedient servant,

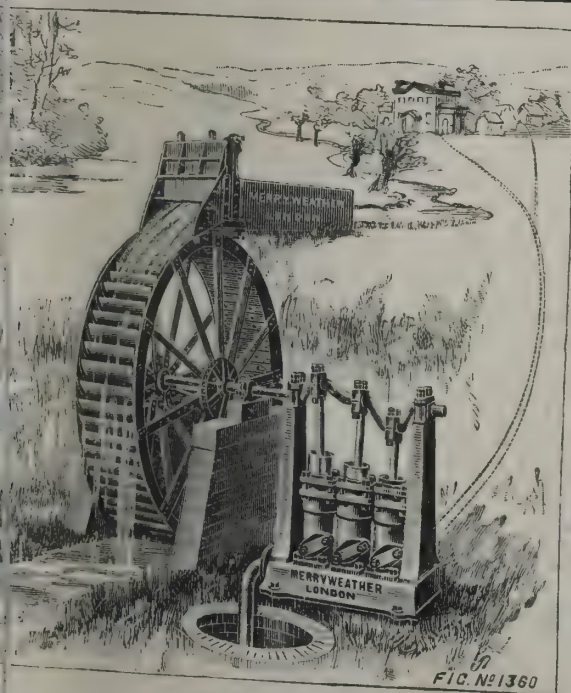
KENELM E. DIGBY.

INSPECTION OF PIPES.

INSTRUCTIONS have been issued by the Bureau of Filtration Philadelphia, for the guidance of inspectors of cast-iron pipes, special castings and stop valves. In accepting material it is said inspectors are hereby directed to exact rigid compliance with all the requirements referring to the shape, size, thickness, eccentricity and soundness of all pipes, special castings and stop valves therein specified, and with the requirements referring to the quality and tests of metal to be used. No deviation whatever from these conditions will be permitted on the part of the inspectors, and in cases where material has been rejected which, in the opinion of the contractor might be used, the exact cause of rejection must be reported promptly to the chief engineer's office in order that it may be determined whether the rejected pieces can or cannot with safety be accepted. No deviation whatever from the contract requirements will be permitted by the inspector, except upon written orders, signed by the chief engineer.

All pipes, special castings and stop valves must be consecutively numbered whether the pieces be accepted or rejected; the test bars must also be numbered and the series of numbers for each be connected with the numbers of the pipes, special castings or stop valves manufactured from the same heat. For other than 60-inch pipe there will be required from each heat two test bars for cross-breaking loads and two tensile test specimens. Not less than six test bars for cross-breaking load shall be made from every heat for 60-inch pipe and special castings. These test bars must be taken at different times during the heat in order to show the quality of the metal at the beginning, during and at the end of the heat, as represented by the material drawn into the ladles and poured into the flasks. Thus if the heat for 60-inch pipe requires three hours to pour off, a test bar should be run from the first ladle and one every half-hour thereafter during the heat until the proper number of bars are obtained. If the heat consumes six hours a cross-breaking test bar must be poured each hour, and a tensile test bar once each two hours of such heat, or in this order whatever the length of time to pour off the heat for each particular day. The test bars in each instance must be taken from the same ladle which carries the molten iron from the cupola to the flasks. If the special castings are not poured from the same cupola as that supplying material for pipe, then the test bars must be duplicated from the cupola

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supplying the material for special castings. Where the one cupola supplies the material at the same time for both pipe and special castings, the test bars will be held to apply to both the pipe and special castings.

The inspector will be required to see that the bars for cross-breaking tests, and the three additional bars cast separately and milled for tensile tests, are boxed up and forwarded to the chief engineer's office regularly each day by express. The duplicate set of cross-breaking bars and tensile test bars, which the foundry will make, will be broken and deflections determined on the testing machine at the foundry. The inspector will be required to be present when these tests are made and certify to the results, and any casting made from metal falling below the requirements of the contract, even though otherwise satisfactory, shall be rejected.

Inspectors will note that each pipe must be subjected to an internal hydrostatic pressure of 300 lbs to the square inch, for an interval of time not less than ten minutes, or longer if in their judgment it is necessary to prove that such pipe is tight and not sweating through the pores of the metal. This test must absolutely be made with every piece of pipe and special casting, excepting curves and breeches pipes, the inspection of which must be made to show absolute compliance with the other requirements of the contract, because these specials cannot conveniently be subjected to the hydrostatic test. In the case of rejection of curves or breeches pipes, because of their non-compliance with the requirements for form, uniformity of thickness of barrel, &c., if the contractor will arrange to subject such castings to the hydrostatic test, and they are found to meet such test satisfactorily, this fact must be reported to the office for such further action as the chief engineer may take with reference to such special castings.

Note the preparation of the coating bath and see that the same is kept at the proper consistency and at the required temperature, also that the castings before immersion are carefully cleaned and heated as required. See that the castings are kept in the bath long enough to become thoroughly coated inside and outside. The inspector shall see that in heating pipes in the oven before they are put into the bath of pitch and oil they are not brought to a temperature high enough to burn the material in the coating tank. The oven for heating pipe and special castings must be fired with coke or anthracite coal. The clause on "Defective Bead Ends" must be construed as applying only to pipe 48 inches and less in diameter. No provision is made for cut 60-inch pipe, and if occasion should

arise where it might be advisable to cut such pipe, specific instructions with reference to banding will be furnished.

If the foundry should not be provided with calipers having a reach of 5 feet, with a self-reading scale whereby the thickness of the pipe at any point in its length or diameter can be quickly read, he shall notify this office and such calipers will be furnished, to be returned when he has completed his work. In calipering pipe for thickness of metal it must be taken near the bell and near the spigot, and at two points equidistant between the bell and spigot, and at four points, 90 degrees apart around the circumference, and if upon this measurement there is reason to believe that the thickest and thinnest sections of the pipe have not been shown, then it will be necessary to continue until the extreme difference of thickness has been stated. In calipering pipe for diameter of bore, this should be taken at four points.

Upon inspection of special castings for all requirements with reference to thickness of flanges, barrels, dimension depths and condition of bells, sizes and condition of bevel facings of flanges, diameter of bolt circle, number and size of bolts and other ordinary conditions, a careful examination must be made for spongy spots where the flange joins the reinforcement of the casting and the bell joins the barrel pipe or casting. This can best be done with a blunt pun and hammer, and wherever such parts are suspected the pun and hammer must be applied until the inspector is satisfied the metal is solid. Spongy spots in the iron where the flange joins the reinforcement or the bell joins the barrel will be considered sufficient cause for rejection.

Where the flanges do not face up smooth and free from blow holes and sand holes, such castings will be rejected, all the facts reported to the chief engineer. In reporting castings so rejected the inspector should make a sketch of the flange and indicate on the same the location, number and size of the spots which do not face out in the lathe or in the boring machine. The back of all flanges shall be smooth, parallel to the faced surface, and furnish a proper seat for nuts and bolt head.

Submit daily reports to the office of all pipe, special castings and stop valves made under the contract, either accepted or rejected, giving the data called for in the blanks furnished. If subsequent examination of castings, after arrival upon work at Philadelphia, should indicate neglect upon the part of the inspector at the foundry it will be deemed sufficient cause for its removal.

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The Architect.

THE WEEK.

THE International Congress of Hygiene and Demography will begin on Wednesday next, September 2, at Brussels. There will be a preliminary meeting of the members on Tuesday evening at the Artistic and Library Club House. The proceedings of the Congress will be opened at the Palace of the Academies by Prince ALBERT, at 9.30 A.M., on Wednesday. The sections of the division of hygiene will meet at the Palais de la Nation at 2 P.M., and those of demography at the Palais des Académies at the same time. They will be continued until September 8. On Thursday evening there will be a "raout" at the Hôtel de Ville, on Friday a special theatrical performance, on Saturday an excursion to Tervueren, on Sunday an excursion to Antwerp, where there will be a municipal reception and luncheon; on Monday a banquet, and on Tuesday evening the King of the BELGIANS will give a "raout" at the palace. On the day after the congress closes there will be excursions to Spa, Barrage de la Gileppe and to Bourgoumont. The subjects to be discussed at the meetings will correspond with those of our sanitary congresses. The Belgian organisers have been able to secure more general co-operation than has been yet attained in England.

NATURE does not appear to be disposed to allow oblivion to retain a hold on the reputation of able painters, for sometimes by trivial accidents their names come again into light. The latest instance is RIDOLFI GUARIENTO. By misspelling his name VASARI veiled his merit. He wrote:—"A much better master than MORZONE was the Paduan painter GUARIERO, who, in addition to many other works, adorned the principal chapel of the Eremite monks of Sant Agostino in Padua; with another chapel in the first cloister also for those monks. He likewise painted a small chapel in the palace of Urbano Prefetto (capitano), and the hall of the Roman emperors where the students go to dance in carnival time was also painted by him. In the chapel of the Podesta there are, besides, events from the Old Testament painted in fresco by this master." In addition GUARIENTO, who in the fourteenth century was considered a master, painted a *Last Judgment* in the Council Hall of the Doge's Palace in Venice. It was destroyed by fire and then a commission was given to TINTORET to paint the immense picture familiar to all visitors. He was then an old man, and there is no doubt the work has suffered through restorations, so that its meaning is not entirely clear. By some it is considered as being a representation of Paradise. As the picture measures 84 feet by 34 feet, and is crowded with figures, there arises some excuse for uncertainty. It has been found necessary to clean the immense work, which is painted in oils on canvas like an ordinary easel picture, and it has had to be removed. It was stretched on a wooden framework. On the wall it was discovered that some fragments of GUARIENTO's work were still to be seen. It is concluded that the old fresco bore some analogy to the later painting, for it contains a very large number of angels, prophets and patriarchs, with CHRIST in the midst. The whole of the wall has not been freed from the framing, and it is therefore hoped that some further fragments will be revealed. The fresco was injured, as we have said, during a fire, and for that reason was superseded by TINTORET's work. In quality the fragments are equal to the best of the few works ascribed to the Paduan master.

THE appearance of the earliest wood-engraving, which has given rise to much discussion, may be revived by a pamphlet written by the Prince D'ESSLING relating to the book or series of prints exemplifying that art. It is impossible to say how remotely the origin of the art is to be traced. One authority says that in 1284 two youths of Vienna cut and printed a series of compositions treating of the history of ALEXANDER THE GREAT. But all examples have disappeared. EMERIC DAVID, who wrote so much about art, believed in the legend. The famous

"St. Christopher," of which a copy appears in all histories of wood-engraving, dates from 1423, but it does not seem to have formed part of a series. According to the Prince, there is in the Gallery of Engravings at Berlin a series called "Devote Meditationi sopra la Passione," which was printed in Venice in 1477. Three copies are known. Some inquirers believe the blocks were produced in Germany, and there seems to be no doubt that similar plates were found there. But there are some characteristics denoting an Italian origin. There is an absence of backgrounds. There are no clouds in the out-of-door scenes, and when the country is represented it has the conventionalism seen in early Italian works. Possibly the engravers assumed that their plates would be completed by the aid of hand colouring, and the Berlin example is coloured although faintly. A similar work, known as the "Speculum Humanæ Salvationis," was popular in Holland and Germany. It is said an edition was produced as early as 1442, but the most ancient edition known is dated 1483, and the majority of the existing examples were produced a hundred years afterwards. The subject is, therefore, rather perplexing. Wood cutting has, moreover, almost become a lost art, and it would be an advantage if interest in the art were revived, if only by means of controversy on its origin.

It has often excited wonder that modern residences should be erected after the form of buildings used by Romans, if not ancient Greeks, and by Mediæval monks. A Swiss manufacturer of silk has gone further backward, for he has had constructed for his own use a pile dwelling in Lake Constance at a distance of about 200 feet from the shore. It has been formed as exactly as possible in imitation of the Swiss lake-dwellings exhibited in the Zürich Museum. Around the house is a gallery 5 or 6 feet wide. The exterior of the walls is covered with osiers and lime. The floor is of plaster and the roof is thatched. Instead of glass, bladder is used. Wood of the yew has been employed as far as possible. It is a freak, but we suppose among those who ridicule it no architects are to be found.

THE name of LUCAS SUNDER, who was known as CRANACH from his birthplace, has been made familiar in England by the engravings of his portrait of LUTHER. He was a friend of the reformer and one of the witnesses of LUTHER's marriage. He was a busy man, for he was court-painter to the Saxon Electors, and accompanied one of them on a pilgrimage to the Holy Land. He might have entered into the service of the Emperor CHARLES V., but he preferred captivity with the Saxon prince. At Wittenberg he was twice appointed burgomaster. In addition to his paintings he is said to have produced more than 800 woodcuts. His countrymen continue to admire his works, and there appears to be a likelihood that CRANACH exhibitions in different parts of the Empire will be held from time to time. Four or five years ago there was one in Dresden, and one has just been opened in Erfurt. It possesses the advantage of displaying several pictures which from the time they were executed were hung on the walls of the ducal mansion at Coburg. They were consequently not much known to experts or students. The works of father and son are sometimes confounded. KUGLER, although his book was issued under royal patronage, was not able to see any of those in the palace of Ehrenberg. The best of the paintings and woodcuts are now at the exhibition. The famous *Madonna* has been sent from Weimar, and this is the first occasion it has been exhibited in public. Most of the works are Scriptural, for before the Reformation CRANACH was a renowned painter of altar-pieces. The Germans, fortunately for themselves, did not witness any clearance of works of art from their churches like that which took place in England in the time of HENRY VIII., ELIZABETH and CROMWELL. A vast number of Mediæval and later examples up to the end of the fifteenth century are still jealously preserved. The high influence which has supported the Erfurt exhibition has obtained the concession of the loan of many of the masterpieces of CRANACH. Students of German painting should not permit the opportunity of studying this master to escape them.

HATFIELD HOUSE.*

ON Saturday evening one of the greatest of English statesmen quietly passed from this life in the mansion which had been occupied by his family for nearly three centuries. This is not the place to recount the history of ROBERT ARTHUR TALBOT GASCOYNE-CECIL, third Marquis of SALISBURY. That duty has been performed not only by many English journalists, but by able publicists in other countries. He was a son of Oxford, a Fellow of one of its colleges, and since 1870 he filled the office of Chancellor of the University. The bent of his mind was, however, towards physical science, and he found occasional relaxation from the cares of State in his laboratory at Hatfield. He was generous in subscribing towards the erection of churches, and there are cottages in the village of Hatfield which show his kindness as a landlord and his desire to recognise sanitation. But it is impossible to consider him as a patron of architecture or the fine arts. The owner of so noble a mansion as Hatfield House would not have desired a more suitable residence, and we are afraid he resembled the public man referred to by CARLYLE, who spoke strongly about the insincerities which follow the fine arts. He may also have considered that the ablest modern composition in painting or sculpture would be out of place among the relics of his family.

Lord SALISBURY looked on innovation of every kind, with the exception of science, as a public danger. It seemed to him to be absurd, as he said, that men should attempt to sail their ships and build their houses by *a priori* reasoning. The rule of thumb he declared to be safer than the rule of science, for "the magic force of habit and traditional attachment will give to the rough contrivances of ruder times an ease, and an elasticity, and a practical efficiency which are denied to the newest masterpiece of the wisest schemer in Laputa." That is the sort of belief we expect from the owner of an ancient house, and which from many associations is loved as well as admired. Hatfield House is hardly a symmetrical building, but it is comfortable and commodious. From such a home the late Marquis probably derived his scorn of those who sought after symmetrical arrangements and tried to introduce "the proportions of a geometrical figure into the institutions which are to secure the happiness and carry out the wishes of capricious, inconsistent, illogical mankind." Hatfield House from time to time had been adapted to suit the needs of more modern possessors, while still preserving the main features of its character, and his Lordship considered that was the only way for the Constitution to undergo modifications; there was no necessity for a change in the essential principle. The builder of the house, if he revisited it would recognise his creation, and why should not the framers of the English Constitution be surprised with its developments? Under any circumstances, he said, change is abstractedly an evil, and we doubt whether any alteration at Hatfield was entirely gratifying to him. But we need not pursue the subject. Houses can exert an influence over their occupants, and although Lord SALISBURY was so much of a nineteenth-century representative as to find employment in journalism, and to seek fortune in the Colonies, he might have imbibed many Elizabethan ideas from Hatfield, and thus continued the theories which came down from the CECILS.

We have mentioned the house as a family inheritance for nearly three centuries. The place was historic at a much earlier period. Like Ely Place in London, it was a part of the possessions of the bishops of Ely, by whom a palace was there erected. When ecclesiastical property changed hands by order of HENRY VIII. the king reserved Hatfield to himself. EDWARD VI. made it over to his sister ELIZABETH, and during MARY's reign she was under the care of Sir THOMAS POPE at Hatfield. He endeavoured to amuse his charge on one occasion by a pageant in the hall, for which he was rebuked by the queen. When it was ELIZABETH's turn to ascend the throne she held her first Privy Council at Hatfield. WILLIAM CECIL, who was a native of Bourne, in Lincolnshire, was her Secretary of State. It is believed that during her long reign she was only once able to visit the mansion. WILLIAM CECIL might be considered as Prime Minister of England for more than

half a century. His son ROBERT succeeded him in office. He was in communication with the Scottish king, and when JAMES I. attained the English crown CECIL was allowed to remain at his post. WILLIAM CECIL had erected another residence at Theobalds, where he was often the host of ELIZABETH. JAMES also visited the house, and was so pleased with Theobalds he offered to exchange Hatfield, which was royal property, for it, and entered into occupation in 1607. The new mansion at Hatfield was at once commenced, and was completed in 1611. ROBERT CECIL, who had been successively created Baron of Essendon, Viscount Cranborne and Earl of Salisbury, did not long enjoy it, for he died in May 1612. He was not more than sixty years of age, and his success was envied by his contemporaries. But in dying he said to one of his friends, "Ease and pleasure quake to hear of death; but my life, full of cares and miseries, desireth to be dissolved."

The house has been always in the possession of its descendants. The State bedroom remains in the same condition as when slept in by JAMES I. His son, CHARLES I., was an occupant, but against his will we obtain glimpses of it afterwards from the diaries of EVERARD and PEPYS. The former, writing on March 11, 1661, records:—"I went to see my Lord of SALISBURY's palace at Hatfield, where the most considerable rarity, besides the house (inferior to few then in England for its architecture) was the garden and vineyard rarely well watered and planted. They also shew'd us the picture of Secretary CECIL in mosaic worke, very well done by some Italian hand." PEPYS visited the place on July 22, 1661, and thus describes his impressions:—"I come to Hatfield before twelve o'clock, and walked all alone to the Vineyard, which is now a very beautiful place again; and coming back I met Mr. LOOKER, my lord's gardener (a friend of Mr. EGLIN), who showed me the house, the chapel with brave pictures, and, above all, the gardens, such as I never saw in all my life, nor so good flowers, nor so great gooseburys, as black nutmegs." On two other occasions PEPYS broke his journey there; of the last he wrote:—"Walked out into the large through the fine walk of trees to the Vineyard, and there showed them that which is in good order, and indeed a place of great delight, which, together with our fine walk through the Park, was of as much pleasure as could be desired in the world for country pleasure and good air. At that time the grounds must have been open to the public as they have continued to be. It was characteristic of the kindly spirit prevailing at Hatfield that on Saturday, although the owner was dying, the fine park was not closed. In the eighteenth century there was a restoration, but his alterations failed to satisfy HORACE WALPOLE.

It is generally asserted that the design of Hatfield House came from JOHN THORPE. But no information exists respecting it among the plans and sketches forming the "Liber Veritatis" he left behind. It has also been doubted whether THORPE was living after 1607. According to Mr. ROBINSON, who wrote a history of the building, the outlay for so large a work was only 7,631*l.* 11*s.* 3*d.* Stone-cutting by hand, which was largely employed, was cheaply executed at the beginning of the seventeenth century. One of the items in the accounts runs as follows:—"For cutting of 48 stone Lyons which stande out of the open worke of masonrye about the house, for 11 taxers more, for the carving of the pewheads in the chappell, the stone pedestalls in the open worke before the house, the chimney-peece in the upper chappell, and the Corinthian heads which stand on the top of the stayre cases on the North side of the house, all which comes to 130*l.* 14*s.* 2*d.* The chimneypiece referred to is likely to be one in JAMES's room, in which Doric and Corinthian columns, various marbles, bronze heads, &c., are introduced.

The style of the building will be evident from illustrations of the south or principal front. It is one of the most successful examples of the Italian Renaissance which was then in vogue. The brickwork is still in excellent condition and the colour is most pleasing to the eye. The wings project to an extent that would have been thought excessive, but were in the sixteenth and seventeenth centuries regarded as the most suitable arrangement. The central part is raised, mainly to display the arms of the Earl of SALISBURY; the bearings are sometimes supposed to be those of King JAMES, through whose influence the

* See Illustrations.

portion of the money expended on the building was provided. The arcade along the central division imparts variety and affords a contrast for the wings. The date of the completion of the mansion, 1611, is also introduced. The northern front has been treated in a simpler manner.

The interior expresses a richness that is not coldly Classical. The elaborate carving of the newels, the panels with heads of Roman emperors, the screens and escutcheons with various quaint figures and paintings, are characteristic of a time when the advantages of the repose to be derived from blank spaces were unappreciated. The grand staircase leads to a gallery 163 feet 6 inches in length. The walls are panelled in novel forms, and from the armour, cabinets and curiosities are suggestive of a museum. There is also a fine library containing valuable books and manuscripts. A description of the manuscripts is to be found in one of the volumes of the Historic Manuscripts Commission.

The paintings in Hatfield House mainly consist of portraits of members of the family or of personages who were connected with the CECILS. The mansion and its contents have a character which is rare. In other stately homes can be found treasures which have been acquired by purchase in England or abroad; and become memorials of travel or of the taste of individual members of the family. But at Hatfield there was seemingly an indifference to objects which the world sought after. All that is to be seen is suggestive of one family and their importance in the State. The house is their own memorial. In one sense it is isolated, and there is some excuse for a scion of the house if by "the magic force of habit" he should consider himself a being apart from the majority of men. There are older families than the CECILS, and some of them have rendered many more services to England, but they are less anxious about the impressions of dignity which are made on their relatives or on strangers. All that is displayed is besides reminiscent of royal favour, and living amidst such surroundings can any one wonder the late owner conscientiously concluded that "dishonesty is involved in following public opinion"?

ONE-SIDED RECIPROCITY.

THE title of this article has a contradiction in terms, and is therefore absurd. But it serves to indicate an economic anomaly which many people are eager to preserve. In other words, there is now a desire that England should be self-sacrificing to an extreme extent in order that other countries can prosper. What we propose to say relates to the subject of foreign imports, which has a particular interest for everyone who is engaged in construction.

When JOHN RUSKIN made his first descent among the mysteries of political economy he displayed his fitness for dealing with the science by recommending the abolition of Custom-houses throughout the world. That might appear an extraordinary suggestion to come from a young man whose thoughts were believed to be engrossed by pictures. But everyone acquainted with the literature of the science is aware that vastness is its characteristic. Its votaries claim that political economy resembles mathematics in being based upon axioms that are indisputable, unchangeable and universally applicable. They are supposed to be irrespective of time or place. Free Trade was assumed to be an English discovery especially opportune in the conditions of this country. RUSKIN took a broader and more scientific view by proposing to make it universal. His formula, like many others, may have been only an affair of words. Although he was the son of a wine merchant, it is doubtful whether he was able to realise the whole extent of his proposal.

If JOHN RUSKIN had recommended the abolition, not merely of import duties, but of dues of all varieties, whether called as taxes or under other names, the necessity for Custom-houses might then become more evident. For what are import duties? If we conclude from what is said in ordinary conversation and what often appears in journals, people evidently imagine that they resemble the passenger fees imposed on strangers when they arrive in certain

foreign countries. Import duties, on the contrary, being derived from goods, are paid in the first instance by the owners, but have to be repaid eventually by those who use or enjoy the goods. They are consequently additions to the ordinary taxation of the country receiving them. An Englishman who purchases tobacco, tea, spirits, &c., from which the Custom-house officers have received the stipulated amounts, and which are insignificant if compared with the value of goods admitted as if they were native products, is practically increasing the amount of his own income tax and local rates. The extra sum he pays is, however, for the benefit of a foreign manufacturer. The remarkable spectacle is every day presented that foreigners can dwell at home in ease on the large revenues which they derive from England without in any way contributing to the financial support of this country. We are in truth saddled with a race of absentees, and they form collectively an incubus which can be with difficulty sustained.

It is hardly necessary to say that political economy provides a plausible explanation for the burthen by which it appears to be a blessing in disguise. We have had, however, a long experience in this country of what absenteeism involves and costs. The millions of money expended and the still larger number about to be expended on attempts to allay Irish discontent and to relieve Irish misery are simply the price which has had to be paid for the evil of absenteeism. If Irish landlords performed their duty and lived among their tenantry, setting them an example of industry and endeavouring to promote the common welfare, Ireland need not be more expensive to the Exchequer than England. But the political economists not only condoned the evil, but argued that when a landlord passed all his life on the Continent he was doing more good than if he had remained at home. In fact, no injury, it was asserted, could arise if he expended his whole fortune among foreigners. The rents he derived from wretched Irish tenants were said to represent foreign trade to the same amount, and the more he carried off the more was received from abroad by his tenants in return. The demonstrations were occasionally varied by figurative descriptions of how the sun drew water from the earth in one country, which was carried in clouds through the upper regions, and fell somewhere in the form of rain. The debit and credit sides of the process were assumed to be balanced with that accuracy which belongs to nature. When our trivial affairs are regarded abstractedly, they assume an appearance of evenness. From a remote point of view the earth's surface, with its mountains and valleys, may seem to form a smooth globe. But ordinary people who have to look at things more closely cannot reach those lofty elevations from which things lose their true character.

Political economy resembles algebra. Equations, we all know, can be developed and resolved with the utmost exactitude. But when we apply them to concrete substances we discover that we must make allowances which experience dictates. The political economist in the same way has his formulae, but does not always realise their abstract nature. If a man fail to find employment in his usual avocation, he is told he is at liberty to take up another. That is true to some extent, for there are organisations which may interpose obstacles. It is not, however, perceived that competency in a different calling is of slow attainment and may even be unattainable. The Germans, for instance, allow contractors to employ prisoners. But they stipulate that the prisoners must first be trained by the contractor at his expense, although by the time a man is qualified the term of the sentence may have expired, and his teacher has no claim on his services. That is the difference between theory and practice, but English professors say the Germans know nothing of true political economy. In the same way a workman is supposed by the economist to be able to go from one place to another, however long may be the journey, in search of employment. The economist does not trouble himself about questions of distance, or whether the labourer can dispense with food during his peregrinations. English political economy abounds in similar supra-mundane peculiarities. Through its conclusions the Custom-house has practically ceased to be a toll-house. RUSKIN expressed the desire that other countries would demolish theirs. But they are too wise and we stand alone in our disinterestedness. However

ridiculous it may seem, the reciprocity which was expected to extend through all civilised countries continues to be one-sided.

At the present time economists are busy in discovering reasons to prevent any effort to remedy a state of affairs which is fast becoming disastrous to this country. They can state with truth that the opening of English ports to foreign corn was an unquestionable advantage to the country. That result was, however, mainly owing to an extraordinary visitation rather than to any discovery of the economists. The famine in Ireland, through which myriads died, excited alarm in England, and it was considered wise to secure an excess of food supplies. It cannot, however, be denied that one effect of providing against a contingency which did not arise was to disturb the industrial character of the country. Agriculture declined, and a vast number of people sought occupation in other ways in spite of their unfitness. It is now impossible to restore the old condition of the country. We have to depend on other parts of the world for bread. If the duty of a shilling a quarter on corn, which was abolished in 1870, has to be reimposed, it will not cause much self-denial to the humblest labourer.

There are other things which must be looked on in the same way. Owing to neglect and mismanagement, as well as dependence on foreigners, the supply of native timber is insufficient. Indeed, all materials required in manufactures should be treated with leniency by every Chancellor of the Exchequer. Happily we possess sources of supply for many things which we should consider as corresponding with those found within English boundaries, although hitherto they have not been sufficiently recognised. The necessity for a revision of our economic relations with other countries ought to have been investigated several years ago. But it gains new urgency from the responsibility imposed on Englishmen to satisfy the legitimate claims of the Colonies. At one time in France there was a common cry, *Périssent les colonies plutôt qu'un principe*. But in those days the French, as a home-keeping race, could not realise the importance of property at a distance. At a later time they were better informed, and after the war of 1870. Cochin-China was offered to BISMARCK as a part of the price for peace. England has proved too often the advantages of those separated parts of the Empire. What is more, we can be assured that such powers as France, Germany and the United States would gladly assume all the responsibilities of satisfying the colonists in the demands which they have made to us. To political economists, who consider the highest duty of a man is to buy in the cheapest market and to sell in the dearest, the Colonies are like an investment yielding only a very low return. Empire to them means bankruptcy. But such conclusions are inevitable so long as the science is allowed to assume an authority for which it is not adapted.

To the economist a man is no more than an animal that exchanges, and barter is consequently the be-all and end-all of his existence. To gain the upper hand is supposed to be the only satisfaction in life, and in order to attain it honour and truth are too often sacrificed without compunction. Man, however, is to be considered not merely as a covetous individual complete in himself, but as a part, even if unworthy, of a great whole. He has, or should have, a country, and be willing to pay for his privilege. In an economical sense, it is true, the most successful people on the earth is the race which has been described as *les Sans-patrie*. It is the fact, however, that they also have a country in view, or at least many among them believe they will enter into possession of their old inheritance, and in that way are no exceptions to ordinary mortals. England, which yields profits for foreign producers who seldom or never visit it, is no doubt an ideal land for followers of the new finance. But it will never uphold the old reputation for being foremost in everything that is worthiest of man if it should make over its manufactures to alien trusts. It was that England which gained the Colonies, and which, we hope, will never allow them to come under a different sway. If rightly considered as an element in sociology, political economy can render service like any other science, but if permitted to continue as supreme arbiter it can only lead to danger.

Free Trade, as we have shown, was due to an emergency, and it was stimulated by a desire then strong for universal

peace. The two were considered as synonymous, and the great advocates of the repeal of the Corn Laws usually intermingled the two in their orations. But after sixty years how few countries have responded to the English appeal or have had the hardihood to imitate the English example. To do so would be to disregard the experience of countless generations. Every country has insisted on its special privileges. The word "sycophant" remains as evidence of the resolution of the Athenians, who were enlightened as well as temperate, to keep their figs for their own enjoyment, and to reward the informers who discovered the criminals who exported them among strangers. Even if the story is doubtful, it is at least evidence of an ancient belief that individual gain is sometimes to be sacrificed to the needs of the majority. There is no jealousy of the kind in England. But those with whom we trade heavily mulct whatever is offered to them. Indeed, none of our customers can imagine, unless very imperfectly, that Free Trade means fair trade on mutual conditions. The French merchant who was consulted by COLBERT about the means of advancing French trade replied *Laissez faire, laissez passer*. He would now say the liberty was not to be extended to both parties in the transaction, for one at least ought to be handicapped. That is the position in England at the present time. It is only necessary for a visitor to purchase English goods of any sort in a foreign town to discover the signification of *laissez faire* in financial sense, and if he will purchase foreign goods of similar kind in England he will ascertain how different the same idea may appear to people in various countries. Indeed, in England it is possible to obtain goods at a much cheaper rate than they are sold for in the neighbourhood of their production.

Everyday experience confirms what was stated by Mr. DEACON, C.E., in a letter which appeared in our Supplement of last week. Speaking of the importations of iron and steel from foreign countries he said, "This country is used as the dumping ground for their surplus production at prices under cost for the purpose of reducing their cost to a low figure, in order that they may make a profit in their home markets." It is indeed difficult to believe that the prices are evidence of honest trading; but in the pursuit of cheapness not only individuals, but public bodies (in municipal trading and foreign imports are inseparable), are regardless of the manner in which foreign goods are produced, and thus we find all over the country many examples which are not the result of a more satisfactory system of working, and are valueless as incitements to our own manufacturers.

It will be objected that we are one-sided in our remarks. But they are borne out by the statements of those who have visited manufacturing countries in the country reputed to be our strongest rivals. Take the case of the United States as exhibited in the reports of the Missouri Industrial Commission. We have already described the remarks of the members more immediately connected with building. They were not calculated to make Englishmen lament over their own degeneration. Coarseness and scamping were allowed to prevail in construction which no English architect would tolerate. In other trades a corresponding weakness was noticed. The work in the boiler-shops and shipyards is declared to be of not so good a quality as was done in England. The locomotives are said to be generally of an inferior character and extremely ugly. In the structural ironwork such as bridges we read, "Let everything else in that country, utility of the moment seems to be the watchword, making the country as a whole seem like a country of temporary expedients." There is much else to the same effect, and they reveal that when American works are examined by workmen's microscopes they do not possess that wonderful perfection ascribed to them in England. But there is one lesson which can be drawn from the reports, and it is thus expressed:—"Probe the American iron and steel industry sufficiently deep, and it reveals the fact that in spite of unlimited supplies of raw materials, cheap transit, latest improvements in machinery, and enormous concentrations of capital, the wealthiest manufacturers strenuously assert the continued necessity of prohibitive tariffs as the only means of maintaining and securing their home trade against outside competition." But the iron and steel industry is not the only one indebted

to Protection. We may therefore ask, If the English race at one side of the Atlantic is not afraid to adapt its policy to the circumstances of the time, why it should on the other side be considered fatal to prosperity to adopt a similar policy? The political economist may perhaps be able to devise a formula which will sanctify an alteration.

It may be gratifying to our vanity to stand alone in upholding a policy of Free Trade. We must also remember that the principle and practice have got such a hold on this country, a vast number of Englishmen have found it more profitable to become the agents of foreigners rather than independent producers. They will naturally uphold the theorists. It is not, however, to be expected that such a change as is desirable can be accomplished without causing inconvenience. But the common sense of the people must in the end realise that the present system of sacrificing our own interests to those of our rivals is ridiculous. Originally political economy was not held to be a science so infallible as never to need alteration. One of the earliest of its pioneers was DAVID HUME. His advocacy of foreign trade was carried to excess, but "nicely calculated less or more" in gain did not appear to him as the *summum bonum*. Accordingly he said, "A government has great reason to preserve with care its people and its manufactures. Its money it may safely trust to the course of human affairs without fear or jealousy. Or if it ever give attention to this latter circumstance, it ought only to be so far as it affects the former." A little of that preserving is all that is sought. Let it supersede approval of the one-sided reciprocity which threatens to become fatal not only to English manufactures, but to the English people, by a policy which is demanded by the exigencies of the present, if not of future times.

THE TOWN WALL OF STIRLING.

AT a meeting of the Stirling Town Council on the 17th inst., a memorial was submitted from the Stirling Natural History and Archæological Society against a proposal made by the burgh committee of the Town Council to sell part of the old town wall to certain private individuals in order to give a frontage to new buildings. The following is the text of the memorial:—

1. The town of Stirling is one of the few walled towns in Scotland, and nowhere else can there be seen so impressive an example of the enclosure of a town for the purpose of protection. The old records of the burgh show that in the year 1547 the town walls were rebuilt and strengthened in order to afford the young Queen Mary a safer place of residence than the capital of the kingdom, and at a later period of national alarm your predecessors showed their public spirit by devoting to the same patriotic purpose a great part of the revenue derived from pious gifts to the pre-Reformation church. While it is not asserted that any particular part of the structure still standing is the original town wall (because there were frequent reparations in former times) it is claimed that the remains are sufficiently old to show the ancient method of fortifying a Scottish burgh, and from an historical point of view are well worthy of being carefully guarded. The spirit of modern enlightened legislation, as evidenced by the Ancient Monuments Protection Acts of 1882 and 1900, is rather to preserve as much as possible such relics of the past than to destroy what can never be restored. Dividing as it does the old town from the new, and crowning the ridge on the south side of the rock of Stirling, the town wall is an ancient landmark which never fails to attract the attention and excite the admiration of visitors. It is believed the removal of the lower part of the wall and the modernising of its surroundings would detract from the interest of the locality, which your honourable body has been lately considering how best to advertise for the information of strangers. Along with its central situation and unrivalled scenery, it is the relic of bygone days in Stirling, and its historical associations, which attract the best class of residents, and also make it a popular resort for tourists, to the great advantage of its merchants and tradesmen. Any further interference with the town wall, one of the chief evidences of the antiquity of the burgh, would, it is believed, rather tend to injure than promote its commercial interests.

2. It is impossible to separate the question of the town wall from another question of public importance, namely, the preservation of the Back Walk, which is justly regarded as one of the most beautiful and picturesque features of Stirling. If any part of this favourite walk be allowed to be made a street for cart traffic, there is a danger that in the course of time the wall of it may be lost to the inhabitants as a pleasure walk, which would be disastrous alike to the amenity and prosperity

of the town. The site of the public library was specially selected on account of the quiet and retired character of the locality, but the proposal now before the Council would eventually place it in the centre of a noisy thoroughfare.

3. In the year 1878, when a similar proposal to the one now made was brought forward by the late Provost Christie, it excited the strongest indignation in the community, who felt that the precious privilege and boon which they enjoy in the Back Walk, sheltered by its old historic wall, was being sacrificed for the convenience and profit of a few proprietors. There can be little doubt that this feeling still exists, and if it had been supposed that the burgh committee were really serious in their proposal, or that such an encroachment on the public rights would be tolerated by the present Town Council, it would have found as strong expression as it did twenty-five years ago.

Your memorialists earnestly trust that the Corporation of this ancient and Royal burgh will strenuously oppose all attempts to destroy any part of the town wall or Back Walk, and will rather maintain and cherish features of the town which have been so highly prized in the past, and are so well calculated to afford instruction and enjoyment to the present and future generations.

Ex-Bailie Gourlay, convener of the burgh committee, asked that the matter be remitted back for further consideration.

Bailie Watt: Is there the slightest danger of this vandalism being committed?

Ex-Bailie Gourlay: I have no hesitation in saying there would be no vandalism although the wall was wiped out.

Treasurer Buchanan having indicated his desire to move an amendment, Provost Thomson said the feeling appeared to be against the continuance of a discussion on a subject that sought to destroy a prominent feature of the town, and he thought the convener and his committee would be well advised if they did not seriously attempt to bring before the Town Council again any minute which would propose the destruction or removal of any portion of the town wall. After further discussion, the matter was remitted to the committee for further consideration, the Provost remarking that it would give the majority who were in favour of the proposal an opportunity of repentance.

A communication was also submitted from the Glasgow Stirlingshire and Sons of the Rock Society containing the following excerpt minute of a meeting of directors held on August 13:—At a meeting of the directors of this Society held to-day, the proposal to take down the part of the old Stirling town wall to the east of the new public library was under consideration. It was unanimously resolved to make a strong representation to the Town Council against the destruction of any part of such an ancient and interesting historic relic and landmark, and the secretary was instructed to write the town clerk to that effect, and to express the extreme regret that would be felt by the members of this Society should the proposal be carried into effect.—ARTHUR FORBES, secretary."

The following letter from the hon. secretary of the Glasgow Archæological Society was also read:—

"88 West Regent Street, Glasgow:

August 13, 1903.

"Dear Sir,—I regret to hear that it is proposed to obtain powers to pull down the portion of the old historic town wall of Stirling, extending from the new public library to Wolf Craig. This Society cannot of course know the reasons which may be urged for this step, but it has more than once offered respectful remonstrance against any destruction of valued relics of the past which can never be replaced. One of the glories of Stirling is the preservation of its historical buildings, and it is sincerely to be hoped that the Town Council will take no step which may imperil any of them.—Yours sincerely, WILLIAM GEORGE BLACK, hon. secretary.—The Town Clerk, Stirling."

HASTINGS CASTLE.*

THE Castle of Hastings (Haestinga-Cæster of the Anglo-Saxons) is situated upon the remains of a natural plateau which surmounts the termination of a spur running southwards from the mainland to the seashore. On either side of this spur is a valley, the eastern one forming the bed of an ancient harbour, called by the Anglo-Saxons Haestinga-Port, and by the Normans one of the chief of the Cinque Ports. There is evidence that this harbour and the castle plateau extended further southward, on land now overflowed by the sea, and there also probably was the old town of Hastings. The castle plateau was occupied in prehistoric days by a Neolithic settlement. Remains from this settlement are to be seen in the Hastings Museum. No Roman remains have been discovered, and beyond the fact that there was a Cæster at Hastings in

* A paper read by Mr. Charles Dawson, F.S.A., F.G.S., at the visit of Le Souvenir Normand on the 21st inst.

Anglo-Saxon times, which possessed a mint, one cannot point definitely to any of the earthworks now to be seen as attributable to the Anglo-Saxon. In the autumn of 1066 King Harold probably dismantled any existing fortification before proceeding northward against Tostig, leaving the south coast wholly unprotected.

William, Duke of Normandy, landed opposite the castle of Pevensey on Friday, September 28, 1066 (the eve of St. Michael's Mass). Pevensey at that time stood upon an island surrounded by the sea and salt marshes. William proceeded to reconnoitre the land, probably in the direction of Hooe, in the neighbourhood of Hastings, and decided to remove to Hastings as a better base for his subsequent operations. His army probably marched past Standard Hill towards Hastings, and it was perhaps at this hill that his standard was unfurled first on the mainland of England.

Duke William entered Hastings on the day of St. Michael, the patron saint of Normandy, and this fact is probably commemorated by the design on the town seal, which bears the representation of St. Michael slaying the dragon, and the motto which surrounds it, "Cruel dragon, thee the power of Michael shall conquer." The dragon on this occasion was the dragon standard of Wessex, under which Harold fought the battle of Hastings. The reverse side of the seal probably depicts an exploit of the Hastings Cinque Ports squadron under Hubert de Burgh off Dover in the year 1217.

The Bayeux tapestry depicts many incidents of this visit, among others either the building or the restoration of a castellum at Haestinga-Ceaster. This probably surmounted the existing mound at Hastings Castle, and the fosse which surrounds it and intersects the plateau is probably the particular ditch that William ordered to be dug there. William's ships were berthed in the harbour at Hastings, and it was there, while the Duke was inspecting his ships, that Hugh Margot, a monk of Fécamp, came to him on an embassy from Harold. The town at this time was probably burnt and ravaged, and it was not until after the Conquest that the new town of Hastings sprang up alongside of the Norman fortress in the valley of the Bourne.

This town is known in the records as "Nova Hastings." William's camp at Hastings was admirably situated as a base of operations. The district around it is enclosed by a range of hills extending from Fairlight to Heathland (Telham Hill), near Battle, and from Battle to Boreham Bridge, near Standard Hill, and by the marshes of Pevensey. In the days when, in Sussex, the tops of the hill-ranges and rivers were the principal highways, it was important to hold possession of them. The range of hills enclosing the district of Hastings is broken only at one spot—at Battle. This probably Harold knew, since his Manor of Crowhurst was situated there, and he therefore seized upon this pass in the hill-range and occupied a plateau behind it. This move destroyed William's northern line of communications between Hastings and Pevensey. Harold's way to Hastings was, however, barred by the Norman outposts at Heathland, and it was to this hill that William brought up his troops from Hastings.

After the battle William came back victorious to Hastings, and directed that the body of Harold should be buried upon the hills at his camp by the sea. Harold was there buried beneath a heap of stones by William Malet, with an epitaph commanding his body to lie there by order of the duke and his spirit to watch over the sea and shore, as he did while living. William remained five days at Hastings after the battle, hoping to receive the submission of the kingdom. He then marched towards Dover by way of Romney, leaving a garrison at Hastings under the command of Humphrey of Tilleul, who, indeed, had had charge of the castle since it first began to rise, and whose figure is probably that shown in the Bayeux tapestry as directing the operations of the workmen.

Upon the division of the English lands by the Conqueror, Hastings and a tract of land surrounding it, called its "Rape," was given to Robert, Count of Eu, who was also castellan of the fortress. He founded within its walls the collegiate church of the Blessed Virgin Mary, which he endowed with seven prebends, held by secular canons under a dean. One of the early deans of the church was Thomas à Becket, and later on Walter Langton, Bishop of Coventry and Chancellor to Edward III. One of the prebendaries was the famous William of Wykeham. The Castle underwent many vicissitudes. It was strengthened, and a keep (Tur) built by Henry II. King John, in his flight from Prince Louis the Dauphin in 1216, destroyed the Castle, probably by fire, since traces of a conflagration remain. It was restored by Henry III. about the year 1225, but fell into decay during the fourteenth and fifteenth centuries, chiefly owing to the depredations of the sea, and to the fact that the moneys contributed towards the Castle guard were misapplied.

The Castle and Rape were successively held by the Counts of Eu, the Dukes of Brittany, the Earl of Westmoreland, the Pelham family, the Hoo family, and the latter granted it back to the Pelham family, in whose hands the Castle still remains.

The collegiate church and its prebends were dissolved at the Reformation in the time of Henry VIII. (1545). The Count of Eu used Hastings as a place of embarkation, and the provision of a ship for the lord's use in transit was made his subject of knight service of one of the tenants of the Rape. Among the historical events connected with the Castle I mention the embarkation there of William II. on his invasion of Normandy in 1094. It was on that occasion that the bishop (Anselm of Bec) rebuked the king on the immorality of his court, which Eadmer, his secretary, has so vividly described. It was here also that King John passed certain maritime laws and ordained the sovereignty of the English flag over the high seas; an ordinance which lost much of its glamour by John's subsequent flight and destruction of the Castle. King Edward I. also passed some maritime laws at Hastings. The military history of the Castle closes at a comparatively early date, but the collegiate church (or Royal Chapel, as Edward I. chose to call it) had many interesting vicissitudes, and the records throw a very interesting sidelight on the ecclesiastical history of the period extending between its foundation and its dissolution.

Architecturally the castle consists of an inner and an outer ward, the former being walled and the latter consisting of earthworks only. The inner ward contains a mound in its north-western angle, and upon this probably stood its original wooden keep. An interesting subterranean dungeon of Norman date is to be seen in this mound. There were several lines of trenches, those on the west side being now entirely destroyed. The more massive walls of the Castle are attributed to the building of Henry II.'s time, and most of the thick walls, including those on the east side, belong to the reign of Henry III. A large portion of the Castle, including the eastern wall, built by Henry II. (probably of rectangular form), has been destroyed by the sea, which formerly undermined the cliff on the south side, which has fallen down and has been washed away. The chapel within the Castle probably contained the oldest Norman masonry, but it seems also to have been improved by King John, and most of the best work now remaining is of Henry III.'s time. It consisted of a nave and cloister on the south side, a choir and chancel. There was one central tower with a spire above the choir, and two western towers, each of which may be seen. The dean's and canon's lodgings were mostly situated on the western side of the chapel. The records of the secular canons who served the church were not distinguished for their morals "corrupting the neighbouring flock," as the records say, and this subject led to frequent disagreements between the Bishops of Chichester and the Kings of England, each claiming jurisdiction over the vicars.

STONEHENGE.

A LETTER has been sent by Mr. G. Shaw-Lefevre, a member of the Commons and Footpaths Preservation Society, to Lord Edmond Fitzmaurice, M.P., chairman of the Wilts County Council, relating to the rights of the public in respect of Stonehenge. He writes:—

August 1.
Dear Fitzmaurice,—I learn from the reports in the papers that the Wilts County Council, of which you are a member, at its meeting last week arrived at two decisions regarding Stonehenge:—(1) It declined to accede to the petition of the Commons and Footpaths Preservation Society for a contribution to the costs of legal proceedings to be taken by them for vindicating the right of public access to the monument, by well-defined and long-used carriage ways of charge, and for removing the fences which have been erected across these roads, and which so cruelly disfigure Stonehenge; (2) it agreed to forward to the Government, apparently without comment or approval as to terms, the resolution made to you as chairman of the council by the owner of the land on which the monument stands to sell his interest in and eight acres of land for the sum of 50,000*l*.

With respect to (1), I may remind you that the application was made by the Society many months ago and under the impression that there would be difficulty in obtaining it from the county council or the general public full pecuniary support for the necessary legal proceedings. Later, however, when the county council a few weeks ago decided not to undertake these proceedings, on the ground, mainly, that the cost of them ought to be borne by the general public rather than by the district council, on whom they would fall if litigation were set in motion by the county council, the Society decided to make an appeal to the public for the whole of the necessary funds. This appeal met with such general support, that the great public interest taken in the question, that the public found themselves in a position to undertake whatever was necessary for determining the question of right, and that accordingly instructed their solicitors to commence proceedings without further delay (of which there has been too much in the past) the necessary legal proceedings.

As, however, it is not likely that any material progress will be made in such proceedings until after the Long Vacation, there will be ample time afforded for negotiation between the Government, yourself and the landowner concerned for the transfer of the interest of the latter in the monument. This will be a solution eminently satisfactory to the Society, relieving them from an invidious task, provided it is clearly understood that the fence which so disfigures the monument will be removed and that the terms of purchase are reasonable.

The Society thinks it necessary to make these reservations, for it has been suggested in some quarters that the fence should be maintained even after purchase of the monument by a public authority. They feel strongly that the existing fence should be removed in any case, whatever other means of protection may hereafter be deemed advisable.

They are also of opinion, in view of the great importance of the legal issues involved in this case, and the bearing which a decision on them may have on many cases of the same kind in other parts of the country, that unless the terms of purchase are much more reasonable than those now offered, it would be more to the interest of the public that the question of the right of access to the monument should be determined in the first instance.

ANCIENT ATHENS.

THE most considerable division of Attica, called the Pedion, was an oval valley belonging to the town of Athens; its whole extent did not exceed nine miles in length and six in breadth, according to the calculation of modern travellers. This soil, watered by the Cephissus, the Ilissus and the Eridan, was well adapted for the culture of olives. Vast forests of such trees, when in bloom, appeared like a white veil sustained by branches of a dusky green, and numberless birds of various kinds took shelter there as they returned in spring out of Asia. The possessors of those great plantations were the richest and perhaps the most refined among the Athenians, for such celebrated men as Socrates, Sophocles, Thucydides, Plato and Epicurus were all natives of the different villages around Athens. This district was divided equally by ten great roads, which, like the radii of a circle, tended towards a common centre until they reached the capital. On entering the city, says Dicaearchus, no person would imagine himself at Athens; the streets, he adds, are strikingly irregular, the town in general

badly provided with water, and although some houses appear more convenient than others, yet all of them are wretched. Only when arrived at the theatre, continues he, and on discovering the grand Temple of Minerva, that incertitude begins to vanish, which was produced by the excessive disproportion between the real state of things and the splendour of their reputation. The enlightened and impartial Greek who makes this acknowledgment was the disciple of Aristotle, and wrote some years after the death of Alexander. His testimony should remove, therefore, the prejudices of those pretenders to learning who still imagine seriously that no town in the universe ever equalled Athens in beauty. The constitution of a popular government opposed invincible obstacles to the pomp of the Athenians by preventing them from raising palaces in the capital. During the prosperous days of the Republic, says Demosthenes, the houses of Themistocles and Aristides, undistinguished by the smallest appearance of superiority, bore a perfect resemblance to those of their neighbours. The nobility and chose to domineer in some solitary spot or in the smallest village rather than be confounded with what they called an imperious populace, whose glory consisted in repressing all other pride but its own. It is further necessary to observe that the most ancient cities of Greece, such as Thebes, Sparta, Argos and Athens were built almost at random. In proportion as their population increased new quarters were constructed, but the ancient edifices would neither admit of order nor symmetry. On this account the towns of the Greek colonies, both in Europe and Asia, possessed infinitely more regularity; the ground was there allotted at pleasure, the public places were marked out with taste, and the streets either ran parallel or crossed each other at right angles. This really was the case at Thurium, a town in Italy founded on the ruins of the ancient Sybarez, and a plan of that remarkable place has been transmitted to us by Diodorus Siculus.

The Selected Designs submitted in a limited competition recently held for the Baptist schools, Luton, comprise a large hall with galleries around, fifteen classrooms, church parlour, infants' room, cloakrooms, &c., and the usual conveniences. The whole of the rooms will be electrically ventilated. The estimated cost is about 4,600*l*. The authors of the selected design are Messrs. George Baines & R. Palmer Baines, London.



ESKDALE COTTAGE
STOW. EDWARD C.H. MAIDMAN
Architect EDINBURGH.

NOTES AND COMMENTS.

NEAR the north-eastern boundary of Derbyshire, and close to the railway station at Hope, exploration on a small scale is now being conducted on behalf of the Derbyshire Archæological Society by Mr. JOHN GARSTANG, of University College, Liverpool. In the village of Brough some buildings are to be seen in which evidently ancient masonry was employed. The stone was supposed to be derived from a castle at Glossop, but there it was only second-hand. Parts of columns, fragments of sculpture and grooved stones could hardly be said to have been produced in Mediæval times. Antiquities on a smaller scale were turned up from time to time. It was therefore decided to try experiments in excavation. On the first day labour was rewarded by encountering the foundation walls of a Roman stronghold, which in places were only some 8 or 10 inches below the surface. Both inner and outer walls were afterwards laid bare. They vary in thickness from 3 to 5 feet, and are of grit-stone. Evidently a fort or castle, as distinguished from a camp, stood there, and it is not impossible a Roman station. What is supposed to be the prætorium in the centre has been discovered, and the four gates or openings are clearly visible. The work is being done on systematic lines. Numerous fragments of tiles, bricks and broken pottery, some evidently being portions of urns of baked clay, have been unearthed. The latest discovery is a bath.

THE Cambrian Archæological Association is not wealthy, for an addition of fifty two members in a year and a balance of 282*l.* in bank are considered as highly noteworthy advantages. But the Association is doing excellent work under economical conditions. For example, it was decided at the annual meeting to vote 30*l.* towards the excavation of Treceiri Fortress. Outside Wales that name is likely to be unknown. The defence stands on the summit of Eifi mountain in the Llyn promontory. It is assumed to date from the first or second century of our era, the relics found being of the late Bronze Age. The fortress is in a remarkable state of preservation. The outer wall is fairly compact, and the inner wall is in an almost perfect state, and has remains of a rampart 10 feet high, while within the enclosure, which embraces about $5\frac{1}{2}$ acres, there are about 140 cutiau or huts. Thirty of the huts have been excavated, and there have been brought to light two bronzes and two Egyptian porcelain beads, which it is presumed were brought over by traders, British and Roman pottery, iron knives, sling stones and spindle horns. Outside the two entrances to the fortress are elaborate works of defence, and there is one sally-port which has a stone lintel, the only known example in Wales. The exploration has been conducted under the direction of Mr. ROBERT BURNARD, Mr. BARING-GOULD and Mr. HAROLD HUGHES. As yet the work can be regarded as only partly accomplished.

THE Palazzo di Venezia in Rome, which stands at the end of the Corso, is unlike most buildings of its class, for it recalls the Mediæval castles of Italy. It was designed by GUILIANO DA MAJANO, and therefore dates from the middle of the fifteenth century. The stones employed in its construction are thought to have been derived from the Coliseum. The palace owes its origin to Pope PAUL II., who was elected in 1464. He was a Venetian, and he endeavoured to unite all Italy against the Turks then threatening Europe. It was used as a summer abode by some of his successors. The Duke of FERRARA, BORZO D'ESTE, lived in it and acknowledged himself to be a feudatory of the Pope. It also served as a palace of CHARLES VIII. of France for a short time. PIUS IV., who presided at the second meetings of the Council of Trent, presented it to the Venetian Republic in order that it might serve as a residence for their envoy and as a reward for being the first State to accept the decrees of the Council. On the downfall of the Republic the building fell into a state of decay. Then it passed into the possession of Austria and was restored. But it cannot be said at the present time that the building is complete. A part, the palazzetto, if not the whole of the large building, is likely to

be removed in order to provide ample space for the memorial of VICTOR EMANUEL, which would lose much of its effect if buildings came too near it. There is consequently one of those coincidences which occur in history. The building was erected by one Venetian patriarch, and it is doomed to fall during the Papacy of another.

UNTIL a few years ago the wall-papers produced in Great Britain were in demand by the Germans. They were preferred on account of their superior and enduring qualities to French papers. But the trade, like many others, has been declining in Germany. British papers are less admired, and unless strong efforts are made the German market will be lost. What is more important, German papers are finding their way to other countries. During five years the quantity exported has increased by 83 per cent. The imports have fallen. No doubt the papers mostly exported are of a cheaper kind, while those imported include the more expensive makes. However, the German industry has also greatly improved in the manufacture of the latter; the British manufacturers would do well to pay greater attention to the patterns here in favour. The days when the so-called "British style" was the fashion, more especially for bedrooms, are over; the fashion materially assisted the introduction and development of the recent German style called "Jugend style," though it is not likely that it will last long, for its exaggerations have a tiring effect; it has, however, given many German industries (wall-paper, hangings, furniture, &c.) a new impetus, which must prove detrimental to foreign competitors. Whether under the new arrangements by which competition is diminished the character of English papers will be upheld may be doubted.

A PARLIAMENTARY return has appeared showing the expenditure on technical education in England and Wales for the year 1901-2. The amount is large, and it is hoped the skill acquired by the students will correspond with the outlay. The total is 1,057,399*l.* 0*s.* 2*d.*, of which sum 1,008,947*l.* 14*s.* 3*d.* was expended in England. It is not possible to discover how much was laid out on building, but it is shown by the return that 21,728*l.* 8*s.* 3*d.* was expended under the Public Libraries and Museums Acts and applied to the building or maintenance of science and art schools, art galleries or museums. In the preceding year, 1900-1, the total expenditure in England and Wales was 1,051,422*l.* 0*s.* 9*d.*; the increase is therefore less than 6,000*l.*

ILLUSTRATIONS.

HATFIELD HOUSE, HERTS: SOUTH FRONT. DETAIL, SOUTH FRONT.

DESIGN FOR PROPOSED EXTENSION OF HULL TOWN HALL.

THE scheme as suggested by the conditions entails the removal of a portion of the buildings existing on the site, and the internal rearrangement of the portion retained for the council-chamber. The new buildings are planned in two groups, the centre containing public hall, council-chamber and committee-rooms, with entrances in Finsbury Gelder Street and Hanover Square, the west end of the site being occupied by the Law Courts Department. The elevations generally were to be carried out in York Mansfield stone and red brick. The estimated cost of the work was 97,000*l.* Mr. W. ERNEST HAZELL is the architect.

PAIR OF SEMI-DETACHED VILLAS, NORTHWOOD, DETACHED HOUSE, NORTHWOOD.

A SIMPLE treatment has been attempted in the design of a pair of houses in red brick and white rough-cast with overhanging wood cornices and eaves. The builder of the pair of houses was Mr. JOSEPH GREEN, of Northwood, and of the single house Mr. C. EAMES, of Watford. Mr. J. ELGOOD, A.R.I.B.A., was the architect.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE sixtieth annual congress of the British Archæological Association was opened in Sheffield on the 10th inst. The Lord Mayor (Alderman Wycliffe Wilson) formally received the members at the town hall. Mr. R. E. Leader, the president, acknowledged the welcome, and hoped the visit would arrest the busy hurry of Sheffield for a moment, and remind it that it had a past, and that it owed something to those who had gone before. It was rather difficult to get Sheffield to interest itself about antiquity. But Sheffield people had an enthusiastic attachment for their town, and he hoped the visit of the Association would induce some of them to take an interest in its archæology.

The members were then taken to the parish church. Mr. J. R. Wigfull, architect, one of the local hon. secretaries, gave a description of the history of the church. Nothing very definite was known about the early history of the church.

Manor Lodge.

Manor Lodge was next visited. It is a wreck. Well might Mr. Leader, says the *Sheffield Daily Telegraph*, repeat that Sheffield has taken little interest in things that are old. The Manor House was one of its most interesting associations with the history of the country. Mary Queen of Scots was imprisoned there for many a long year, although during most of her confinement she was a sort of prisoner-guest. But the old manor is now in a terrible state. It looks as though there had been a big fire there recently. A chimney-stack stands at one end. In another part the roof is bare, and the falling timbers look much as they would after a fire brigade had been attending to them. The place seems to be open to everybody without much care. The Duke of Norfolk is having some researches made under the direction of Mr. T. Winder, and there is a prospect of the place being looked after more carefully in future. Unfortunately there is little left to care for. The tower outside the walls of the old Manor House has been restored from its farm associations, and now forms the most interesting object of interest. Mr. Winder had prepared a paper on the history of the old house, but he wisely handed round copies so that members could study it at their leisure. In a few words he briefly explained the history of the place. Very little is certain. An alderman of the City Council went so far as to say that the only "fact" that could be stated as a fact about the place was that Wolsey occupied a room which was pointed out in the old house. Mr. Winder said the tower now standing was Mary's prison, and members climbed through the white-wash to her apartments. But there were doubting Thomases in the party. Mr. Winder himself rather encouraged the doubters by admitting that it was strange that Mary should be "imprisoned" outside the walls of the prison. One distinguished archæologist cross-examined the caretaker on the matter. It might be possible to doubt Mr. Winder, but an old man who had looked after the place for years, and knew just as much as he had been told, was readily accepted as undeniable evidence. In the old portion of the ruins was a place pointed out as a possible guard-room. It is now the abode of smells. The general secretary had to use his whistle freely before he could get all the members away from the interesting old ruin. There were so many theories to advance and upset. Then they drove back to the warmer atmosphere of Sheffield for the evening gatherings.

Sheffield's Early Records.

In the evening there was a conversazione at the town hall, on the invitation of the Lord Mayor and Lady Mayoress of Sheffield.

Mr. R. E. Leader, in the course of his presidential address, said during the thirty years that had elapsed since the British Archæological Association honoured Sheffield by holding its annual congress there great changes had taken place. A town of some 250,000 inhabitants had developed into a city of over 400,000. Its central streets had been reconstructed almost beyond recognition. The remorseless extension of its boundaries had been accompanied by a lamentable sacrifice of beautiful surroundings and the submerging of many old landmarks. The immense modern activity, evidenced by this material prosperity, was inimical to a study of archæology, and to the conservation of matters of antiquarian interest. The topography of Sheffield was the key to its history. The slopes that rose from the confluence of Sheaf with Don, buttressed by a rampart of hills and wild moorland, girdled with primeval forests, and remote, on the only accessible side, from the great de of life, formed an ideal place of settlement when might as the only right, when it was desirable not to tempt foes, and essential to be provided with secure lines of defence or retreat if they came.

Little was certain as to the British inhabitants of the district. But general knowledge of the slight impress made on the less vulnerable parts of the country by the centuries of

Roman occupation taught them that the tribe or tribes there escaped conquest. When the Romans departed the long-headed, black-haired people of whom Mr. Addy found traces were left, until in course of time another stubborn resistance had to be offered to bands of invading Germanic tribes. Slowly, painfully, and long years after more open parts of the country had been subjected, the Saxon fixed his hold on Hallamshire, driving to other regions a race which disdained to sink its freedom by commingling with the outlander. So the Saxon erected his dwellings on the slopes between Loxley, Rivelin and Sheaf, and overlooking the broad valley where these became united in the Don. But little was known of the Saxon occupation. Equally in the dark were they about the fortunes of Hallamshire when the Danes overran the land. Their chief ethnological guide there was philology, and the outstanding fact in connection with the place-names and dialect of Hallamshire was their singular freedom from that Scandinavian element which manifested itself in closely-surrounding districts. Dr. Henry Bradley had pointed out that the names included within a circle of twelve miles radius round Sheffield were almost exclusively of Anglo-Saxon origin. Their dialect, too, was a thing apart, showing robust individuality and self-centred independence. The common speech supported, though somewhat less emphatically than place-names, the evidence of pure Saxon descent.

It might reasonably be conjectured that when Dane and Saxon had agreed to live side by side, the people of Hallamshire, again benefiting by their exclusion, enjoyed a fair measure of peace and prosperity. That certainly was their state when the Norman invasion burst upon the land. At that time the township was protected by encompassing stockade and ditch. Outside were the common pastures and the plough lands; the fields apportioned among the husbandmen in those long strips of which their land boundaries retained distinct traces to this day. The Saxo-Danish lord's aula of that period had faded, leaving not a rack behind. Under a line of Norman lords, sagacious enough to conserve the existing order, though grafting on it new forms, the commonalty settled down under a rule that, if sternly arbitrary, was paternal. If it conceded no rights it insured to the obedient tacit privileges. The outward visible mark of the change was the suppression of Hallam, and the emergence of Sheffield as the seat of the lord. The De Lovetots and Furnivals set themselves to remove the reproach of there being no church except at Treton in their domain, and their mildly feudal sway was marked by other religious and charitable foundations. The inhabitants enjoyed the happiness said to be the portion of people "whose annals are blank in history's book." While other towns situated on the great lines of communication won early recognition in the form of charters of incorporation, Sheffield humbly plodded along, content with such crumbs as fell from its lord's table. That its privileges as to common lands, with some voice in regulating the parish pump, were, with a readjustment of taxation, continued from Saxon to Norman rule, was evident. The two local historians who had studied the subject most closely interpreted differently the status of the community as revealed in Lord Furnival's charter of 1297.

From 1297, the date of Thomas de Furnival's charter, to 1557, when Queen Mary, alienating public property to ecclesiastical uses, had incorporated the church burgesses, Sheffield municipal history was largely matter of conjecture. Not until 1556 did the accounts of the Burgery or Town Trust commence. Not until 1625 had they systematic records of that Cutlers' Company which, under King James's Charter, supplanted a craft guild of less formality. This mention of the Cutlers' Company led him to remark that great as had been the influences of topography on Sheffield's general history, they might be said to have created, as they had also vitally shaped, her industrial career.

Five rivers, like the fingers of a hand

Flung from black mountains, mingle, and are one.

It was these, together with abundant iron and contiguous forests, supplying unlimited charcoal for smelting, that fixed the occupation of the earlier settlers, and made them workers in iron. At what period they began to shape the iron into weapons and tools was just one of the problems awaiting illumination. The first known mention of Sheffield cutlery was dated 1340. In the list of goods issued from the King's wardrobe in the Tower (fourteenth year of Edward III.), there was scheduled, amongst other knives, "i. cultellum de Shesfeld." Next came Chaucer's oft-quoted reference, in the Reeve's tale, to the "Sheffield thwytel," which the Miller of Trumpington "bare in his hose." That was always cited as proof that Sheffield cutlery had already obtained national fame. But no one had ever explained by what process the name of Sheffield had become applied as a trade description to knives when Chaucer wrote. The Canterbury Tales were approximately contemporaneous with the Poll Tax of Richard II., 1379. That document's revelation of the humble character of the population there emphasised the dis-

abilities incident upon Sheffield's geographical position; but the remarkable thing they had to note for the moment was that among all the townfolk assessed, and among all the trades specified, not a single cutler was named. The nearest approach was one Johanne Coteler, assessed at the minimum sum of a groat. Yet they found cutlers (and prosperous ones, too) in the neighbouring Hallamshire villages of Ecclesfield, Handsworth and Tinsley. How, then, were Sheffield knives familiar to Chaucer?

The part played by Sheffield in the events of national history had been but small. The clash of arms had only twice been heard within its borders. As an obscure episode in the wars of the Barons, De Furnival's castle (if, indeed, it were a castle) was burnt in 1266. There was no doubt of the reality of the castle, which in 1644 was besieged by, and surrendered to, the Parliamentary forces. These two events, so far from impugning his demonstrations of the teachings of the seclusion of Sheffield, strengthened it distinctly, because the castle, not the town, was in both cases the object of the attack. Archæologically, they regretted its demolition, but undoubtedly the Commonwealth, in razing the castle in 1648, was wise in removing what was useless in the keeping of friends, and could not be more than an irritating thorn in the hands of foes.

The imprisonment in Sheffield, for some fourteen years, of Mary, Queen of Scots, was the only other notable point at which Sheffield touched the nation's history. Here again recurred the old note, for undoubtedly Lord Shrewsbury's fortalice was chosen, and remained much longer than any other place Mary's prison, because of the seclusion of its situation. It combined the publicity which made attempts at rescue hopeless, with the obscurity engendering forgetfulness. "Out of sight, out of mind" was Elizabeth's hope; and, whatever the effect on contemporaries, her device succeeded so far as, until recently, to blind historians to the fact that out of eighteen years of captivity, Mary spent fourteen in Sheffield.

The nestling retirement of situation once more stood Sheffield in good stead when, in 1745, Prince Charles Edward (who, if tradition could be believed, had found there convenient seclusion for secret conspiracies), poured south with his ragged following. The incursion of bare-legged Highlanders was heralded by frenzied stories of bloody atrocities marking their path. The legend that it was their favourite amusement to impale babies was so abundantly believed that the infant ancestress of an alderman who was one of their vice-presidents was hidden in a holly bush until the modern Herods should have passed. But like their ancestral Picts aforetime, the rabble passed on without turning aside into Hallamshire. So sundry timid citizens, who had incontinently abandoned hearth and home, crept back shamefacedly to endure the jeers of their bolder neighbours. Apart from any "moral and intellectual damage" caused by the raid, Sheffield's loss might be appraised at 7*d.* That was the fee paid by the Cutlers' Company to the bellman when sent round to recall the Corporation to a meeting put off "on account of the rebels being near us." No opportunity for conviviality at taverns was ever lost, and in a few months Culloden afforded legitimate excuse for rejoicings at the Cock, accompanied by an expenditure of 1*s.* 7*d.* for beadles' cockades and of 3*d.* for tobacco pipes. Thus Sheffield emerged from the crisis cheaply, and without the inconveniences that were the lot of more obtrusive towns.

That, however, was the last time when modest seclusion worked for her good. In 1674 were published a hundred maps of the principal roads radiating from London to all parts of England. Sheffield had no place in that elaborate survey of the kingdom. Its existence was contemptuously indicated by a note pointing to a by-road at Nether Haugh as leading "to Shefeild," apparently the way through Wentworth to Chapel-town. The Cutlers' Company's accounts teemed with payments for letters sent by special messengers from places on the North Road, where they were dropped by a postal service that did not condescend to come nearer. Since then public effort had been largely directed towards overcoming the disadvantages of living, as it were, in a *cul de sac*. Even when the railway era dawned, their pioneers, with strange infatuation, passed by on the other side. It took many years to get Quarter Sessions to recognise, except as a humble payer of large tribute, the existence of Sheffield.

It would, then, be readily understood why, in Sheffield itself, there were but few objects of archæological interest to attract examination by the Association. One reference in Domesday was all they knew about Waltheof's Hall. One stone, with chevron moulding, is the only proof of a Norman church. One mention alone was there of an early castle, weakened by a contemporary document in which De Furnival himself called it his house. The Shrewsbury monuments remained the most prized possession of the fifteenth-century church. The old Hall in the Ponds was, in its decadence, the only remnant of the appurtenances of a castle whose materials were utilised to rebuild a town of wood with stone. And there was the manor, whose lodge, with its tragic memories, had

been happily redeemed by the ducal descendant of its build from the decay of the larger structure. Beyond these, what had they? The oldest thing, after their rivers, was probably that goit or mill-race which, now relegated to the status of sewer, fed the lord's mill from time immemorial. But when was asked to point out the most characteristic remnant of Hallamshire of the remote past, he would indicate the survival of the ancient grinding wheels which once studded the streams. These, the most typical relics of the old industrial conditions, had by a tenacious conservatism been hidden down little changed. Happily Hallamshire in some way atoned for Sheffield's archæological poverty, and would have them much to inspect during their meetings.

On the second day the visits began with Blyth Church, about seven miles from Worksop. Dr. John Stokes said the church was built in 1088, and was altered in 1287. It was originally about 60 feet longer, but that much had been cut at the east end. On the old screens were paintings of saints, but he could not identify them. Inside its Norman character is more marked. The pillars are so massive that they divide the church into three distinct portions. There is the nave devoted to present-day services. Beyond the pillars is another church, used for overflow congregations. Beyond that is a third aisle, only much more secluded than the big pillars than an ordinary aisle, used as a lady chapel for week-day services. In the early days the monks occupied the adjoining monastery had one half of the church, and the parishioners the other half. There are many objects of interest, including the old screens, remains of frescoes on the walls, and the broken figure of a Crusader. The tower is of stone and the top is approached by the usual narrow, dark, winding staircase.

Worksop Priory.

At Worksop Priory Church Mr. Charles Lynam gave an account of its architectural features. He claimed that the eastern end of the church was built about 1125. It contained evidences of early Norman work. In the remainder of the building they saw evidences of a "progressive" spirit, and the seed of the Early English style. Mr. Lynam also described the ruins of the lady chapel, and what little remains of the old Priory.

Steetley Chapel.

Steetley Chapel is on the extreme north-eastern verge of the county of Derby. It is small and plain, with not much attempt at ornamentation. It has been restored, but the restoration has carefully preserved all its original features. When last the Association visited Steetley, in 1873, the chapel was a ruin. Mr. R. White announced that the owner was desirous of covering it, to preserve it from further dilapidation, and members expressed the hope that it would be covered, not restored. It was not until Canon Mason became rector at Whitwell that the restoration took place. That was in 1880. The Canon stated that the chapel was then in ruins. The stems of the ivy growing over it were like the trunks of trees. It was growing inside as well as out. Fowls and cats were to be found inside. The change has been complete. The ivy has gone, and everything about the chapel now suggests the most loving care. Canon Mason described the interesting symbolic carving in the chapel and on the beautiful porch.

Barlborough Hall.

Mr. J. R. Wigfull said the hall was built in the Italian style in 1583 for Francis Rodes, Justice of Common Pleas, serjeant-at-law. It has remained in the Rodes family ever since, and is now occupied by Miss De Rodes, a descendant of the founder of the house. Outside and in the house radiates the atmosphere of the sixteenth century. There has been little attempt to "improve it," while every effort has been made to preserve it. In the rooms all the furniture and fittings of those used centuries ago. The grates bear the date 1616. An old box was left by Oliver Cromwell. In another room are letters signed by Henry VII., Henry VIII., Queen Elizabeth I. and the Protector. The chimney-piece in the drawing-room carved in stone, displays the arms of Francis Rodes and his two wives, as fresh-looking as when they were placed there in 1584. Members were spell-bound by the place.

The whole of the third day was given up to visits to Beauchief Abbey, Chesterfield parish church and Winton Manor.

Beauchief Abbey.

During an inspection of the quaint little abbey church Dr. John Stokes outlined its history and traditions, adding many amusing legends. The house was of the order of Premonstratensian canons, probably founded in France by a Norman German nobleman, in 1120. Beauchief Abbey was founded by Robert FitzRanulph in 1162. FitzRanulph was concerned in the murder of Thomas à Becket, and in expiation of his crime founded the abbey which he dedicated to the murdered prelate. Dr. Stokes explained that of the original building only the tower remained, the church being built as recently as 1840.

eventeenth century. The tower, which was built in 1183, originally stood 20 feet higher than at present. When the abbey was built it was not the practice to have aisles, and it was evident that church had none. There was a peal of bells, and a local tradition was that the big bell was taken to Lincoln and is identified with "Great Tom" of the cathedral. Another local "female" tradition was that when that bell rang the milk round the district of Beauchief turned sour. In 1536 the old abbey was pulled down to build Beauchief Hall. The old tombstones and fish-ponds were afterwards inspected.

Chesterfield Church.

Mr. R. T. Gratton acted as guide. Starting at the south-west porch, he said that this porch used to form a very important part of the edifice. It was there that the secular business of the parish was transacted, and the body of anyone whose death had resulted from violence was brought there for the inquest, the jurymen sitting on the stone benches on each side. In a case of accident the body was taken inside and received Christian rites, while that of a person who had committed suicide was taken away to be buried at the junction of our cross roads. Banns of marriage were published from the porch, proclamations were read there, and when the inhabitants had no public hall or covered market it was there that they used to come to make their bargains.

The members then entered the church and took seats in the nave, while Mr. Gratton briefly sketched the history of the structure, and indicated some of its notable features. The original church was very ancient, the nave, which was built last, dating back as far as 1350. The pews at present in use were provided in 1843, but he had evidence of two sets of pews before that date. The only trace of the earliest of these was the end of a pew discovered amongst some back-boards in the chancel roof during its restoration by the Ecclesiastical Commissioners. The large west window was the work of a local working stonemason, who copied it from the north-east window of Henry VII's Chapel at Westminster Abbey. In recent years it had been filled with stained glass in memory of the late Mr. Chas. Markham. The steeple was not the only crooked thing about the place, for the nave pillars and walls were out of plumb, and there was really nothing symmetrical, straight or level. The galleries were an abortion, but Sir Gilbert Scott, who carried out the restoration in 1842-43, was compelled to retain them in order to provide accommodation for all who claimed the right to certain pews. The party next visited the chancel, examined the old pillars supporting the arch which gives access to the Calton chapel; spent some time in inspecting the monuments in the Foljambe chapel (on one of the tombs in which is deposited a "rib" of the dun cow killed by Guy of Warwick); saw the tomb in the wall on the south side, with the effigy of a priest (placed, as Mr. Gratton pointed out, the wrong way about, the custom being for priests to be buried with their feet to the west, while laymen were buried with their feet to the east); visited the chapel of the Guild of the Holy Cross; took note of the finely carved oak screens, and finally entered the vestry, where the registers, which commence in 1558, were shown to them by the clerk, Mr. Geo. Damms.

Wingfield Manor.

The party next journeyed forward to Wingfield. On arrival at the manor house, Mr. J. B. Mitchell-Withers read a paper descriptive of the place and some of the vicissitudes through which it has passed. It was built by Ralph, Lord Cromwell, in the reign of Henry VI. After pointing out the arrangement of the buildings, he said that the main entrance from the inner courtyard to the more important part of the structure was formed by a large porch, now the most perfect portion of the building, surmounted by rich perpendicular battlements, with shields of arms. The banqueting-hall must have been a splendid example of its time, and its fine bay window fortunately remained in a sufficient state of preservation to attract the admiration of all interested in art treasures. Under the hall was a vaulted apartment called "the crypt," and the exact purpose for which it was used had been the subject of much contention. The designers had been at the trouble to light it well, but by its being approached by three staircases from the building and a fourth from the inner courtyard, one could only assume that it had some important use. Mr. D. Leader suggested that it might have been the chapel. Mr. S. O. Addy declared it to be the "spence," where the wine, pices, fruit, dishes, &c., were kept by an officer of the household called the "spenser;" but having regard to the fact that it could be readily approached from the hall, the terraces, the port, the inner courtyard, the battlements, and, in fact, from the buildings generally, his (Mr. Mitchell-Withers's) view was that it was the armoury. After indicating the rooms used as a larder, the buttery and the kitchens, he said that the first floor of the building facing the inner courtyard appeared to have been one storey of considerable height, and, judging by the richness of the window and the small rose window over it,

it seemed probable that this was used as the domestic chapel of the manor house. From the kitchen up a flight of steps the inner courtyard was also reached, and adjoining were the buildings in which Mary Queen of Scots was said to have spent the portion of her captivity passed at Wingfield. It was recorded that those who remembered this portion of the building said that it was the finest portion, but there was little left now save the outer wall, with its fireplaces and windows, and traces of the inner wall. The water supply to the manor house appeared to have been originally through pipes, as they learnt that during the siege in the time of the Commonwealth they were cut, and a well was sunk in the inner courtyard.

Wincobank Camp.

The members on the fourth day devoted attention to Wincobank Hill and Ecclesfield Church. Wincobank had been specially prepared for the visit. It belongs to the Duke of Norfolk, but through the instrumentality of Mr. E. Howarth, F.R.A.S., F.Z.S., the City Council undertook the cost of opening up the old British fortifications. The library and museum committee of the Council voted 100*l.* for the purpose, and the work was entrusted to Mr. Howarth and one of his assistants. For three months he has been engaged upon the ramparts, excavating in various directions, and trying to form some exact conclusions about the interesting old earthworks. He has not found very much. Either the old Britons were careful to carry off all their valuables, or some one has anticipated Mr. Howarth in the hunt for relics of some of Sheffield's earliest inhabitants. He has found some Roman pottery, but, as Mr. I. C. Gould, a vice-president of the Association and a well-known authority on earthworks, remarked, that does not prove that the place was of Roman origin. Romans might have gone there, or pottery which the Romans left behind after they returned to their own homes might have been carried there and left.

Mr. Howarth related what he had found, pointed to old walls he had exposed, and left the members to form their own conclusions. He had clearly traced the foundations of stone walls, had found burnt stones built into the wall and had come across a quantity of charred wood. There are two ramparts, one encircling the other, with a ditch between. The theory at one time was that the Romans constructed the encampment; that gave place to the idea that ancient Britons had a town there. The conclusion advanced by Mr. Howarth was that it had never been an inhabited camp, but simply a place of refuge. The people, he suggested, lived out on the slopes and then took shelter in the encampment on the approach of an enemy.

Mr. Gould thought it was perfectly safe to say that the camp had seen more than 2,000 years of life. It might go back 500 years before the Romans came to England. As a rule the late Celts fixed their encampments on a hill with a more or less flat top. Wincobank was a ridged hill, and his experience led him to say that a camp on a ridge-topped hill was earlier than the others. The finding of bits of flint there was not of much value. They might have been part of the soil.

Mr. Leader spoke about the desirability of bringing to the notice of the town the question of preserving the encampment. If the Duke of Norfolk was approached he thought his Grace would take steps to preserve the place from the rapacious builder, who was advancing on all hands. If the visit of the Association could exert any influence in that direction it would not have been in vain.

Ecclesfield Church.

At Ecclesfield Church Mr. Leader gave the brief descriptive sketch. He referred at the outset to the death of the Rev. Dr. Gatty, who for many years was vicar of the parish, and who took a very active part in the meetings of the Association when last it visited Sheffield. The Lovetots again turned up in the history of this church. They left their mark on Sheffield and Worksop, and Ecclesfield owes its original church to them. It was built about 1141. All trace of that church, however, has gone. The present church was erected during the reign of Henry II. A priory close by was provided towards the end of the twelfth century. There had been an unbroken line of vicars since 1311. The church has been well called the Minster of the Moors. It has a very fine external appearance, with its commanding tower, its flying buttresses and quaint gargoyles. In the churchyard is the tomb of Hunter, the historian of Hallamshire. Gravestone poets seem to have thrived in Ecclesfield. Most of the gravestones have verses of some sort upon them.

Carbrook Hall.

This building was the first visited on the fifth day, where the oak panelled rooms were inspected. Carbrook Hall was in old days the residence of Sir John Bright, who made a name for himself as a Parliamentary leader at the battle of Marston Moor. Built in the early part of the seventeenth century, probably by Stephen Bright, the large panelled room on the ground floor was doubtless the scene of many a council during

the wars of the Commonwealth. Mr. J. R. Wigfull, who acted as guide, called attention to the carving over the chimneypiece, which is said to represent Wisdom trampling on Ignorance. There is another wainscotted room, with good antique carving. As is well known, the hall is now used as a tavern.

Rotherham Church.

When Rotherham was reached, and without delay, the party found their way into the parish church. Mr. E. Isle Hubbard furnished a brief description of some of the notable features of this fine Perpendicular building. There is documentary evidence that Rotherham was a manor before the Domesday survey, and consequently it is probable a Saxon church existed in those early times. That there was a Norman church at a later period is evidenced by Norman remains, and the old foundations discovered during the restoration under Sir Gilbert Scott in 1873. The present church occupies pretty nearly the site of its Norman predecessor, as is proved by the Norman capitals and bases, which had been used for the foundations of the pillars of the present edifice. By a happy arrangement, certain benches are movable, and this early work can be viewed without difficulty. That the older church was smaller than the present one was illustrated by a drawing. The earliest parts of the present church are found in the arcades in the chancel. There is a "squint," or hagiocope, and sedilia for subdeacon, deacon and priest. The tower is older than the nave, and the pitch of an old roof is discernible. The clerestory is sixteenth-century work. In the chancel the finials of the carved oak benches and the old pews came in for attention, and there was much to admire in the ceiling, lady chapel and also in the north chapel, where is the Swyft memorial with its quaint brass, and the keyboard of the organ put in by Snetzler more than a century ago. The tower was of interest, and its date is conceded to be of a period earlier than that of the nave. The remainder of the fabric is generally ascribed to Archbishop Rotherham, who died in 1500, and it is believed that he, if not the sole founder, was a principal contributor to it, and without his assistance it would have been a difficult task even for a parish as extensive as Rotherham was, and aided by the funds of a monastic establishment, to have borne the expense. A choice possession of Mr. Hubbard's is a copy of a fresco which at one time existed over the western arch of the tower. The church plate was displayed in the vestry, and included a chalice and cover of the date of 1571.

A short walk brought the party to the chapel of Our Lady of the Bridge. It is only one of three in this country, and is probably the most interesting. To find the building used as a tobacconist's shop must have been a surprise, and it is certain that the feoffees of the common lands of Rotherham, as custodians, would give considerable satisfaction if they treated the structure as an ancient monument.

Roche Abbey.

The ruins of Roche Abbey were inspected under the guidance of the Rev. H. J. Dukinfield Astley, who told how the Cistercian monks of the Middle Ages, the Puritans of the Monastic Orders, founded the abbey in 1147. He traced the history of the monastic pile until its suppression in 1539, when it was allowed to go to ruin and be used as a quarry for the neighbourhood. Then, in the eighteenth century, "Capability" Brown came along and did further mischief, leaving standing only the two fine arches of the east end.

Laughton Church.

At Laughton-en-le-Morthen the Vicar gave a brief description of the three edifices out of which the present building has been evolved. Then Mr. I. C. Gould headed the way to the neighbouring earthworks, which he described.

Sheffield's Defences.

At the evening meeting Mr. I. C. Gould read a paper on "Early Defensive Works near Sheffield." He first referred to "Carl's Wark," an ancient fortress presenting so weird a picture of loneliness and desolation as to have been likened to an immense blackened altar. How long had elapsed since this spot was fortified Mr. Gould could not say, but there could be no doubt that the name "Carl's Wark" was evidence that to the Norseman who christened it it was an archaic work belonging to the misty days long anterior to his own era. In fortresses on hill-tops, with artificial defences following the natural line of the hill, Wincobank came again under review, and another plea was put forward for those controlling the destinies of Sheffield to use efforts to secure the preservation of the hill and camp and all the slopes leading to it. If the property belonged to the Duke of Norfolk, Mr. Gould did not think his Grace would be found unappreciative of the importance of retaining this valuable relic of the pre-Roman era. Mr. J. D. Leader, speaking of the great earthwork here, and its associated vallum, said:—"So enormous is the work that by our Saxon and Danish ancestors this region was deemed

supernatural, and so ancient that its ridge became for some distance the boundary between the parishes of Sheffield and Ecclesfield." Upon these moundings doubtless stood a Brigantine city or hill fortress, barring the way to the Romans, who quietly and methodically threw up protecting banks forming their camp at Templeborough. Reference was made to the Brough fortress, about eleven miles west of Sheffield, where excavations of the camp are likely soon to be made under the auspices of the Derbyshire Archaeological Society. Mr. Gould also referred to the local tradition of Hengist, the Saxon leader's betrayal and assassination of British king Vortigern, and Hengist's subsequent defeat of Ambrosius Aurelianus, the elected king of the Britons upon Mexborough Plain, Hengist being taken to Conisborough Castle, and there beheaded. The mound and court forts at Laughton-en-le-Morthen, and forts at Tickhill, Mexborough, Bradfield and Conisborough were also dealt with, Mr. Gould pleading for the preservation of the glorious little chapel at last-named, as its late Norman carvings and mouldings were suffering from careless hands or wanton desecration.

We are indebted to the *Sheffield Daily Telegraph* for this report.

LONDON BUILDING ACT AMENDMENT.

A PAPER was prepared by Mr. Bernard Dicksee, district surveyor, for the International Fire Prevention Congress on "Fire Preventive Sections of the London Building Act," treated of the fire sections, their effect upon the construction of buildings, and the following suggestions were offered for amendment of the law where such had been found by experience to be necessary or desirable:—

SEPARATION OF BUILDINGS.

In substitution for Section 74 (1).

1. Every building shall be separated from each of its adjoining buildings by external or party walls or by party arches or party floors.
2. If any building exceeding ten squares in area be divided into two or more tenements, each having a separate entrance and staircase, or a separate entrance from the outer air, every such tenement shall be deemed a separate building and shall be separated accordingly.

SEPARATION OF TENEMENTS WITHIN A BUILDING.

In substitution for Section 74 (3) and 68.

1. In every building exceeding 100,000 feet in cubic extent separate sets of dwelling-rooms tenanted or constructed or adapted to be tenanted in different occupations shall be separated from each other by walls, partitions and floors constructed of fire-resisting materials; and from the common staircase or other approach by walls constructed of brick, stone or other hard and incombustible substances of the thickness prescribed for cross walls; and the floors of the common corridor and passages, and also the landings and stairs of the common staircase approaching thereto, shall be constructed and be carried on supports of fire-resisting materials.

No such building shall extend to more than 250,000 cubic feet, unless divided by party walls in such manner that no division thereof shall extend to more than 250,000 cubic feet, and each such division shall be provided with a separate staircase and entrance affording a direct means of approach from each set of dwelling-rooms in that division to a street or public open space.

2. In every building exceeding 100,000 feet in cubical extent containing separate sets of offices or rooms (other than dwelling-rooms) tenanted or constructed or adapted to be tenanted by different persons, the floors and the principal staircases and corridors shall be constructed of and carried on supports of fire-resisting materials, and the walls of such staircases shall be of the thickness required for cross walls.

No such building shall extend to more than 250,000 cubic feet, unless divided by party walls in such manner that no division thereof shall extend to more than 250,000 cubic feet, and each division shall be provided with a separate staircase and entrance affording a direct means of approach to a street or public open space.

SEPARATION OF TRADE PREMISES FROM DWELLING-ROOMS.

In substitution for Section 74 (2).

1. Every building exceeding 10 squares in area and used or constructed or intended to be used jointly for the purposes of manufacture or trade (whether wholesale or retail) and for dwelling shall be structurally divided into a part or parts to be used for the purposes of manufacture or trade and a part or parts to be used for dwelling.
2. The part or parts to be used for the purposes of manufacture or trade shall be separated from the part or parts to be used for dwelling by walls and floors constructed of fire-resisting materials, and all such walls shall be at least 4 inches in

sickness, or, if more than 10 feet in height and not built in cement, at least $8\frac{1}{2}$ inches in thickness.

3. All openings made in the walls and floors of fire-resisting materials shall be closed by doors and frames of fire-resisting materials bedded solid to the wall or floor.

4. There shall be provided to the part or parts to be used for dwelling a separate means of approach from a street or from an open space, from which reasonable access can be obtained to a street, and all staircases and passages forming such means of approach shall be included within the part or parts to be used for dwelling, and shall be constructed throughout of fire-resisting materials.

5. Where the building extends to more than 50 squares in area two such means of approach shall be provided separate and distinct from each other.

6. All buildings used or to be used wholly or in part for the purposes of manufacture or trade, whether wholesale or retail, shall so far as regards the part used for the purposes of manufacture or trade be subject to the provisions of the Act of 1894, and any amendment relating to the cubical extent of buildings of the warehouse class.

WIDTH OF WAY.

In substitution for Section 13 (5) first proviso and amendment, 1898.

Provided always that no dwelling to be inhabited or adapted to be inhabited by persons of the working class shall without the consent of the Council be erected or re-erected within a distance of 20 feet from the centre of the roadway, so that the height of the ceiling of the topmost storey above the roadway shall exceed 20 feet more than the distance of the front or nearest external wall of such building from the opposite side of such street; and that no building or structure shall be converted into such dwelling-house so as to exceed such height.

UNITING BUILDINGS.

In substitution for Section 77 (1) b.

Such opening shall have the floor, jambs and head formed of brick, stone or iron, or other fire-resisting and non-combustible material, and shall be closed by a pair of party wall doors at a distance from each other of the full thickness of the wall. Such party wall doors shall be of iron at least one-fourth of an inch thick in the panel, and be either hung on pivots and fitted close to rebated iron frames, and secured by bolts or other fastenings at the top, middle and bottom of each stile, or sliding doors or shutters fitted close at all edges into grooved or rebated iron frames; and such party wall doors shall be constructed and fitted in all respects to the satisfaction of the district surveyor.

Provided that the Council may by by-laws or otherwise, after consulting with the District Surveyors' Association, approve the use as party wall doors of doors of fire-resisting material otherwise constructed.

Additional to Section 77 (1) c.

Provided that the Council shall have power where they think fit to allow such opening to be constructed of a width not exceeding 9 feet.

Additional to Section 77.

Where any opening or openings have at any time been made in any party wall or in two external walls dividing buildings, the making of any subsequent opening in such party wall or two external walls shall notwithstanding be deemed to be a uniting of buildings, and no such subsequent opening shall be made except in accordance with the provisions of the principal Act or any amending Act as to the uniting of buildings.

Additional.

Where, before the passing of this Act, any openings have been made in any party wall or in two external walls dividing buildings, the owner or occupier of such buildings shall within six months of the commencement of this Act make application to the district surveyor for a certificate as to such openings. Every such application shall state the situation, area, height, number of storeys, use of each building and the name and address of each occupier and tenant, with particulars as to the occupation and such other information as the district surveyor may reasonably require. On receipt of such application the district surveyor shall make a survey of the buildings, and if the openings be found to be in accordance with the Act, shall issue a certificate to that effect; but if the openings be found to be in any way irregular he shall cause the same to be closed or built up, as the circumstances may require. In the case of openings constructed after the passing of this Act the district surveyor shall issue his certificate on completion of the opening.

The certificate shall run for two years from the date thereof, and at the expiration of that time application shall be made by the owner or occupier for the renewal, when the same provisions shall apply.

Any person who neglects to make application to the district surveyor for his certificate as aforesaid shall be liable to a penalty not exceeding 5*l.*, and the district surveyor may take all proceedings as though application had been made.

Any person who makes an opening in a party wall or in two external walls dividing buildings without giving notice to the district surveyor shall, in addition to the penalty for neglecting to give building notice, be liable to a penalty of not exceeding 20*l.*

Additional.

Where a party wall separates buildings of different heights and in different occupations such wall shall be deemed a party wall for the full height of the higher building, and no opening shall be made in any portion of the wall except in accordance with the provisions of the Act of 1894 and any amending Act as to the uniting of buildings, or as provided in section 101 of the Act of 1894.

LIMIT OF CUBICAL EXTENT OF TRADE PREMISES.

In substitution for Section 75 (First Two Paragraphs).

No building of the warehouse class or other building used or to be used either wholly or in part for the purposes of manufacture or trade, the floors of which are not constructed of fire-resisting materials, shall extend to more than 100,000 cubic feet, unless divided by party walls in such manner that no division thereof extends to more than 100,000 cubic feet. Provided that where the floors of such building are constructed of fire-resisting material the building or division may extend to not more than 250,000 cubic feet.

No addition shall be made to any existing building exceeding the aforesaid limits of cubical extent unless the building be altered to comply with this section; nor shall any addition be made to any building nor to any division thereof, so that the cubical extent of such building or division shall exceed the aforesaid limits.

CONSTRUCTION OF WAREHOUSE BUILDINGS.

Additional.

The following provisions shall (except with the consent of the Council) apply to buildings of the warehouse class and all other buildings used or to be used for the purposes of manufacture or trade:—

1. The roofs, flats and gutters of every such building and every turret, dormer or other erection thereon shall be constructed solid of fire-resisting materials, except the necessary woodwork of doors and frames, windows and frames, skylights and lantern lights.

2. The external walls abutting upon any street or upon any court or light well connected with or adjoining to such building shall, where within a distance of 20 feet from any other buildings opposite thereto, be carried up as a parapet at least $8\frac{1}{2}$ inches thick for a height of 3 feet above the roof, flat or gutter. And all windows in such walls and any skylights or lantern lights lit from such street, court or light well, shall be either fitted entirely with metal frames and glazed with wired glass, or be fitted with fire-resisting shutters capable of being closed and fastened from the inside.

3. In all such buildings exceeding ten squares in area the principal staircases shall be constructed of and carried on supports of fire-resisting materials, and shall be enclosed with walls or partitions of fire-resisting materials carried up to the roof, or where such staircase does not extend to the top of the building be covered in with a floor of fire-resisting materials. And the corridors and passages from such staircases communicating with the street shall be similarly constructed and enclosed.

PROTECTION OF METAL FROM FIRE.

Additional.

Every metal girder, stanchion, column or storey post supporting a wall or a floor or partition required by this Act to be of fire-resisting material shall be protected from the action of fire by being encased to the satisfaction of the district surveyor in concrete, brickwork, terra-cotta or metal lathing and plaster or cement without woodwork of any description. Should any person be dissatisfied with the decision or requirements of the district surveyor he may appeal to the tribunal of appeal.

WOODEN BOARDING AND PANELLING.

Additional.

1. No wooden boarding or panelling shall be fixed as a lining to walls, partitions, ceilings or soffits, in any building of the warehouse class, nor in any other building used or to be used for the purpose of manufacture or trade, nor in any shop or room used in conjunction therewith, unless all the floors, ceilings, flats, soffits, walls and partitions enclosing the room or other space in which such boarding is fixed be constructed entirely of fire-resisting materials, or the spaces between the joists or studs be filled in solid with brick, concrete or other fire-resisting materials, and there shall be no space between such wooden boarding or panelling and the wall partition.

floor, ceiling or soffit, to which it is affixed, other than the thickness not exceeding 1 inch of the battens necessary for fixing such boarding or panelling.

2. No wooden boarding or panelling shall be fixed as a lining to walls, partitions, ceilings or soffits in any dwelling-house unless the floor, wall or partition, or the ceiling or soffit (other than to a roof or flat over which there is no room) to which such boarding or panelling is affixed be constructed of fire-resisting materials, or the space between the joists or studs be filled in solid with brick, concrete or other fire-resisting materials.

INTERNAL PARTITIONS AND WALLS.

Additional.

1. All interior walls and partitions (other than partitions constructed of wooden boarding or panelling) shall, so far as regards the lowest storey at least of such wall or partition, where adequate support is available upon the solid ground or upon a brick wall, or upon a metal girder, be constructed of brick, stone, concrete or other incombustible material.

2. The spaces inside any partition constructed of timber framing shall be filled in solid with brick, stone, concrete or other incombustible material from the level of every ceiling up to the level of the top of the skirting of the storey immediately above.

ONE-STOREY PROJECTING SHOPS, &C.

Additional.

1. The roof or flat over any shop or other premises used for the purpose of manufacture or trade, projecting beyond the main front flank or rear wall of the building of which it forms part, and abutting upon a street or open space adjacent to a street, shall be constructed throughout of fire-resisting materials. And no skylight or lantern-light shall be placed on such roof or flat within 6 feet of any such wall in which there are windows, but all such skylights and lantern-lights shall be so situated as to afford a clear gangway at least 4 feet wide from such windows to the frontage abutting on the street or open space aforesaid.

2. There shall be provided to the storeys above the ground storey of such buildings a means of approach at least 3 feet in width from a street or from an open space from which reasonable access can be obtained to a street, and where such means of approach passes through, along or across the aforesaid projecting shop or premises used for manufacture or trade it shall be separated therefrom by walls, floors and partitions of fire-resisting material and shall be constructed of fire-resisting materials.

EXIT FROM CERTAIN BUILDINGS.

In substitution for Sections 63 and 68.

In every public building and in every building the upper surface of the top floor of which is more than 60 feet above the level of the street, and in every building of the warehouse class and every other building used for the purpose of manufacture or trade, there shall be provided exits from the building by means of one or more staircases communicating with the various parts of such building, constructed throughout of fire-resisting material and carried upon supports of and enclosed by walls of fire-resisting material, and the floors of all lobbies, corridors and passages communicating therewith shall be constructed of fire-resisting materials. There shall also be provided to such building an additional means of escape in case of fire either by a second staircase as aforesaid, or by an external iron staircase or bridge communicating with the ground or with some other building from which access can be obtained to the street, or by some other means that may be approved by the Council, or on appeal by the tribunal of appeal, and the Council may make by-laws under section 164 of the principal Act with respect to such additional exit.

REGULATION OF EXITS OF EXISTING BUILDINGS.

Additional.

1. In the case of any building erected before the passing of this Act that is either (a) a public building, or (b) a building the upper surface of the top floor of which is more than 60 feet above the level of the street, or (c) a building of the warehouse class or other building used for the purpose of manufacture or trade, where it is made known to the Council that the said building is so defective in its structure that special danger from fire by reason of the insufficiency or inadequacy of the means of exit may result to the persons dwelling or employed therein or frequenting or resorting thereto, the Council shall require a survey of such building to be made by the district surveyor.

2. The district surveyor shall make known to the Council any information that he may receive with respect to any structure being in such state as aforesaid.

3. For the purposes of carrying this section into effect the Council may cause such inquiries to be made respecting each building as they may think fit.

4. It shall be lawful for the district surveyor to enter into

any building or upon any land upon which any building is situate for the purpose of making a survey of such building.

5. Upon completion of his survey the district surveyor shall report to the Council his opinion as to the condition of the building and the reasonable means to be adopted to remedy such deficiency or inadequacy of exits as aforesaid, if any.

6. If the certificate be to the effect that such deficiency or inadequacy exists, the Council may cause a requisition to be served on the owner or occupier of the building requiring him to cause such works to be done as can reasonably be demanded under the circumstances of the case. Any person dissatisfied with the requisition of the Council may within twenty-one days of receipt of same appeal to the tribunal of appeal, which shall hear and determine such appeal, and may affirm, alter, or disallow such requisition.

7. At the expiration of the twenty-one days aforesaid, if no appeal have been lodged or where such appeal has been lodged, then upon the decision of the tribunal of appeal, copies of all plans and particulars of any works approved or required by the Council under this Act shall be furnished by the Council to the district surveyor within whose district the building to which such plans and particulars relate is situate, and it shall be his duty to ascertain that the same are in accordance with the said plans and particulars.

8. Upon the completion of the required works by the owner or occupier the district surveyor shall issue a certificate to the owner or occupier and to the Council that the works have been done in accordance with the requisition of the Council or the tribunal of appeal as the case may be. After the issue of such certificate no further requisition shall be served by the Council in respect of the same building.

9. If the owner or occupier fail to comply as speedily as the nature of the case permits the Council may cause a complaint to be made at a petty sessional court, and the proceedings shall be in all respects where the same are applicable thereto as in the case of dangerous structures.

TESSERÆ.

The Colonnade.

THE colonnade, when applied to a superb building, and unbroken in all its parts, isolated from all other buildings and of moderate dimensions, produces at all times a noble and striking effect that no person who has a soul susceptible of impressions of this sort can behold without a sensible and pleasing emotion. When viewed at a considerable distance the amplitude of the shade gives a distinctness to the form, a boldness of relief which, when combined with the uniformity of the wall, leaves an effect that is strongly impressive. As one approaches nearer, the structure seems to increase in magnitude, and the bold projections of the cornice and entablature, now necessarily viewed from below, produce a grandeur of effect that no person who dares to own his feelings will venture to deny. This is the only situation in which this species of ornament can be displayed to the fullest advantage, and this is the very situation in which the inventors of it have chosen to exhibit it. No wonder that men who have seen this situation have admired it; but it is truly wonderful that those who have actually seen it thus exhibited should not have been sensible at the first glance what a very different sentiment is excited by those pitiful imitations of it that they see so profusely scattered throughout all the regions of Europe, and which have been induced to investigate the cause of this peculiarity. The only circumstance that shows they must have felt the effect is the unvarying admiration with which those who have had access to view the finest remains of antiquity talk of them, and the infinite disparity that they admit exists between the modern structures in which the same style of architecture has been employed, and the same proportions most scrupulously adhered to. One characteristic excellence attacks the colonnade that seems to have wholly escaped the notice of its warm panegyrists, viz. the striking effect that a Grecian colonnade is adapted to produce when it is viewed as a whole. If we could suppose that men, when they were contriving to erect a building that was to be constructed of the most durable materials they could procure, and which were obviously intended to stand as long as the art of man could effect, had their eye the appearance which that building would exhibit when it fell at last into ruins, we should be compelled to attribute to the Grecian artists a very high degree of excellence. It will be admitted that no other structures that have hitherto been contrived by man (not the Gothic church itself excepted) can be compared with them in this respect. In the state of ruin all the characteristic defects of this style of building disappear, and those excellences which tended to render it pleasing in the perfect building acquire additional power to render it an object superlatively attractive. The bold proportions now acquire additional power, and, suspended by

ce of the cement (which age alone can give) and the interpoises that accidents sometimes provide, they assume appearance that is picturesque. The light, too, often seen between the yawning gaps of the tottering architrave above ves to these massive shades an effect that is sublime.

Architectural Models.

The model, which seems the most certain guide of all architectural representation, and which has at least the advantage being intelligible to those who are not conversant with geometrical designs, may if incautiously trusted greatly mislead. It is indeed an exact representation of the building, but nothing more; there is no positive scale for the eye, so that their fancy or inclination may exaggerate its dimensions and bestow upon it an importance the building itself will not possess. Sometimes indeed a figure is put in to serve by way of scale, but even this will not entirely guard against delusion, because the building is to be in the immediate vicinity of others, its height will be more or less affected by theirs. What may be exceedingly well proportioned in itself and have a sufficiently dignified look when considered apart from any other object may make a very different figure when it comes to be built. Feeling that it ought to have superior importance and to display itself to the best possible advantage, people take it for granted that such will be the case; therefore it is no wonder they afterwards feel something like disappointment should they happen to find the structure itself, as will sometimes happen, look little better than an overgrown model, being much lower than the houses above which they fancied it was tended to rear its height. Even they who are aware that the building will not be so lofty as those on either side of it do not always make due allowance for the difference, and the difference of effect so occasioned may greatly exceed that of positive measurement. Delusions of this kind might easily be guarded against by having cardboard elevations of a part of each adjoining building that may be fixed up against the model for pleasure. By way of further precaution, if the building is to be in a street, or in any other situation where the view of it will be limited to a certain distance, that distance should be accurately marked by scale and a card with a hole in it fixed at the natural level of the eye, so that the model can be seen through that aperture under precisely the same angle of vision as the building really will be. This would not at all hinder the model from being completely examined or viewed in any other direction, as the card or board might be attached to a thin wire made to hook on the model stand whenever required. It may here be observed that models are seldom placed properly, the consequence of which is that we generally look down upon them as in a bird's-eye view, whereby much of their proper effect is quite lost. This defect might be remedied, and the advantage of being able to inspect the roof still secured were the stands upon which models are placed so constructed as to allow them to be raised or lowered at pleasure by means of a screw and winch handle. Another circumstance which renders it prudent not to trust too implicitly to models is that they do not express colour, particularly if executed in plaster. They enter the eye by that brilliancy of decided and uniform white which not even a newly erected stone building possesses; consequently they rather show a degree of beauty which is desirable than one which is attainable; that is, what persons in general would consider to be such, although in a painter's imagination it would more frequently than not be considered a defect. Hence a model is apt very frequently to mislead the judgment, and more especially to impose upon those who, lighted with it as a miniature resemblance, think that because the model looks "very pretty," the building must of course be very beautiful. Unless the windows are real apertures, it is desirable that they should be coloured of a tolerably dark colour, since if that be not done they will have the effect of blank windows, thereby occasioning an appearance of breadth and looseness which the real structure cannot possess. In spite of these drawbacks, which by being known and kept in mind are reduced to very trifling ones, models recommend themselves by the decided advantages of their own, since they enable us to study every imaginable effect of light and shade and of perspective. Besides which a well-executed model is in itself a really pleasing and ornamental work of art.

Greek Architects as Slaves in Rome.

The Greeks, when transplanted to a foreign soil, from kings and rulers became strangers and slaves, could not in their fallen state retain the sentiments, the emulation of freedom. They naturally began to prefer such a deviation from the painful and sober adaptation of ancient forms to new uses as should insure to them present employment and that degree of marketable fame which might contribute to the acquisition of those advantages suited to their condition; nay, perhaps wishing to repay their wrongs to the Romans by combining with an open obsequiousness to the most absurd dictates whatever revenge they could still exact from them, and to repay with secret ridicule the open insult

received from them, were probably even anxious in lending them their architecture to employ it in the manner most inconsistent with its original principle, most calculated to prove and expose the ignorance and bad taste of their employers. Thus what remained of Grecian architecture became completely degenerate in the Roman territory. In the former the column was a more characteristic and essential feature than the wall, since it supported a greater proportion of the weight, seemed rooted in the deep recesses of the soil like the oak in its native forest, and rose in single stem, continuous in substance and robust in frame, from the surface of the earth to the entablature. Notwithstanding its great individual strength and diameter, it was so approximated to many more of a similar nature, which shared with it the burden of the superincumbent masses as to give the greatest solidity to the edifice, and to gratify the spectator with the richness and variety of form, combined with the appearance of vigour and durability. In the latter, a continuous wall, capable not only of supporting great perpendicular weight, but of enduring considerable oblique pressure, was an indispensable requisite for the continuous vault, and naturally became an object of greater consequence and attention than columns. These, indeed, needed only to adorn its nakedness, placed too far from the main building to be embodied with it or to add to its strength, instead of rising directly from the plinth or stylobate, were separated from it, and raised upon a clumsy square block which, under the name of pedestal, seemed interposed to interrupt the connection between the shaft and the floor; by its size to narrow the passage, and by its protruding angles to inconvenience or to hurt the passengers. Frequently, as in the triumphal arches of the emperors, that pedestal became so lofty that instead of raising the columns on a sort of cothurnus, it lifted them on a positive stilt, and not only cut off their connection with the ground, but made them appear as if tottering in air. Where the pedestal occupied a greater space between the soffit and the stylobate, less remained for the column, which became shorter, thinner, weaker, requiring instead of affording support; its apparent weakness exceeding its real debility like an appendage not wrought for the building, but borrowed from some smaller structure, and only carried to the requisite height by the aid of materials which did not belong to it. As they became weaker, like the limbs of an unhealthy child, they were stretched to a greater distance from each other, and were no longer capable of bearing an entablature diminished to their own proportions. In order fully to confirm their inutility, they were not made to carry any such, but of an architrave directly supported by the wall itself (a continuation of that wall, indeed, under a different denomination), such projections or knots as did not exceed their own diameter, and appeared fitter for the purpose of steadying the useless pillar than the pillar for that of carrying an unmeaning entablature. The effect produced was that of a second capital mimicking the first; confusing its form and destroying its appearance, causing as great a multiplication of breaks and angles and of clumsy mouldings as arises from the equally useless pedestal underneath. At other times, again, to show the inutility both of the column and the entablature still more evidently, both were, as in the recesses of the Pantheon, placed within an arch totally independent of either, so that the column carrying the entablature, but the entablature carrying nothing, the former only appeared for the purpose of supporting the latter, and the latter for that of tying together the former.

Hindu Columns.

Indian pedestals and bases are made more systematically, and afford by far a greater variety of proportions and ornaments than the Grecian and Roman. In European architecture the forms and dimensions of the pedestals and bases are fixed by invariable rules with respect to the orders in which they are employed, but in the Indian the choice is left to the option of the artists. The capitals of the Grecian columns invariably mark the distinction of the several orders; those of the Indian are varied at pleasure, though not without regard to the diameter and length of the shaft, and the forms of the plainest of them, though they have in reality nothing in common with the Grecian orders, are found at a distant view to bear some resemblance to the Doric and Ionic capitals, but those of a more elaborate kind are sometimes so overloaded with a sort of filigree ornaments as to destroy the effect of the beautiful proportions of the whole. The Egyptian capitals, on the other hand, are formed into elegant vase shapes, decorated with the stalks, leaves and blossoms of the lotus, and occasionally with palm leaves, which latter ornaments are supposed to have given the first idea of the Corinthian capitals. And in some specimens the Egyptian capital is composed of the representation of the head of the goddess Isis. The entablature of the Indian order admits of little variety, as well in its composition as in its relative proportions, whereas the same member in the Grecian and Roman architecture is varied for each order both in form and magnitude. The massiveness of

the Indian entablature offers a striking contrast to the lightness of the Grecian, but the richness of the former may be said to be unrivalled. In the existing treatises on Hindu architecture no mention is made of anything like a substitution of human figures for columns to support the entablature, but the shaft is directed to be adorned with the figures of demons and animals, yet various examples are to be met with in which human figures as well as representations of animals are employed in bold-relief in the sides of pillars in temples and porticoes, but by no means like those found in Egyptian architecture. The antiquity of this invention in India is not determined, but the Grecian architects refer the origin of their caryatides to the commemoration of their captivity of the Caryan women, while others assert that it was derived from an Egyptian source.

Union of Arts in Italian Buildings.

In Italy there scarcely exists any fine monument of architecture which is not, thanks to those who were its authors, the result of the combined knowledge and practice of different arts. The reason of this union of talents, formerly so common, but now so rarely met with in one man, is that formerly the common point of instruction in these different arts was the study of nature, manifesting to each, according to its style and under its direct or indirect affinities, the physical or moral qualities of this great original. Everyone read and appropriated to himself the laws and effects of unity and variety, and understood the harmony of form, outline and proportion. Instructed by and imbued with these grand principles, every artist by the practice of drawing could apply them to the different arts as to different dialects of the same language, and knew how to pass from one form to another without changing anything in the groundwork of the skill which enabled him to design each. Thus it was often seen that an artist, compelled by chance to the exercise of an art of which till then he had no experience, suddenly developed aptitude in it, which would now appear to be the result of the devotion of an entire life. The history of architecture furnishes a multitude of examples of this kind. Vasari, in his "Life of Baccio d'Agnolo," remarks that this art, more peculiarly than any other, has been exercised by a great many men who had not made it a special study, and who were even ignorant of its technical terms. To which this writer, who was himself both a painter and architect, adds "that no one could excel in architecture without sound judgment, a knowledge of drawing or the habitual exercise of painting and sculpture. The cause of the facility," continues Vasari, "with which painters and sculptors learn architecture is that, both from the affinity of statues with edifices and the necessity of employing architectural compositions in pictures, they are forced to make themselves acquainted with this art and to study its relative proportions."

Sebastian Serlio.

The study of Vitruvius inspired Serlio with an eager desire of obtaining greater insight into the practice of the ancients by examining and making drawings of what remained of their structures—at that time the only method by which any knowledge of them could be acquired, for although many buildings were then to be seen in a perfect state in comparison with what they are at present, that advantage was counterbalanced by there being no accurate delineations published for the instruction of those who could not visit the edifices themselves. After staying some time at Pesaro, Serlio proceeded to the Venetian States, where he employed himself in examining and measuring the amphitheatre and bridges at Verona. He subsequently visited both Vicenza and Venice, erected a theatre in the former city, and in the other made designs for the church of San Francesco delle Vigne. During his residence in the last-mentioned city he became acquainted with San Micheli, Sansovino and other architects of note, and he himself would doubtless have found employment there, being noticed by the Doge Andrea Gritti, if his passion for exploring antiquities had not induced him to pass over to Pola, of whose amphitheatre and other Roman remains he was the first to publish any architectural account. On his return he examined those of Ancona, Spoleto, &c., and afterwards those of Rome, many of which are introduced as illustrations, but certainly not as embellishments, in his work on architecture, they being there represented in most coarsely-drawn and executed woodcuts. It was while he was at Rome that he composed his treatise on the five orders, for a copy of which he was complimented by Francis I. with 300 gold crowns. Invited to France by that monarch in 1541, he was there appointed architect at the palace of Fontainebleau, and was also commissioned to undertake the court of the Louvre, but generously declined in favour of Lescot, whose designs he recommended to be adopted as being superior to his own. After the death of his royal patron he retired to Lyon, where he remained for some time in exceedingly straitened if not in indigent circumstances, but he returned again to Fontainebleau, and died there in 1552 in his seventy-seventh year. His reputation rests chiefly upon his writings,

"Opere di Architettura, Libri Sei," which display more taste and learning than taste, and which, highly as they were at the time esteemed, possess little real value at the present day.

THE NATIONAL GALLERY.

THE following additions have recently been made to the National collection:—Sir William Agnew has presented the portrait of Mrs. Hartley and her child in the character of "Nymph with the Infant Bacchus," which was at the exhibition of the old masters at the Royal Academy in 1896. It is placed in Room XVIII. in the Gallery in Trafalgar Square. A portrait of an elderly man by Lucas Cranach the Elder has been presented by Mr. J. P. Heseltine, one of the trustees. It is hung in Room XV.

A picture by Zurbaran has been purchased from the collection of the late Louisa Lady Ashburton. It represents a lady in the character of St. Margaret; the dragon, the emblem of this saint, is seen in the background. It will shortly be hung in Room XIV.

GENERAL.

About 150 Students and some professors of Russian Universities arrived at Athens on Monday with the object of visiting the Greek antiquities. The Government ordered the museums to be open the whole day, and instructed the municipal inspectors to act as their guides.

Building Permits for 1,274 houses in Berlin have been granted between January and June this year. The number of shops erected during that period is 550.

Lambeth Palace Library will be closed for the recess on the 28th inst. The entire series of the Society of Archaeological Society has lately been acquired.

A Chancel Screen is to be erected in the church of Middleton Tyas, near Richmond, Yorks, as a memorial. The design has been prepared by Messrs. J. P. Pritchett & Co., architects.

The American scientific expedition has been compelled to abandon its plan of extensive excavations at Babylon, which preparations have been made for the last three years. The abandonment is due to the persistent refusal of the British Government to permit the American Society to carry on such work, although it has readily authorised excavations by other nations.

Mr. E. Clutton, sole arbitrator in the inquiry which was held recently at the Surveyors' Institution—"Blundell and the Secretary of State for War"—has issued his award. The proceedings had reference to 40 acres of sandhills a few miles from Liverpool, and also to 700 or 800 acres of foreshore lying in front of them. The claim approximated to 550 acres. The land was compulsorily acquired by the War Office for the purposes of a fort for gun-firing practice. The arbitrator's award amounts to 17,642l.

In the Cathedral Library at Peterborough amongst MSS. and records bequeathed by Bishop White Kennett is a small volume of the fourteenth century containing copies of ancient charters relating to the borough has been found. The book is endorsed by Bishop White Kennett as having been bought by him at Cambridge in 1714. A deed was found slightly fastened to one of the pages, and was discovered to be an original charter of Edward the Confessor to the Abbot of Burgh, dated 1060. The charter, which conveys the manor of Fiskerton to the Abbot Leofricus, is in excellent condition.

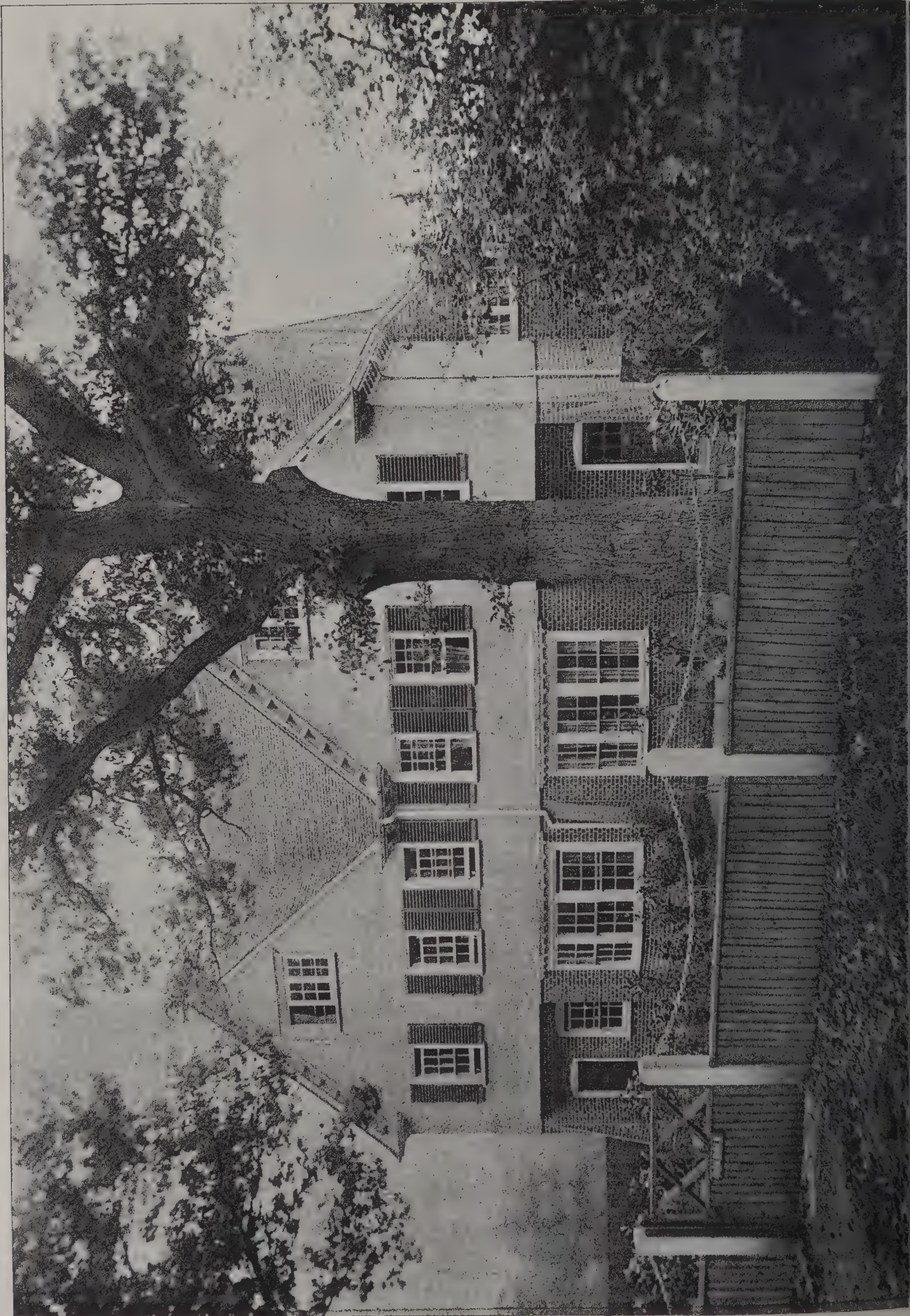
The First Prize in the competition for the Limiting Carnegie Free Library has been awarded to Mr. George Beckett, of Dublin, and the second to Mr. G. P. Sheridan, of Dublin, whose design has been adopted for erection by the trustees.

Dr. W. E. Corfield, the sanitary adviser to His Majesty's Office of Works, died on Wednesday last at Marstrand, Sweden. All his inventions have been entrusted to Messrs. Thomas Crapper & Co., Marlborough Works, Chelsea.

Mr. T. S. Robertson, architect, of Dundee, from whose designs St. Margaret's parish church, Arbroath, was built, has been commissioned to complete the tower, and the tender by Messrs. Ramsay & Gordon has been accepted.

A Petition having been forwarded to the Postmaster-General from residents in Alexandria, N.B., against the proposed site in Bank Street near the railway station acquired some time ago by the Post Office authorities, and a counter-petition in favour of the site having been also forwarded, the Postmaster-General has decided the matter by intimating through his secretary that the site already selected will be adhered to and that building operations are about to commence.

UNIVERSITY OF THE
SOUTH ALABAMA



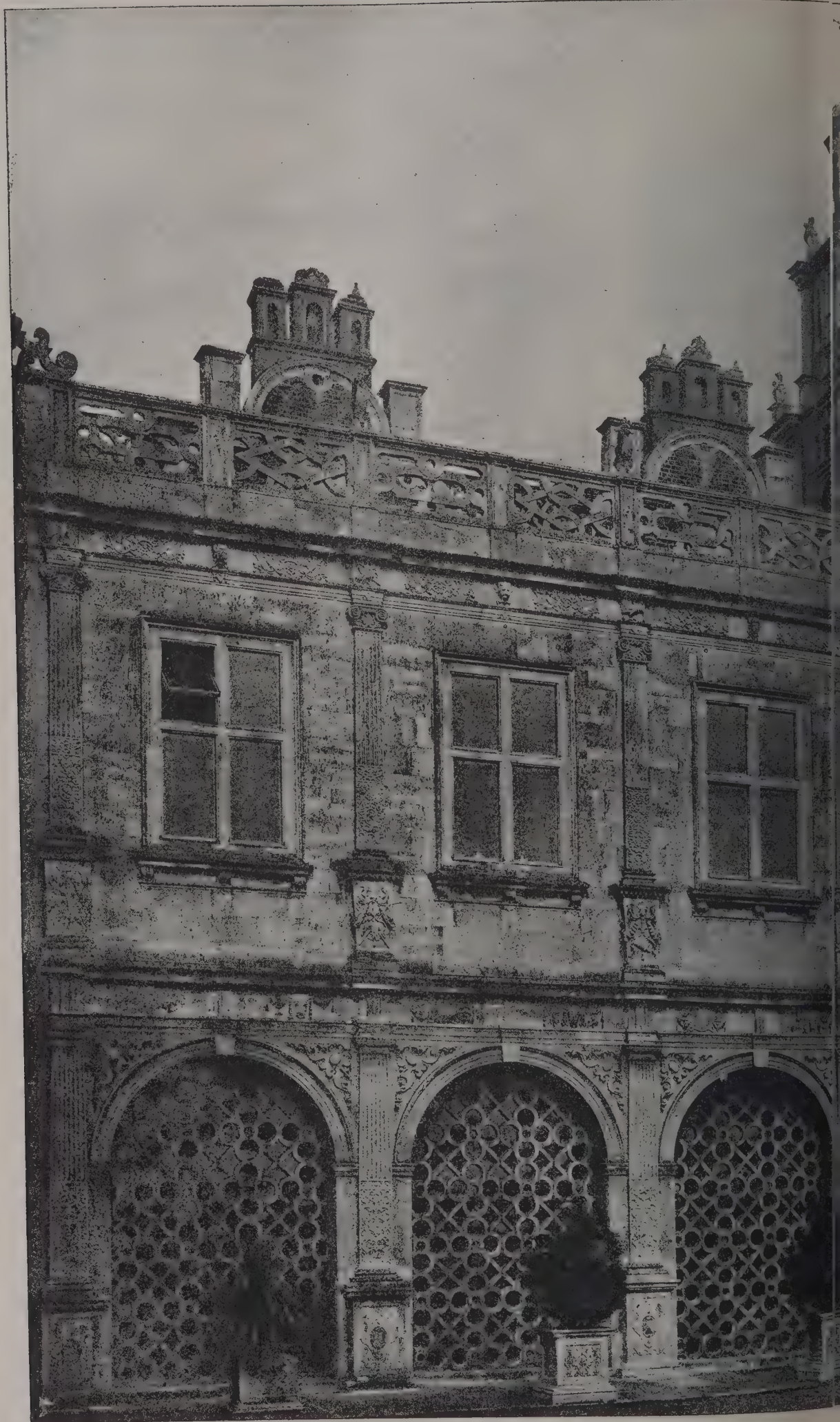


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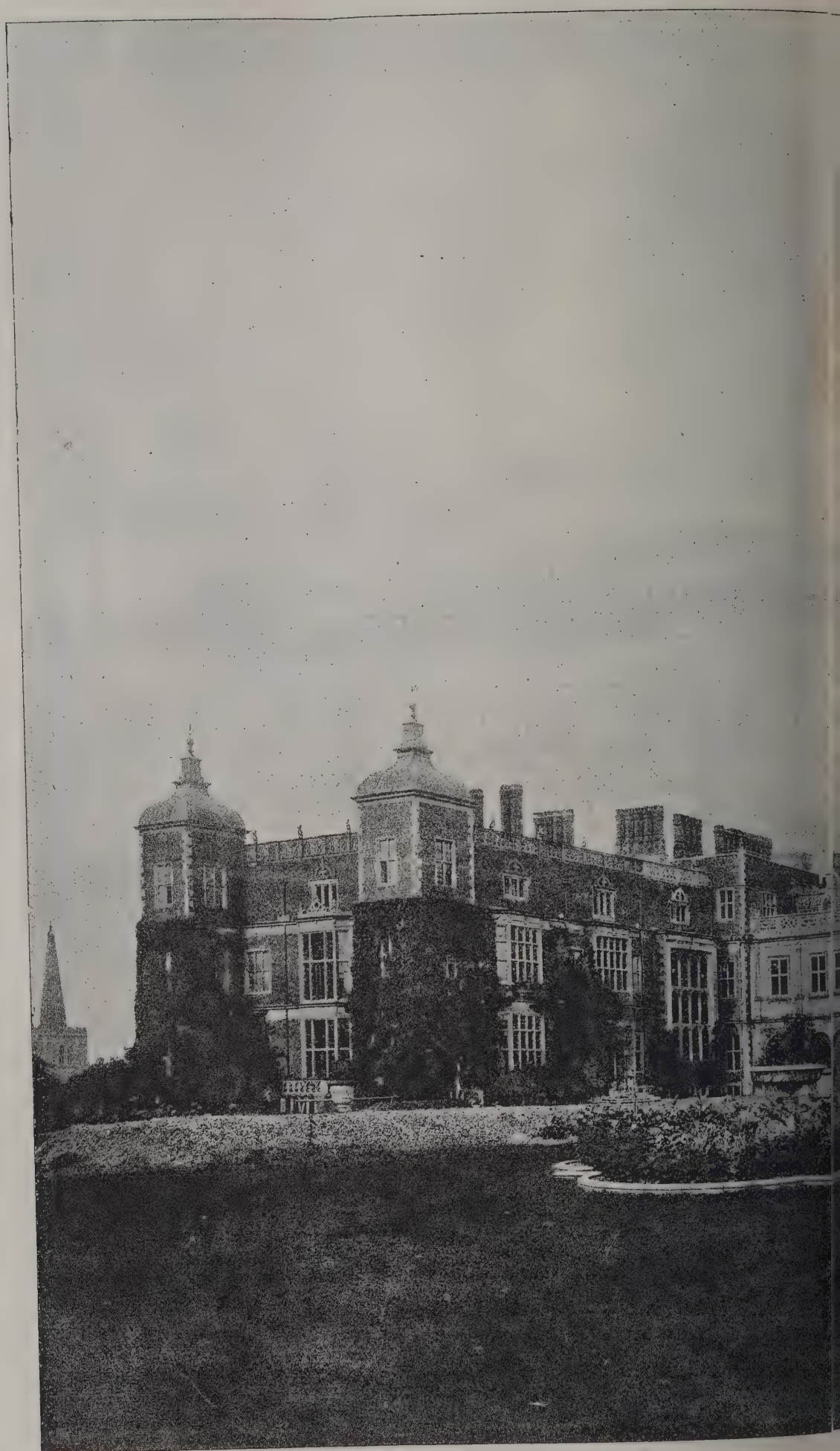
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EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

AYLESFORD.—The Maidstone Town Council invite designs and estimates for a stone single-span bridge over the Medway at Aylesford, Kent. Premium 100 guineas offered for design signed premier place. Details can be obtained on application to the Town Clerk, Maidstone.

BLACKPOOL.—Aug. 31.—Competitive drawings are invited for new offices to be erected at the corner of Sefton Street and Victoria Street, Blackpool. The architect whose design is selected will be appointed to carry out the work. The competition is limited to architects having offices and practising in the water area of the Fylde Water Board. Mr. C. J. Dawson, 34 Victoria Street, Blackpool.

BRIGHTON.—Nov. 9.—Designs are invited for a new hospital. Premiums of 50l., 30l. and 20l. will be paid to the second and third premiated designs respectively. Papers up to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Brighton and Hove Hospital for Women, 76 West Brighton.

DUBLIN.—Sept. 30.—Designs and specifications wanted for workmen's cottages, semi-detached or terraces, each cottage not to exceed £100. The successful plan to become the property of the company on payment of £20. Mr. Francis B. Ormsby, Great Southern and Western Railway, Kingsbridge Terminus, Dublin.

ELHAM.—Oct. 7.—For sewage disposal of the village of Saltwood. Report, plan and estimate of probable cost. Premium 30 guineas. Further particulars, Mr. R. Lonergan, 11 Cheriton Place, Folkestone.

HEYWOOD.—Sept. 14.—Competitive designs are invited for a library building to be erected in Church Street at a cost of 4,500l. Premiums of 30l., 20l. and 10l. will be awarded for designs adjudged of sufficient merit and placed first, second and third in order respectively. Mr. J. Ainsworth Settle, Municipal Buildings, Heywood, Lancs.

HOWDEN.—Sept. 12.—Plans and estimates are invited for improving and extending the sewerage of the contributory place of Howden. The successful competitor will be awarded a sum of 15l. and the usual commission for superintending the execution of the works. Mr. Henry Green, clerk.

IRELAND.—Sept. 30.—The Great Southern and Western Railway Company offer a prize of 20l. for the best design and specification of workmen's cottages, built either semi-detached or in terraces. Mr. Francis B. Ormsby, secretary, Knightsbridge Terminus, Dublin.

LEYLAND.—Sept. 26.—Plans are invited for the laying-out and development for municipal and other purposes of about 11,902 square yards of land in Church Road and Sandy Lane, Leyland, Lancs. A premium of 15l. 15s. is offered to the author of the plan considered to be the best design. Mr. M. H. Wilkinson, surveyor, 21 Towngate, Leyland.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75l. for design placed first, and one of 25l. for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100l., 50l. and 30l. respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

SCOTLAND.—Sept. 22.—Competitive plans are invited for the erection of a hospital and offices. Conditions of the competition and full particulars may be obtained from Mr. J. E. Shaw, clerk to the Lunacy Board, County Buildings, Ayr.

CONTRACTS OPEN.

AYLESBURY.—Sept. 1.—For repairing, painting and decorating the town hall. Mr. J. H. Bradford, surveyor, Town Hall, Aylesbury.

BALBY-WITH-HEXTHORPE.—Aug. 28.—For additions and alterations to Hexthorpe mixed school. Mr. F. W. Masters, architect, St. Vincent, Doncaster.

BARKING.—Sept. 8.—For the erection of eighteen four-roomed cottages and twelve six-roomed cottages, in two blocks respectively, adjoining the workmen's dwellings in King Edward's Road. Mr. C. J. Dawson, architect, East Street, Barking.

BATLEY.—Sept. 4.—For additions to the town hall. Messrs. Walter Hanstock & Son, architects, Branch Road, Batley.



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BATLEY.—Sept. 5.—For the erection of an approach tower to the Independent Methodist chapel, Cambridge Street, Batley. Mr. O. J. Kirby, borough surveyor, Branch Road, Batley.

BERMONDSEY, S.E.—Sept. 3.—For the construction of offices, &c., at the town hall, Spa Road. Mr. R. J. Angel, borough surveyor, Town Hall, Spa Road, S.E.

BERMONDSEY.—Sept. 8.—For the erection of buildings in connection with extensions to the dust-destroyer house, electric-light station, boiler-house, &c.: Mr. R. J. Angel, borough surveyor, Town Hall, Spa Road, S.E.

BIRMINGHAM.—Sept. 10.—For the construction of a retaining wall at Bordesley and of a culvert near Olton. Mr. G. K. Mills, secretary, Great Western Railway Company, Paddington Station.

BIRMINGHAM.—Sept. 16.—For the erection of engine and boiler-houses, including seatings for five Lancashire boilers and the construction of a new flue, adjoining the present pumping station at Monument Lane, Edgbaston, Birmingham. Mr. Edward Orford Smith, town clerk, Council House, Birmingham.

BRADFORD.—For the erection of the industrial hall of the Cartwright Memorial Exhibition, Bradford (1904). Messrs. Ledingham & Edwards, joint-architects, District Bank Chambers, Bradford.

BRIDLINGTON.—Sept. 2.—For repairs at 1 Victoria Terrace. Mr. A. E. Matthewman, town clerk, Town Hall, Bridlington.

BRISTOL.—Aug. 31.—For the erection of one or two warehouses at Cumberland Basin. Mr. W. W. Squire, engineer, Engineer's Office, Underfall Yard, Cumberland Road, Bristol.

BRISTOL.—Sept. 10.—For the erection of school buildings in Hanham Road, Kingswood, near Bristol, to accommodate 990 children. Mr. John Mackay, architect, Richmond Place, Kingswood, near Bristol.

BURTON-IN-LONSDALE.—Aug. 31.—For the erection of a Wesleyan Sunday school and classroom at Burton-in-Lonsdale. Mr. Robt. Richardson, Halfway House, Cantsfield, Kirkby Lonsdale.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CANNOCK.—Sept. 7.—For the construction of an iron and wood infectious disease isolation hospital, comprising administration and mortuary blocks and wards to accommodate sixteen patients. Mr. Herbert M. Whitehead, surveyor, Ince, near Stafford.

CANNOCK.—Sept. 8.—For certain works at the workhouse, Cannock, Staffs, in connection with (a) rebuilding and addition to the laundry and washhouses, and (b) the provision and fixing of steam-engine and laundry machinery. Mr. A. To Veall, architect, 84 Darlington Street, Wolverhampton.

CARLISLE.—Sept. 1.—For the erection of twelve houses, Margery Street, Carlisle. Messrs. Johnstone Bros., architects, 63 Lowther Street, Carlisle.

CHELMSFORD.—Aug. 31.—For alterations and additions to the laundry at the union workhouse. Messrs. Chancellor & Son, architects, Chelmsford.

CHESTER.—Aug. 31.—For the erection of twelve cottages on part of the Tower Field Gardens, Dee Basin Road, Chester. Mr. J. H. Dickson, deputy town clerk, Town Hall, Chester.

CLITHEROE.—For the erection of a Catholic church, Clitheroe, Lancs. Mr. J. C. Howard Sandbach, architect, 15 Richmond Terrace, Blackburn.

CONSETT.—For alterations and additions to dwelling-houses at the Middles Farm, near Consett, Durham. Mr. R. G. Norman, 5 Rosebery Terrace, Consett.

COVENTRY.—Sept. 8.—For the erection of science building at the King Henry VIII. school, Coventry. Mr. F. V. Chattaway, architect, Trinity Churchyard, Coventry.

COVENTRY.—Sept. 14.—For the erection of thirteen cottages at Wolston, near Coventry. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry.

DARENTH.—Sept. 5.—For (1) sanitary work and repairs to corridor floors at the adult and schools department, and (2) cleaning and painting work at the schools department, Darenth asylum, near Dartford, Kent. Mr. T. Duncanson Mann, clerk, Metropolitan Asylums Board, Embankment, London.

DARLINGTON.—Sept. 2.—For the erection of twelve houses in Grey Street, Darlington. Mr. Rispin, 50 Thornton Street, Darlington.

DARLINGTON.—Sept. 3.—For rebuilding and enlarging of the Red Lion hotel, Darlington. Mr. G. Gordon Hooper, architect, Court Chambers, Darlington.

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DERBY.—Sept. 1.—For the erection of tramway-car sheds depôt on the Osmaston Road. Mr. John Ward, borough surveyor, Babington Lane.

DOVER.—Aug. 31.—For the erection of a Congregational church in High Street, Dover. Messrs. Cresswell & Newman, architects, 54 Castle Street, Dover.

EARLTH (HUNTS).—Aug. 31.—For reconstructing the wood framing, painting ironwork and other works at the Earlth suspension bridge over the Hundred Foot River, close to Earlth Bridge station (G.E. Railway). Mr. Herbert Leete, county surveyor, Huntingdon.

EASINGTON.—Sept. 2.—For erecting panelled brick wall, with a gate, about 55 yards long, including stubbing-up hedge, site, and also coal-house, ashpit and pantry, at Guardians' offices, Easington, Durham. Messrs. Farthing & Dunn, architects, Shakespeare Chambers, Newcastle-on-Tyne.

EXMINSTER.—Aug. 31.—For alterations at stores and keeper's office and providing for a separate water supply from an old borehole at the county asylum. Mr. E. H. Harbottle, architect, County Chambers, Exeter.

GUILDFORD.—Aug. 31.—For the erection of an underground and convenience for both sexes in North Street. Mr. C. G. Mason, borough surveyor, Tuns Gate, Guildford.

HALIFAX.—Sept. 2.—For the erection of offices and front boundary wall and railings at the Skircoat Road Tramway and Electricity depôt. Mr. James Lord, borough engineer, Town Hall, Halifax.

HASTINGS.—Sept. 11.—For the erection of superintendent's cottage at the Hastings borough cemetery. Mr. P. H. Palmer, borough engineer, Town Hall, Hastings.

HULL.—Sept. 1.—For rebuilding offices, &c., in High Street. Messrs. Brodrick, Lowther & Walker, architects, Low Street, Hull.

HULL.—Sept. 2.—For the erection of central mission and day school premises in Alfred Gelder Street, Hull. Messrs. Gier & Kitchen, architects, 76 Lowgate, Hull.

IRELAND.—Sept. 3.—For additions at Glenmount, near Clonmuck. Messrs. W. H. Hill & Sons, architects, 28 South Circular, Cork.

IRELAND.—Sept. 4.—For erection of a Presbyterian church at Portstewart. Mr. Vincent Craig, architect, 5 Lombard Street, Belfast.

IRELAND.—Sept. 10.—For the erection of a labourer's cottage on the townland of Launtaggart, and another on the townland of Tullyskeherney. The Chairman of the Rural District Council, Workhouse, Manorhamilton.

IRELAND.—Sept. 14.—For the erection of four cottages and the conversion of single rooms into a dormitory at the Armagh District lunatic asylum. Mr. R. H. Dorman, Court House, Armagh.

IRELAND.—Sept. 14.—For an extension to the fitting shops, Dundalk, for the Great Northern Railway Company (Ireland). The Secretary, Amiens Street Terminus, Dublin.

LANCASTER.—Sept. 19.—For the erection of a new produce market. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEEDS.—For the erection of a dry fence at Cookridge. Messrs. Newsom & Gott, surveyors, 3 East Parade, Leeds.

LEEDS.—Sept. 8.—For the erection of a bakehouse at the workhouse, Beckett Street, Leeds. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LONDON.—Sept. 2.—For certain fire-resisting works and additional buildings at the Fountain hospital, Tooting Grove, Tooting Graveney, S.W. Messrs. T. W. Aldwinckle & Son, architects, 20 Denman Street, London Bridge, S.E.

LONDON.—Sept. 11.—For the erection of a wooden bandstand platform, conveniences and shelter, boundary walls and iron railings at Brickfield Gardens, Spenlow Street, Limehouse, E. Particulars at the Architect's Department (General Constructional Section), London County Council, 15 Pall Mall East, S.W.

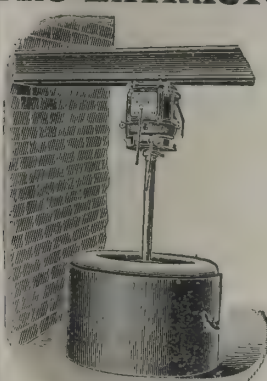
MACCLESFIELD.—Sept. 2.—For the erection of three shops at Bollington. Messrs. Whittaker & Bradburn, architects, 19 King Edward Street, Macclesfield.

MANCHESTER.—Aug. 31.—For the erection of a car-repairing works and permanent-way buildings, Hyde Road, Manchester. Mr. J. M. McElroy, general manager, Tramways Department, 55 Piccadilly, Manchester.

MANNINGHAM.—Aug. 31.—For the extension of West End laundry, Whetley Hill, Manningham. Mr. J. W. C. Atkinson, architect, 1 Ivegate, Bradford.

MEXBOROUGH.—Sept. 4.—For the erection of a Wesleyan church at Mexborough, Yorks. Messrs. John Wills & Sons, Victoria Chambers, Derby.

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NEWCASTLE-UPON-TYNE.—Sept. 7.—For the erection of senior and junior departments (in two blocks) at Forsyth Road, West Jesmond, for the Newcastle-upon-Tyne School Board. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

NEW MALDEN.—Aug. 31.—For the erection of new public offices, fire station, stabling, &c., at New Malden, Surrey. Mr. William Hope, architect, Seymour Road, Hampton Wick.

PADIHAM.—For the erection of St. Leonard's National schools, Padiham, Lancs. Mr. Thomas Bell, architect, 14 Grimshaw Street, Burnley.

PORTSMOUTH.—Sept. 18.—For the erection of two additional manual instruction centres. Mr. Alfred H. Bone, architect, Cambridge Junction, Portsmouth.

PLYMPTON ST. MAURICE.—Sept. 1.—For restoring and enlarging dwelling-house and farm buildings at Lower Yealmpstone, in the parish of Plympton St. Maurice, Devon. Messrs. Hellard & Bewes, Manor Office, Stonehouse.

PUDSEY.—Aug. 31.—For the erection of twelve dwelling-houses at South Parade, Pudsey, Yorks. Messrs. Kendall & Bakes, architects, Calverley Chambers, Victoria Square, Leeds.

RAVENSTHORPE.—Sept. 5.—For the extension of the Congregational school premises in North Road, Ravensthorpe, Yorks. Messrs. C. H. Marriott, Son & Shaw, architects, Church Street Chambers, Dewsbury.

ROTHERHAM.—Sept. 2.—For the erection of two dwelling-houses, offices, studio, workshop, storerooms, &c., in Percy Street, Rotherham. Mr. J. Platts, architect, High Street, Rotherham.

SALCOMBE.—Aug. 31.—For taking-down and rebuilding portion of east end of Salcombe Church, Devon. Particulars may be obtained at the Vicarage.

SANDOWN.—Sept. 4.—For the erection of new coastguard buildings at Culver Cliff, near Sandown, Isle of Wight, consisting of houses for five men, outbuildings, &c. Particulars may be obtained at the Director of Works Department, Admiralty.

SALFORD.—Sept. 2.—For an additional pumping engine-house at the sewage works, Weaste. Mr. L. C. Evans, town clerk, Town Hall, Salford.

SCOTLAND.—Aug. 29.—For the erection of gas manager's dwelling-house, adjoining the gasworks at Dunbar. Mr. Gegan Fulton, architect, 30 St. Andrew Square, Edinburgh.

SCOTLAND.—Aug. 31.—For the erection of new waiting-rooms, &c., on down-line platform, Eassie station, for the Caledonian Railway Company. Mr. J. Blackburn, secretary, 302 Buchanan Street, Glasgow.

SCOTLAND.—Aug. 31.—For the erection of hotel at Tumberry. Mr. James Miller, architect, 15 Blythewood Square, Glasgow.

SCOTLAND.—Sept. 3.—For the erection of two new ward blocks, an addition to the administrative block, and a new block of office houses at the hospital, Bellsprings Road, Annan. Mr. Alexander Tweedie, architect, 43 Lady Street, Annan.

SCOTLAND.—Sept. 14.—For the extension of Macdonald Road electric-power station, Edinburgh. Mr. R. Morham, city architect, City Chambers, Edinburgh.

SENNEN COVE.—Aug. 31.—For the erection of a private hotel at Sennen Cove, Land's End, Cornwall. Mr. Hey White, architect, Penzance.

SIGFORD.—Sept. 1.—For the erection of three cottages at Sigford, near Ashburton, Devon. Mr. Andrew Wainwright, architect, Buckfastleigh.

THORNTON-LE-FYLDE.—Aug. 31.—For the erection of a compressing station, caretaker's cottage, &c. Mr. Arthur Hindle, 44 Abingdon Street, Blackpool.

WATFORD.—For alterations and additions to the receiving wards at the workhouse. Mr. C. P. Ayres, architect, Burway, Watford.

WALES.—For additions to corrugated iron building, at Institute, Llanbradach. Messrs. Teather & Wilson, architects, Andrew's Buildings, Queen Street, Cardiff.

WALES.—For pulling-down and rebuilding the Drysgwyn inn, Ebbw Vale, Mon. Mr. John J. Swallow, architect, Steep Packet Chambers, Dock Street, Newport, Mon.

WALES.—Aug. 31.—For alterations and additions to Porth Talbot county school. Mr. T. Mansel Franklyn, clerk, Glamorgan County Council Offices, Cardiff.

WALES.—Aug. 31.—For the erection of additional classrooms and carrying-out other alterations at the Griffithstown Mixed Board school, near Pontypool. Messrs. Lansdowne & Griggs, architects, Newport, Mon.

WALES.—Aug. 31.—For the erection of twenty-nine (more) houses at Rowles Square, Rhymney, Mon. Messrs. Llewellyn Smith & Davies, architects, Aberdare.

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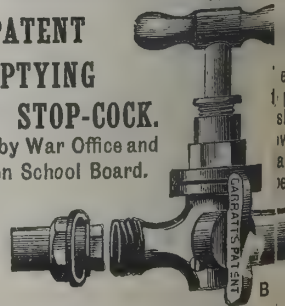
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London School Board.

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WALES.—Sept. 2.—For additions and alterations to business premises in The Hayes, Cardiff, and for pulling-down and building the Pavilion. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Sept. 2.—For the erection of an infant school in Llantrisant, Abercynon, to accommodate 250 children. Mr. O. Evans, architect, Post Office Chambers, Pontypridd.

WALES.—Sept. 3.—For the erection of a school, senior department, to accommodate 360, at Trealew, Ystradfordwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

WALES.—Sept. 3.—For the erection of ten houses in Llantrisant, Tredegar. Mr. W. S. Williams, architect, Tredegar.

WALES.—Sept. 3.—For the erection of new bathrooms at Wrexham joint fever hospital. Mr. G. Morison, architect, King Street, Wrexham.

WALES.—Sept. 4.—For the erection of mercantile marine office at Barry Docks. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—Sept. 10.—For the erection of a bridge and alteration to road at Glanrafon, Rhosyllen. Mr. T. Rees Evans, Highway surveyor, Johnstown, Ruabon.

WALES.—Sept. 14.—For the erection of two new departments for boys and girls at Penygraig, Ystradfordwg. Mr. Jacob Rees, Hillside Cottage, Pentre.

WALES.—Sept. 14.—For the erection of public offices in Morgan Street, Pontypridd. Mr. Henry T. Hare, architect, Hart Street, W.C.

WEM.—Sept. 14.—For the erection of a market house, assembly-hall, &c., at Wem, Salop. Mr. James Brown, architect, 12 Castle Street, Shrewsbury.

WHICKHAM.—Aug. 31.—For the erection of Council offices, &c., at Whickham, Durham. Mr. Thomas Lambert, Clerk, U.D.C., Town Hall, Gateshead.

WIGAN.—Sept. 2.—For the erection of new public offices, workshops, stables and appurtenances. Messrs. Heaton, Liph & Heaton, architects, Wigan.

WORKINGTON.—Sept. 10.—For the erection of a shop and office at Westfield, Workington. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

TENDERS.

BELPER.

For sewerage works at Over Lane, in the parish of Denby. Mr. ROBT. C. CORDON, surveyor, Duffield, near Derby.
Cope & Raynor £150 0 0
G. F. Tomlinson 135 0 0
A. HINGLEY, Duffield, near Derby (accepted) 98 0 0

BIRMINGHAM.

For the construction of five sewage silt tanks, four bacteria beds, each one acre in area, intake chamber, inlet and outlet channels, gauge basins, &c., and jointing of cast-iron supply pipes, &c., for the Birmingham Tame and Rea District Drainage Board. Mr. JOHN D. WATSON, engineer.
W. CUNLIFFE, Kingston-on-Thames (accepted) £25,633 0 0

CHESTER.

For erection of a washhouse at the workhouse.
G. CASH & SONS, Capenhurst (accepted) £322 7 0

DARTFORD.

For constructing an approach road to the refuse destructor.
T. Free & Sons. £1,150 0 0
E. Iles, jun. 1,058 0 0
A. T. Catley 1,023 0 0
Parsons & Parsons 926 0 0
G. RACKHAM, Norwich (accepted) 920 0 0

DERBY.

For supply of electrical plant.
Accepted tenders.
Chloride Electrical Storage Co, Trafford Park, Manchester, accumulators, £2,812 15s.; Lancashire Dynamo Co, Clifton Junction, near Manchester, balancers and reversible boosters, £791; Johnson & Phillips, Victoria Works, Old Charlton, Kent, switchboard, £1,276.

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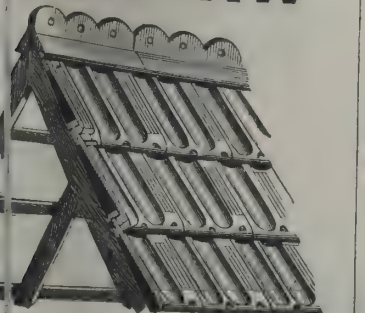
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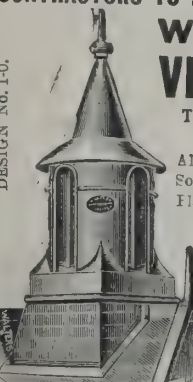
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DEWSBURY.

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Accepted tenders.

Robb & Mitchell, Ossett, £634 17s. 4d.; May & Co, Jackfield, Salop, wall tiling for same building, 11s. per super yard.

FOLESHILL.

For sewerage works.

JOHNSON BROS., The Barton, Hereford (accepted) £20,497 0 0

FRINTON-ON-SEA.

For sewerage works in First Avenue, Frinton-on-Sea. Messrs. BEESLEY, SON & NICHOLS, engineers, Westminster.

W. S. Bushnell	£1,663	0	0
B. W. Glenny	1,158	10	9
T. Adams	1,089	0	0
Z. Fairclough	1,075	0	0
G. Rackham	985	1	9
Wilson, Border & Co.	979	7	2
G. G. RAYNER, 4 Elmwood Road, Croydon (accepted)	845	0	0

HALIFAX.

For the erection of two houses, Stump Cross, Halifax. Messrs. WALSH & NICHOLAS, architects, Museum Chambers, Halifax.

Accepted tenders.

J. Feather, Shibden, Halifax, mason.
J. S. Ackroyd, 46 Pellon Lane, Halifax, plumber.

HEATON.

For the erection of a pair of semi-detached houses in Heaton, Yorks. Mr. JAS. LEDINGHAM, architect, District Bank Chambers, Bradford.

Accepted tenders.

Hartley & Kemplay, Shipley, mason.
J. Copley, Lower Cobden Street, Bradford, joiner.
Atkinson & Smith, Keighley Road, Frizinghall, plumber.
T. Nelson & Son, Springfield Place, Manningham, Bradford, slater.
J. Throp, Stephenson Fold, Southfield Lane, Bradford, plasterer.
J. Wallace, Baptist Place, Westgate, Bradford, painter.

HEYWOOD.

For the construction of storm-filters at Botany, and the laying out of the land filtration areas at Heap Bridge. M. JAMES DIGGLE, engineer, Hind Hill Street, Heywood.
J. BERRY, Heywood (accepted).

HONITON.

For sewerage works.

C. Turner* £110 0 0
* Recommended for acceptance.

HORWICH.

For sewerage and street works in a number of private streets. Mr. T. GREEN, surveyor.

W. Clarke	£3,791	6
E. Taylor	3,133	16 1
W. Pollitt & Co, Ltd.	2,852	12 1
W. J. Slater	2,852	4 0
T. Kilburn	2,836	0 1
G. Baker	2,811	6 2
T. Hindley	2,802	2 1
S. Cowburn & Sons	2,677	13 2
J. & T. Finch	2,675	16 3
Webster & Winstanley	2,651	17 4
Chadwick Bros.	2,613	2 2
E. YATES, Horwich (accepted)	2,379	8 1

HUNSLET.

For supply of four ornamental gates and for fencing of wells at the new workhouse, Rothwell, Haigh.

TEALE FIREPLACE CO., Wortley, Leeds (accepted) £55 0 0

ILKESTON.

For the erection of a Congregational church and school, Ilkeston. Mr. H. TATHAM SUDBURY, surveyor, 18 Mart Place, Ilkeston.

A. Summerfield	£6,787	19 3
A. Brown & Son	6,570	00 0
T. Fish & Sons	6,491	00 0
T. H. Beeson	6,439	62 0
W. Crane, Ltd.	6,437	00 0
T. Whittaker	6,400	00 0
T. Barlow	6,337	00 0
J. Wright	6,330	00 0
L. Buxton	6,152	00 0
A. EARNSHAW, East Street, Ilkeston (accepted)	6,112	10 3

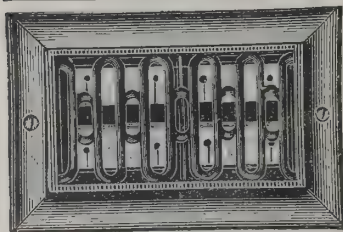
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IRELAND.

the erection of creamery at Dunalong. Mr. W. STUART, architect, Bowling Green, Strabane.
Dillon £230 0 0
Ellis 220 0 0
COULTER, Bready, Strabane (accepted) 210 0 0

enlargement of chancel, Mallow Church, county Cork.
Messrs. W. H. HILL & SON, architects, Cork.
F. DOLAN, Queenstown (accepted).

the erection of two semi-detached villas on Glen Road, Comber. Mr. W. K. WHEELER, architect, Ballyhackamore.
McCLUGHIN, Larne (accepted) £1,065 0 0

the erection of acetylene gas plant at the workhouse.
OHERTY & BOYLE, Londonderry (accepted) £97 5 11

KNUTSFORD.

providing and fixing washhouse and laundry machinery and fittings, with power, fittings of drying-rooms, water tank, &c, at the workhouse, Knutsford. Mr. ROBERT J. M'BEATH, architect, Birnam House, Sale.
D. & J. TULLIS, LTD, Kilbowie, Glasgow (accepted).

MORLEY.

the erection of three terrace houses in St. Andrew's Avenue, Morley, Yorks. Messrs. BUTTERY & BIRDS, architects, Queen Street, Morley.
Accepted tenders.
Pearson & Ainsworth, Morley, mason.
J. W. Binks & Sons, Morley, joiner.
W. Stakes, Morley, plumber.
E. Firth, Morley, plasterer.
Atkinson & Son, Leeds, slater.

NORWICH.

the erection of shop to 75 St. Benedict's Street. Mr. J. OWEN BOND, architect, 15 Upper King Street, Norwich.
Holmes £201 10 0
S. Smith 191 4 0
W. UTTING (accepted) 168 10 0

external fittings at the workhouse.
MARSHALL, Norwich (accepted) £138 0 0

NORTHWICH.

For the erection of the Gospel Union mission hall, Northwich.
Mr. E. T. WARD, architect, Winnington Street, Northwich.
S. Appleton, Northwich, inclusive of foundations, &c. £330 0 0
F. Smith & Co., Stratford, exclusive of foundations 275 0 0
A. MARSDEN, Northwich, inclusive of foundations, &c. (accepted) 260 0 0
R. Iles & Co, Walham Green, London, exclusive of foundations and cartage and reduced strengths 245 0 0

OXTED.

For the erection of stables, coachman's and gardener's houses, and other buildings for Mr. Max Michaelis. Messrs. F. S. BRERETON & SON, architects. Quantities by Mr. E. G. HARDCASTLE.
W. & E. Loakes £13,025 0 0
E. J. Saunders 12,914 0 0
J. Carmichael 12,700 0 0
Kilby & Gayford 12,420 0 0
W. H. WAGSTAFF & SONS, 9 Bartlett's Buildings, E.C. (accepted) 11,998 0 0

QUEENSTOWN.

For the erection of a gentleman's residence at Queenstown. Messrs. W. H. HILL & SON, architects, 23 South Mall, Cork.
F. DOLAN, Queenstown (accepted).

RAMSBOTTOM.

For sewerage works. Mr. JAMES DIGGLE, engineer, Hind Hill Street, Heywood.
J. AINSCOUTH & SONS, Oldham (accepted) £539 13 6

STROOD.

For alterations and extensions to the workhouse.
J. A. LEONARD (accepted) £1,890 0 0

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For widening part of the North Drive drain, in Deeping Fen.
W. FOVARGUE, Little London, Spalding (accepted), per chain, 9s. 6d.

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SCOTLAND.

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A. F. CRAIG & CO, LTD., Paisley (*accepted*) . £9,093 0 0

SOUTHEND-ON-SEA.

For street works in Gossett Street, Palmerston Road and The Lees. Mr. E. J. ELFORD, borough surveyor.

The Lees.

D. T. Jackson	£1,242	0	0
J. & J. Jones	1,190	0	0
BUXTON & JENNER (<i>accepted</i>)	1,122	0	0
W. Iles	1,115	0	0
Summerfield	1,041	0	0

Palmerston Road.

D. T. Jackson	1,065	0	0
J. & J. Jones	1,040	0	0
BUXTON & JENNER (<i>accepted</i>)	1,024	0	0
W. Iles	985	0	0
Summerfield	912	0	0

Gossett Street.

D. T. Jackson	649	0	0
W. Iles	633	0	0
J. & J. Jones	625	0	0
BUXTON & JENNER, Southend (<i>accepted</i>)	609	0	0
Summerfield	584	0	0

THORNBURY.

For the erection of ten small houses in Upper Rushton Road, Thornbury, Yorks. Messrs. WALKER & COLLINSON, architects, 227 Swan Arcade, Bradford.

Accepted tenders.

Jones & Wilcox, Queensbury, mason.
S. Andrews, Great Horton, joiner.
J. Hodgson, Bradford, plumber.
T. Bolton, Bradford, plasterer.
G. Wilkinson, Bradford, slater.
J. C. Calvert, Bradford, painter.

THORNTON HEATH.

For drainage and sanitary works at 14 and 16 Quadrant Road, and 16 and 18 Elliott Road. Mr. E. H. DANCE, architect, 185 Victoria Street, S.W.

J. Westbrook	£152	5	0
Kemp & Son	130	5	0
H. BACON (<i>accepted</i>)	122	9	0

TROWBRIDGE.

For additions, repairing, painting, &c., at the market hall. H. G. NICHOLSON-LAILEY, surveyor.

Gowen & Stevens	£203	0	0
E. Lindsey	162	0	0
G. MOORE, Trowbridge (<i>accepted</i>)	162	0	0

For the construction of about 2,000 lineal yards of stoneware and cast-iron pipe sewers, with river crossings, manholes, ventilating columns, &c. Mr. H. G. NICHOLSON-LAILEY, surveyor, Town Hall, Trowbridge.

R. H. B. Neal	£5,599	0	0
J. & T. Binns	5,416	10	0
Free & Son	5,310	16	6
H. Roberts	5,067	8	0
J. H. McDonald	5,064	11	0
B. Cooke & Co.	4,764	12	8
J. Riley	4,377	3	0
S. Wood	4,266	17	3
E. H. Page	3,980	3	0
E. IRELAND, Sandylands, Morecambe (<i>accepted</i>)	3,734	26	0

UXBRIDGE.

For ventilation, water supply and drainage works at the institution hospital in Kingston Lane, Hillingdon. Mr. J. FRIBAIRN STOW, engineer, Corn Exchange, Uxbridge.
W. BATTRUM, Hillingdon (*accepted*).

WALES.

For the erection of a shop and two semi-detached villas at Pembroke Dock. Mr. J. PREECE JAMES, architect, Terr. BROWN BROS., Pembroke Dock and Narberth
(*accepted*) £900 0 0

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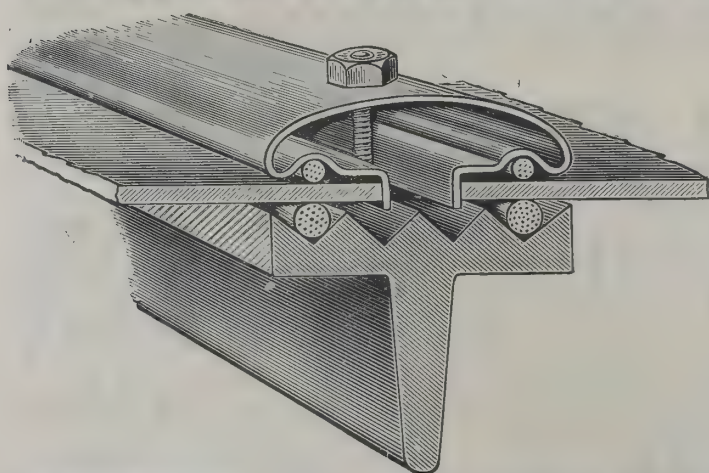
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For Index of Advertisers, see page x.



WALES—continued.

painting bridges, abattoirs and smallpox hospital, Pontypridd. Mr. P. R. A. WILLOUGHBY, surveyor.
Cadwgan (part) £241 0 0
CASEY, 125 Severn Road, Cardiff (accepted) 183 7 6
Jones (part) 175 5 6
Talbot (part) 173 5 0
Thomas & Co. (part) 126 15 0

street works in connection with the reconstruction and widening of various bridges over the Glamorganshire Canal, Pontypridd, comprised in Contract No. 1, and for supply and erection of steel girders, flooring, &c., and other contingent works comprised in Contract No. 2. Mr. P. R. A. WILLOUGHBY, surveyor.

Steelwork.

Jones £800 0 0
A. Baker 700 0 0
Norman & Long 660 0 0
Gilbert, Thompson & Co. 653 0 0
Eenan & Froude 640 0 0
Parfitt 630 0 0
O. Brettell 620 0 0
Launey & Sons 540 0 0
FINCH & Co., Chepstow (accepted) 540 0 0

Masonry.

Eenan & Froude 669 14 0
Fraser 553 12 3
ASH, Pontypridd (accepted) 409 4 5

supplying and fixing a hot-water apparatus in Danygraig Board schools, Risca, Mon. Mr. ERNEST N. JOHNSON, architect, Risca.

High-pressure.

Dargue, Griffiths & Co. £203 10 0
ALGER & SON, Newport (accepted) 88 15 0
Perman 66 0 0

Low-pressure.

G. Arnold & Son 350 0 0
J. Kallaway 279 17 0
Dargue, Griffiths & Co. 201 5 0
Hillier & Son 196 10 0
Alger & Son 191 0 0
Hates & Son 145 0 0
Perman 143 15 0

WALES—continued.

For supplying and fixing gasfittings and interior piping (seventy lights) at Danygraig Board schools, Risca, Mon. Mr. ERNEST N. JOHNSON, architect, Risca.

Dargue, Griffiths & Co. £75 10 0
Western Valleys (Mon) Gas and Water Com-pany 41 5 0
Foslett & Co. 37 0 0
A. G. Arnold & Son 36 17 0
Hillier & Son 36 14 0
G. E. Rogers 36 10 0
E. Perman 35 0 0
E. Williams 33 12 0
R. ALGER & SON, Newport (accepted) 31 0 0

For new electrical department for lupus treatment, &c., at the Cardiff Infirmary. Mr. EDWIN SEWARD, architect, Cardiff.

Lattey & Co. £2,433 14 5
G. Hallett 2,320 0 0
Knox & Wells 2,261 0 0
Symonds & Co. 2,143 5 4
F. Small 2,120 0 0
Tucker Bros. 2,098 8 0
BEAMES & NEPHEW, Violet Row (accepted) 1,972 10 0

For the erection of bridges over the Berrach Brook, near Glanamman, and over the river Garnant, at Garnant, Llandilo-Fawr. Mr. EVAN JONES, surveyor, Glancenen, Llandilo.

W. MORGAN, Gwynfe, Llangadock (accepted), bridge over river Garnant, £380; bridge over river Berrock, £120.

For the erection of two dwelling-houses, shop and out-offices in High Street, Narberth. Mr. J. PREECE JAMES, architect, Tenby.

D. Jones £868 0 0
BROWN BROS., Pembroke Dock and Narberth (accepted) 693 0 0
Parry & Sons 600 0 0

WHITWOOD.

For street works in Union Street, David Street and Railway View, Hightown, Whitwood. Mr. A. HARTLEY, surveyor, County Chambers, Castleford.
J. L. RODGER, Albion Street, Castleford (accepted).

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Aiton & Co., pipework . . .	3,195 0 0
International Electrical Engineering Co., engines and dynamos . . .	3,192 0 0
International Engineering Co., switchboard . . .	1,860 9 0
E. Danks & Co., boilers . . .	1,850 0 0
Oliver & Co., arc lamps and posts . . .	704 3 0
J. Hitchen & Sons, crane . . .	280 10 0
Tudor Accumulator Co., storage battery . . .	156 0 0

NEW CATALOGUE.

MESSRS. MABIE, TODD & BARD, 63 Cheapside, London, E.C., announce the issue of a new fully-illustrated catalogue of their well-known "Swan" fountain pens and "Cygnet" stylos. All who at present possess one of these excellent pens, and all those who do not, should write for a reference copy, which will be sent post free, and which cannot fail to be of interest.

TRADE NOTE.

THE new schools, Egremont, Cumberland, are being warmed and ventilated by means of Shorland's patent Manchester grates and special inlet tubes, by Messrs. E. H. Shorland & Brother, of Manchester.

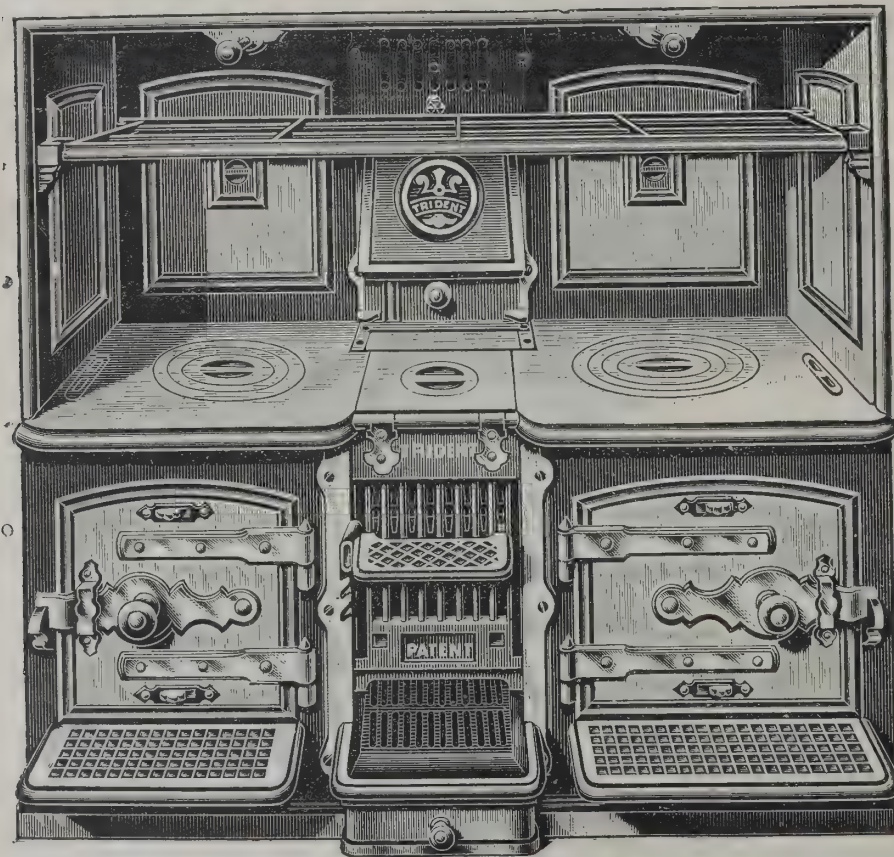
A NEW United Methodist Free church (Manchester Third Circuit) and Sunday schools were opened at Gorton last week. The necessity for the new buildings has been brought about by the development of the district and the rapidly increasing population. The edifice is situate in Hyde Road, the principal thoroughfare from Manchester to Hyde, and the building is substantially constructed and in a neighbourhood where there is plenty of opportunity for building up a strong church. The church and schools have been built at a cost of 3,000l.

ELECTRIC NOTES.

THE Westminster City Council has, we understand, decided to extend its system of electric lighting from Exeter Street, Strand, the boundary of the parish of St Martin's-in-the-Field, to the Law Courts, and also to light by electricity the thoroughfares of Kingsway and Aldwych. The first standard has been erected at the end of Burleigh Street, and the base of a column fixed near the City boundary. The standard will be fixed alternately on either side of the thoroughfare at a distance of 35 yards, on the "islands" in the centre of the roadway, and round the churches of St. Mary-le-Strand and St. Clement Danes. They will be 24 feet high, and will be fitted with arc lamps each of 1,000 candle-power. The Council will erect the standards and provide the fittings, and current will be supplied under contract by the Charing Cross and Strand Electricity Supply Corporation (Limited). It is anticipated that the Strand portion of the scheme will be completed in three weeks.

A SPECIAL meeting of the Redditch Urban District Council was held on Tuesday evening (Mr. A. Townsend presiding), to hold a conference with Mr. Monkhouse, the expert engaged to report upon the electric light undertaking. The clerk informed Mr. Monkhouse that, after considering his first and supplementary report, the Council had decided that provision should be made in the proposed new loan for the new starting gear recommended and four sets of watt-meters. Upon a question of the provision of new gas-producing plant to enable the Council to use bituminous coal for gas production instead of anthracite coal, Mr. Monkhouse strongly favoured an alteration of method. The cost of the alteration would not exceed 500l. The cost of anthracite coal to the Council is 17s. 9d. per ton. The bituminous coal could be bought, delivered at Redditch, at 7s. 6d. per ton. Another point discussed was as to the reduction in the cost of production per unit, and on this point Mr. Monkhouse repeated his belief that under the new conditions a considerable reduction in the cost of production would be secured. In reply to further questions, Mr. Monkhouse repeated that it was not necessary to make any allowance for depreciation if the plant was maintained in good working order out of revenue. He also said there would be no need of any addition to the existing staff. He recommended that the sale of power for motor purposes at present prices (1d. to 2d. per unit) be continued, as in any case the plant had to be running continuously during the day under the

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ILLUSTRATIONS.

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DESIGN FOR PROPOSED EXTENSION OF HULL TOWN HALL.

PAIR OF SEMI-DETACHED VILLAS, NORTHWOOD.
DETACHED HOUSE, NORTHWOOD.

alternating current system. Asked by Mr. J. Johnson as to how they might turn the present loss of about 1,000l. a year to a profit, Mr. Monkhouse replied that it depended upon how rapidly they could get new customers.

VARIETIES.

ESSRS. CASTLE, of 40 Chancery Lane, London, W.C., have been appointed by the Stockport Union to value the railway, gas, water, electric light and other public properties.

LIVERTON CHURCH, Yorks, was reopened on the 19th inst., after undergoing restoration under the supervision of Mr. H. Fowler, of Darlington, at a cost of about 800l.

THE *Model Engineer and Electrician* of last week contains the first of a series of special articles on the subject of "The Electric Lighting of a Private House," by Frederick H. Taylor, A.M.I.E.E.

H.R.H. PRINCESS LOUISE, Duchess of Argyll, opened on the 25th inst. the new technical schools in Abbey Road, Glasgow, which have been built as a public memorial of the late Queen's reign at a cost of 20,000l.

ON the 25th inst. the memorial church recently erected at Mornish, N.B., by Mr. and Mrs. Todd, Mornish Lodge, was opened for service. The building is of stone and finished inside with oak. It presents a very neat and tasteful appearance. In the east end there has been erected a fine window, brought in from America and costing 1,300l.

THE opening of St. Paul's new Congregational church, Glasgow, took place on Wednesday afternoon. The new church

occupies the site of the old structure in Standish Gate, with extensions in the rear. It provides accommodation for 750 persons, and the cost amounts to about 6,000l., the architect being Mr. F. W. Dixon, of Manchester, and the contractors Messrs. J. Wilson & Sons, of Wigan.

THE death took place on the 22nd inst. of Mr. Thomas Wardrop, one of the senior members of the firm of Harris & Wardrop, builders and contractors, of 10 to 14 Wallwood Street, Limehouse, E.C. The business will be carried on as heretofore by the remaining partners, Messrs. Edwin Harris, Clarence Gregory and James Wolfe King.

THE death took place on Sunday at Caerwys of Mr. Henry Indel, formerly surveyor to the Holywell Turnpike Trustees and subsequently to the Holywell District Highway Board, at the age of seventy-seven. He was a native of Minera, Wrexham, and in his earlier years was connected with several important enterprises in North Wales, including the reconstruction of the Denbigh and Ruthin and the Wrexham, Mold and Connah's Quay Railways. He subsequently became manager of Parry's mine works at Holywell prior to entering the service of the Turnpike Trustees.

THE committee of management of the Hospital of St. Francis—until recently in the New Kent Road—have been fortunate in securing a large and substantial house (Darent House) at Camberwell Green, S.E., which, as soon as the necessary alterations, &c., are completed, will be thrown open to the public as a general hospital, under the designation of the South London Hospital, or Hospital of St. Francis. The building, which almost adjoins one of the institutions of the Metropolitan Asylums Board (the Remand Home), will provide four or five large wards, &c., and an out-patients' department at the rear.

THE reconstruction of the Midland hotel, New Street, Birmingham, has now been completed. The hotel has been greatly improved and modernised at a cost of about 90,000l., with an additional 30,000l. for furnishing. It can now claim to be one of the most convenient and luxurious hotels in the provinces. In carrying out the work considerable difficulties had to be surmounted by the architects, Messrs. Henman & Cooper, and the builders, Messrs. Barnsley & Sons, in order to realise the best results. The building now contains over 160 bedrooms, and has main entrances from New Street and Stephenson Street, and separate entrances for the members of the staff, tradesmen, &c. The public entrances and the lower

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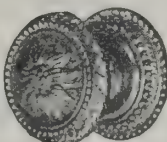
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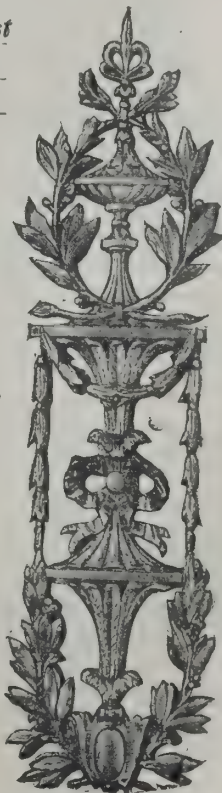


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and ground-floor rooms have their walls of Grecian marble. The whole of the interior is furnished on the most elaborate and, at the same time, useful lines, everything being in modern style. The sanitary arrangements are exceptionally complete. A distinctive feature is the water supply, which is procured from a well sunk to a depth of 600 feet. The water is driven afterwards by compressed air into storage tanks in the roof. Throughout, the building is, so far as the new portion is concerned, fire resisting, and in the case of any outbreak precautions have been taken to provide ample means of exit.

BUILDING AND BUILDERS.

ON and after September 1 carpenters working under the Truro master builders will receive an advance of 2s. per week.

THE Board school which has just been completed at Halifax cost 29,500l., and provides accommodation for 1,000 children; special attention has been paid to the ventilation. Messrs. Horsfall & Son were the architects.

AT an inquiry held by Colonel W. Langton Coke at York into the application of the City Council for approval to borrow 98,465l. for asylum purposes, it was stated that a contract had been entered into with Messrs. George Longden & Sons, Sheffield, for the erection of the main buildings at a cost of 90,453l.

THE alterations at the Savoy Theatre are now making very satisfactory progress, and will, it is anticipated, be completed before the end of September. In addition to a complete re-decoration of the house both inside and out, the chief improvement will be a new broad level roadway from the Strand to the main entrances of the theatre.

A PAINTER named Frederick Barrett was at work on a ladder at Ilford station on Monday morning when an up-express struck the ladder and hurled the man into the air. Barrett fell upon the train and then dropped upon the down-line as another train was approaching. A comrade dragged him from the metals, and he was conveyed to the West Ham Hospital, having sustained shocking injuries.

THE church of St. John the Baptist, Hulme, is just now closed for public worship, as it is undergoing a long-needed renovation. The outside fabric was dealt with last year and

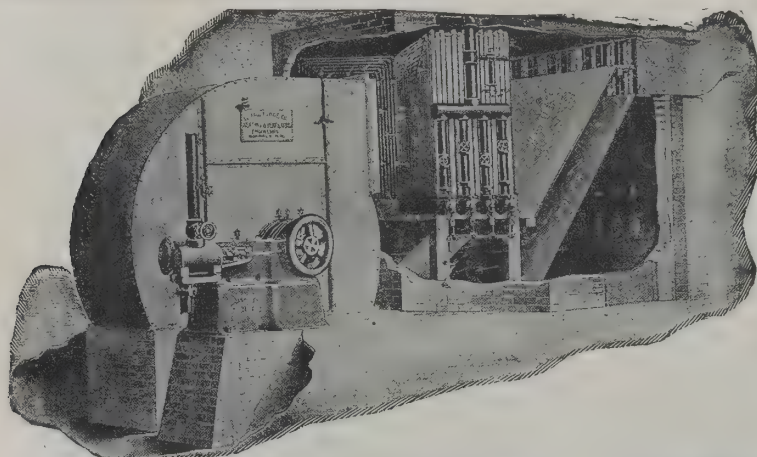
was put into a state of sound repair at a cost of nearly 300l. The interior is now receiving attention, and is being thoroughly cleaned and redecorated. It is expected that the church will be reopened on Sunday, September 13.

AT Sutton Coldfield Congregational church it has been decided to take down a partition wall separating chancel and transepts from the nave, and to furnish the chancel end of the church at a cost of 1,600l. More than 4,000l. has been spent in extension during the last three years, and it was resolved that this last piece of work should not be commenced until 800l. had been promised. The amount was raised in three days.

A SHOCKING accident occurred on Tuesday in Montague Street, Edinburgh. James Brogan, a workman residing at French Street, Bridgeton, Glasgow, and in the employment of the National Telephone Company, was at work on the roof of a house in Montague Street when he lost his footing and fell from the roof on to an iron paling beneath, the spikes of which passed through his body. He was removed to Edinburgh Royal Infirmary, where he succumbed to his injuries shortly after admission.

MR. S. W. HEATON, M.D., Local Government Board inspector, held an inquiry at the Birkdale town hall on Wednesday, regarding the application of the Birkdale Urban District Council for sanction to borrow 2,750l. for the provision of an infectious diseases hospital. Evidence was given by the clerk, the surveyor and the medical officer supporting the application. The site of the proposed hospital, in which it is intended to make provision for eighteen beds, is in Shaftesbury Road. The medical officer emphasised the necessity of a speedy reply on the part of the Local Government Board, as the accommodation was much needed. After the inquiry the inspector visited the site.

HAVING obtained the sanction of the Local Government Board, the Stretford (Lancs) District Council will soon commence the erection of 112 semi-detached artisans' dwellings, with a 6 yards frontage to each. There are only one or two similar schemes in England in which the houses are semi-detached, the Council being enabled to give this advantage owing to the low price of the land. The cost of the land is 3,750l., and the total amount proposed to be borrowed is 24,000l. If the Council succeed in getting sixty years in which to repay the capital, they will be able to let the houses at 4s 6d. a week and there will be no charge on the rates.



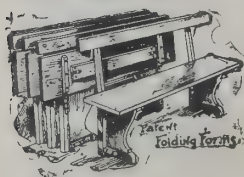
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For Index of Advertisers, see page x.

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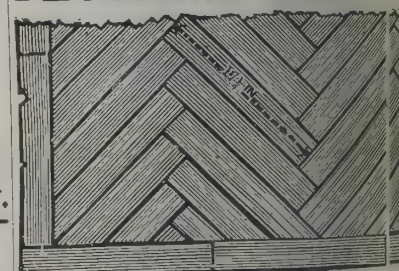
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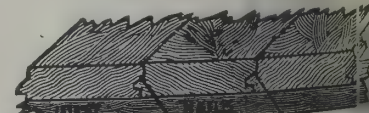
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THE Worcester City Council recently decided to abandon the system of chemical precipitation which had been sanctioned by the Local Government Board in favour of septic treatment with the aid of Candy-Caink sprinklers, with a view to effecting greater economy and efficiency. The Local Government Board agreed to consider plans for such a scheme, which they ordered should be lodged with them in view of the adjourned proceedings under the mandamus to come on in September. Instructions were given to the Council's engineers, Messrs. Beesley, Son & Nicholls, for the preparation of plans, and the mayor (Alderman C. J. Whitehead), who is chairman of the water and sewerage committee, recently called upon them to inspect the progress of the plans. He was surprised to learn from the engineers that they considered they had received no definite instructions, and that they had prepared plans for the disposal of the city's sewage by means of septic tanks such as are in use at Exeter, which they thought best, and were about to submit them to the Local Government Board. This system the Council had rejected, being in their opinion more costly and less efficient than the system they recommended, and the Mayor immediately communicated to his committee the serious position of affairs, inasmuch as so little time now remains to rectify the error. A perusal of the correspondence with the engineers by the committee left no doubt in the minds of the latter that the instructions to the engineers were quite definite and unmistakable. Instructions were at once sent to the engineers to forward the plans they had prepared, and they are now under the consideration of the committee, who will in all probability place the matter before a special meeting of the Council.

On Sunday night a girder carrying the new Thirlmere water-pipe of the Manchester Corporation over the L. & Y. line at Agecroft collapsed, and blocked both the main lines to Bolton, by which Colne and Accrington are also served. A breakdown gang was hurried to the spot as fast as possible, and the work of clearance went on all night, the Bolton trains being sent round by Bradley Fold and Radcliffe, and those to Colne and Accrington by Bury Hill. Considering the disorganisation which necessarily resulted from the accident, traffic was well maintained and was worked fairly up to time. The girder, which weighed about 17 tons, was in the course of being put in position by the Corporation contractors. It is a big mass of steel, long enough to span the line, and hollow in the centre to allow the great pipe to be carried through it. At either end it

rests on masonry, close beside the old pipe, beyond which is the road bridge. In order to lift the heavy mass into position a large wooden derrick had been erected. This was anchored to the ground on either side by guy ropes, and the girder hung from the derrick. Owing, it is supposed, to the sodden state of the ground, one of the guy ropes gave way. The result was that the derrick heeled over and let the girder down on the permanent way, carrying some of the masonry with it and blocking both up and down lines. No traffic was passing at the time, and no injury was caused to any person. The breakdown gang got to work very soon after the accident, and by half-past eleven on Monday morning the girder was again in position and the debris cleared away. The blocked line is one of the busiest on the Lancashire and Yorkshire system. In addition to the heavy traffic to Bolton and a large part of that to Preston and Blackpool, the line accommodates the Midland expresses from Victoria to Scotland. These had to be reversed at Victoria station and sent round by Radcliffe and Bury.

NEW COURT HOUSE AT HENLEY-IN-ARDEN.

THE new Petty Sessions Court House at Henley-in-Arden, which has been erected at a cost of 2,000*l.* from plans prepared by the Warwickshire county surveyor, was opened on Wednesday by Lord Leigh, Lord-Lieutenant of Warwickshire. Hitherto the magisterial business has been conducted at the White Swan hotel, and in this respect the petty sessional division of Henley has stood unique, as the practice of dispensing justice on licensed premises has long been discontinued in most parts of the country. When the late Queen ascended the throne, and Henley presented a very similar appearance in size and buildings to what the town does now, there was one constable of seventy-five years of age of the name of Walton. Two reverend gentlemen officiated in one of the rooms of the White Swan as justices, and the prisoners before trial were conveyed to the King's Head hotel close by, and fastened by means of chain and lock to an old grate. During the succeeding years the magistrates' roll was increased and proper policemen were stationed in the town, yet the police proceedings were till now always held in the White Swan. The new court house has been erected at the rear of the police-station, which is on the main thoroughfare from Birmingham to Stratford, is an

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imposing looking building of red brick, and contains all the modern arrangements for the efficient carrying out of the law. There is a comfortable police-court, a magistrates' retiring-room, police offices, cells and lavatories, and altogether they form a great advance on the old method of procedure.

THE LATE PROFESSOR W. H. CORFIELD.

THE death is announced in the *Times* of yesterday as having taken place on the 26th inst. at Marstrand, Sweden, of Professor William Henry Corfield, sanitary adviser to His Majesty's Office of Works. He was born in 1843, and was educated at Cheltenham Grammar School, Magdalen College, Oxford, University College, London, and the medical schools in Paris and Lyons. Among the appointments which he filled were those of professor of hygiene and public health in University College, London, honorary sanitary adviser to University College and Hospital, president of the Epidemiological Society of London, vice-president of the Sanitary Institute, and past-president of the Society of Medical Officers of Health. In 1868 he was appointed examiner for honours in the Natural Science School, Oxford, and he discovered the existence of lithodromous borings in the Aymestry limestone of the Silurian formation, and "thus removed to an earlier age than had been previously known the evidence of boring bivalves." He was not only the first professor of hygiene appointed in London, but he started the first hygienic laboratory, which was at University College. For six years he was a member of and reporter for the British Association committee on the treatment and utilisation of sewage, and he originated in 1891, the meeting of the International Congress of Hygiene and Demography in London. The Royal Society of Public Medicine in Belgium awarded Professor Corfield a bronze medal in 1901 for his work in connection with public health. For twenty years he was chairman of the committee of the Sunday Society, the object of which is the opening of public museums and libraries on Sundays. In addition to being a member of many foreign scientific societies, he was a prolific author of works connected with public health. Among his publications are a "Résumé of the History of Hygiene," "Dwelling-houses: their Sanitary Construction and Arrangements," "The Laws of Health," "Disease and Defective House Sanitation," which was translated into French, Hungarian and Italian, "The

Etiology of Typhoid Fever and its Prevention," and "Alleged Spontaneous Production of the Poison of Enteric Fever."

THE IRON AND STEEL INSTITUTE.

THE programme has been arranged for the meeting of the members of the Institute at Barrow-in-Furness in the first week of September. The Duke of Devonshire, who is chairman of the Barrow Steel Works and Furness Railways, will receive the visitors at Barrow. Mr. Andrew Carnegie, address, as president, will contrast the conditions of the iron industry in the United Kingdom and America at the present time with what it was at the last meeting of the Institute at Barrow twenty-nine years ago, and endeavour to forecast what the change will be twenty-nine years hence. Mr. Carnegie may also have an invitation to hold the next autumn meeting in America, where they were so magnificently entertained in 1890, and conveyed in special sleeping and dining trains all over the States and through Canada. Mr. J. E. Stead will disclose a discovery he has made which will revolutionise steel manufacture, for he finds that by simply heating dangerously crystalline steel to a certain temperature, however bad the steel may be, he is able to restore it to its normal condition, and even to improve it. The great shipbuilding and other works of the Vickers-Maxim Company, the Barrow Steel Works and the Cumberland Mines will be visited, and all the new features shown to the members, and a most interesting meeting is anticipated.

THE LATE J. A. MACKENZIE, C.E.

ON Saturday night Mr. J. A. Mackenzie, C.E., who was burg surveyor of Inverness for the past twenty-three years, died in that town. He was a genial and public-spirited official, under whose supervision many improvements were carried out, including the laying down of a new sewage system on both sides of the Ness and the consequent purification of the river; the erection of the Waterloo Bridge, a large steel girder structure; the repavement of streets and other useful works. Mr. Mackenzie, who was a son of the late Free Church minister Kilmorack, received his early training as a civil engineer in Inverness, and afterwards acquired experience in America and in England, where he was employed on the Midland Railway.

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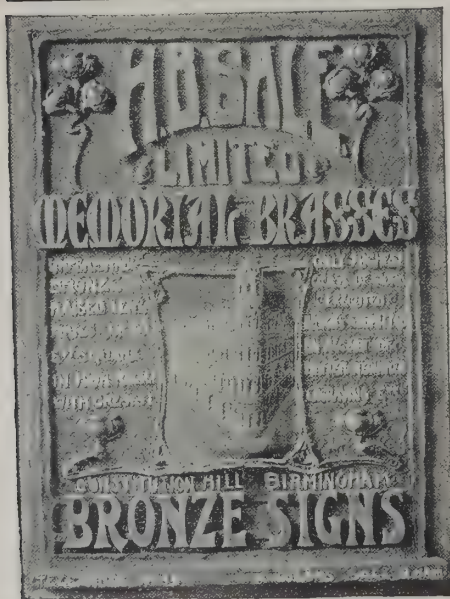
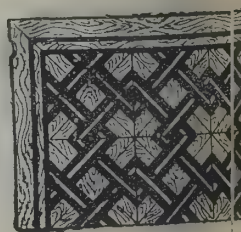
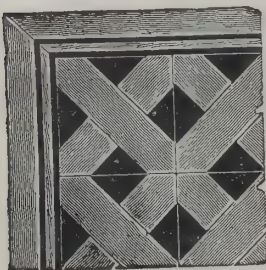
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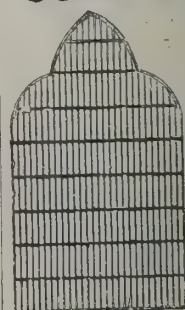
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fore returning to Inverness on his appointment as burgh surveyor. Some time ago Mr. Mackenzie's health gave way, and since then he had not been able to devote himself with his wonted energy to his professional duties, but until the end he took a keen personal interest in structural improvement in the town. His death in his fifty-fourth year was due to heart weakness.

THE BRIDGEWATER TRUST.

OCTOBER 19 will soon be here, and when that date has come and gone the famous Bridgewater Trust will come to an end. The estates which have been administered by the trustees for more than a century will pass to the Earl of Ellesmere, under the will of the famous Duke of Bridgewater. The *Times* has published a very interesting outline of the history of the trust, and incidentally of the development of commerce in Lancashire and other matters in which the Egerton family has taken part. It was the third duke, second son of the first, who was the canal maker; and, as is well known, it was the making of his engagement with the beautiful Duchess of Devonshire that drove him to reside in comparative seclusion on his Lancashire estates, and led him to study the question of canals. In 1759 he sought Parliamentary powers to construct a canal between Worsley and Manchester. Brindley's success in an enterprise which proved more difficult than was at first thought is now a stupendous fact; and hardly was the first canal opened than others, involving even greater engineering difficulties, were put in hand.

But Brindley's genius (as the *Times* points out) again rose superior to all obstacles, and the duke's confidence in him never faltered. It was at this period that the duke's financial resources and credit were almost exhausted. Though he reduced the expenses of his establishment to 400*l.* a year, money was still wanted, and it was only the fruits of his first enterprise that saved him from serious embarrassment. He secured advances on the receipts of the Worsley Canal, and that means was able to carry his second undertaking to a triumphant conclusion. Throughout this period of financial stress he had steadfastly refused to mortgage his estates. If during that period Brindley's remuneration was low, he enjoyed afterwards a fair share of the prosperity he had helped to create. The story that his salary while in the duke's service was only a guinea a week is a myth which,

thanks to Dr. Smiles's improving but misleading work, has gained wide currency. There is evidence that Brindley was in receipt of an adequate emolument. The duke was only thirty-six years old when the great works were completed, and he spent the remainder of his days in improving his canals and estates, and increasing their coal output by his extraordinary system of underground canals with an inclined plane in the rocks between two canals of different levels. They are now some forty miles long, and although no longer used for conveying coal to the surface, still play an important part in draining the collieries. Late in life the duke became an art collector, and acquired many pictures, including three Raphaels and five Titians, for a few hundred pounds. The collection has never been jealously hidden from the public, and is always accessible to real art lovers. The duke, after his first disappointment, remained unmarried, and when he died in 1803 the earldom of Bridgewater passed to a cousin, the higher title lapsing. The duke's canals, his estates in Lancashire and Cheshire, an estate at Brackley, in Northamptonshire, and Bridgewater House, London, with its contents, were devised on trusts under which his nephew, the Marquis of Stafford (afterwards first Duke of Sutherland, whose mother was the duke's sister) became the first beneficiary, and his son, Francis Leveson Gower, and his issue, the second and succeeding beneficiaries. The method adopted by the duke's advisers to extend the duration of the trust as long as possible is likely to remain memorable. Availing themselves of the legal rule that property may be settled for the duration of lives in being and for a further period of twenty-one years, they chose a number of persons and their living issue directly connected with the duke, and added to them the peers who had taken their seats in the House of Lords on or before the duke's decease on March 8, 1803. This proved to be an unnecessary extension, as the last of the peers died in 1857, while one of the commoners lived until October 19, 1883; indeed, several members of one family selected, the Vernon Harcourts (uncles and aunts of Sir William Vernon Harcourt), surpassed the peers in longevity, and curiously enough the last survivor of the named lives was not born at the time of the duke's decease, but some six months afterwards, coming, however, within the description, as in the eye of the law he was in being when the duke died.

As the *Times* further points out, it has been necessary to establish the death of all the persons named, including 359 peers—lay, spiritual and representative—who composed the

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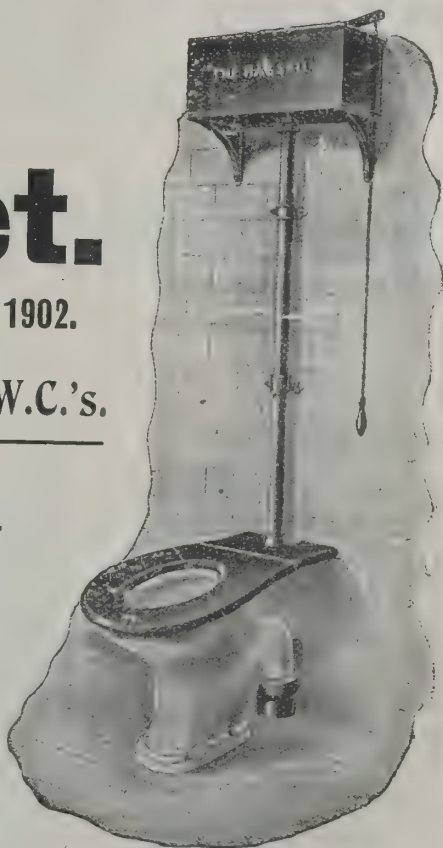
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Upper House of Parliament for the session 1802-3. The proving of the deaths of so many persons, even if peers, was a difficult task, more especially from the fact that, of the lay peerages, no fewer than forty-nine became extinct on the deaths of the possessors. Finally all were disposed of as a matter of evidence with the exception of two, of whose deaths, however, there is abundant indirect evidence. The will of the duke is almost as remarkable as his other achievements. It fills sixty-six pages of printed matter, and contains the most minute directions for the administration of the estates under the control of a superintendent trustee, endowed with ample powers. The revenues were to be enjoyed during the existence of the trust by the Marquis of Stafford, and then by his second son, Lord Francis Leveson Gower and his issue. An interesting provision in the will was that, in the event of Lord Francis or his issue succeeding to the Marquisate of Stafford, the revenues of the Bridgewater estates should pass to the next in succession.

The object of the formation of the trust was, in the words of the duke, as set forth in the will:—

"As far as the rules of law and equity will permit by the means adopted in this my will to suspend the right to the inheritance of my trust estates for the purpose of keeping my said canal and the trade thereof, together with the estates annexed thereto, as one joint fund, under such control, superintendence and management thereof as aforesaid, to the intent that the public may reap from the same those advantages which I hope and trust the plan adopted in my will is calculated to produce for their benefit."

Thus was founded the trust which for so long has played a prominent part in the history of Lancashire, and the influence of which has been felt all over the country. Though it has been long in existence, the memory of the duke and the impress made by his character have not altogether faded, and to this day persons employed on the estates speak of working at the "Duke's," while the products of the collieries are still known as "Duke's coal."

Into many of the ramifications of the *Times* article space will not allow us to enter; they are almost as bewildering as a Bridgewater tunnel to a stranger, but it is interesting to note that the effect of the splendid canal service was to reduce the price of coal in Manchester by one-half, while even in the midst of success the duke was shrewd enough to see danger in the rivalry of "those d— tramroads." Railway communication, however, was slow in developing, and as late as

1860 "swift packets" plied between Worsley, Patricroft, Barton and Manchester, carrying passengers at lower rates than they are even now conveyed by the railway. Communication with water with Liverpool was also maintained until about 1860, and "swift packets" on the canals ran in connection with the steamers on the Mersey. Keener and Keener became the Parliamentary struggle with the railways; the trustees fought 170 battles in the committee-rooms, and only four times were they vanquished. All this was done without crippling the trust property. And ultimately some forty years ago the railway and the canal to a great extent joined forces, and ultimately the canals were transferred to the Bridgewater Navigation Company. In 1887 the Manchester Ship Canal Company bought the canals.

The beneficent rule of Lord and Lady Francis Egerton is sympathetically sketched in the *Times* article, which concludes:—"The present Earl of Ellesmere on attaining a majority became the beneficiary, and will succeed to the unfettered ownership of the property on the expiration of the trust. It will make no difference to him in income or wealth, but the absurd rumours that have obtained some currency as to his accession to fabulous fortune are understood to have made him an object of much solicitude and assiduous attention on the part of many of those who are ambitious of disposing of other people's money in charity or other ways. He has been very successful as a breeder of horses, and has always been keenly interested in 'the sport of kings,' while at the same time he has maintained the traditions of his family and firmly recognised in his grandfather's words, 'the duties that devolved upon him with his inheritance,' though the ample benevolence of his predecessors leaves him less prominence in this field."

NEW FIRE STATION FOR SALFORD.

A new fire station which has been erected in Albion Place, Salford, is now ready for occupation, and is a marked improvement on the brigade's old quarters. Planned by Mr. Hey Kirkley, of Manchester, the new building embodies the results of a wide investigation of the fire stations of the larger towns of England, Ireland and Scotland, carried out by Mr. Alvan Shaw and members of his committee, assisted by Mr. Bentley, the chief officer of the brigade. The building faces north and south, the front portion directly overlooking the City.

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ent. In the middle and facing the Crescent is the central block containing the main engine-house, a duty-room, callroom and a large tower 52 feet high for drying the hose after use. Adjoining this block, and on the left of it, is a commodious dwelling for the use of the chief officer. To the right of the engine-house block, but separated from it by the main entrance, are a large workshop, smithy, loose-box stabling and a spare machine-house, whilst on the corresponding side, and behind the chief officer's quarters, is the drying-room, as well as another machine-house. Behind the front block and flanking a large exercising ground are two rows of cottages for married firemen, each of which contains three good-sized rooms, three bedrooms and a scullery and bath. Room has also been left for an additional block of similar dwellings, should the increase of the brigade necessitate more housing accommodation.

The main engine-room is 69 feet long, 35 feet wide and 25 feet high, and will accommodate five machines, which will stand directly in front of the large doors, whilst the stalls in the engine-room are so arranged as to be directly behind the engine, with a direct run from stable to engine. The electric callroom and duty-room, which are separated only by a glass partition, are on the right of the engine-room, and allow of complete supervision from the chief officer's room. This last is an office 12 feet by 13 feet, and communicates directly with the engine-room and also with the chief officer's dwelling. On the first floor over the engine-room is a large parade and instruction-room, as well as the single men's quarters. Over the duty and call-room is a capital recreation-room, where billiards and other games may be played, and there are on the same floor lavatories and bathrooms for the use of the men. To facilitate the work of the brigade when a call is received there are two sliding poles connecting the parade-room on the first floor with the engine-room below, two others connecting the recreation-room with the duty-room, and one from the chief officer's bedroom to his office below. The brigade at present consists of chief officer, sixteen married men, and about six single men, and the appliances include one steamer, a chemical engine, two horse tenders and a horse escape.

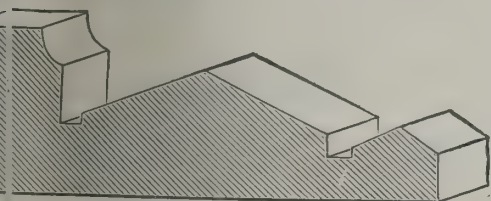
While the station contains little that is not found in one or other of modern fire stations, it is claimed that it goes far to embody all their merits. There is, however, one new feature, the form of a horse-bath, introduced by Mr. Bentley himself. It is found that valuable horses are often lost after severe exertion because they catch a chill. This the bath, which can be heated to any degree, will, it is hoped, prevent.

NEW DOCKYARD AT GIBRALTAR.

A SPECIAL correspondent of the *Standard* has described the new works at Gibraltar:—

The South Mole has been extended for a distance of 2,700 feet; a new detached mole opposite to the King's Bastion, 2,720 feet long, is being completed, and the Commercial Mole is being extended towards the latter, with a wharfage of 9,348 feet, thus enclosing about 440 acres of water, of which 250 acres will have a minimum depth of 30 feet at low water, with two openings capable of being closed against torpedo attack. Within the harbour, and in the angle between the South Mole and the shore, three dry docks, respectively 850 feet, 550 feet and 450 feet long, are being constructed, the largest of them capable of division into two docks by means of a sliding steel caisson. Gibraltar is also to be raised to the rank of a dockyard capable of executing the most important repairs, and accordingly, extending northward from the docks to the Ragged Staff, a whole range of necessary works is being erected, including buildings for constructors, machine shops, engine and pumping houses, stores, a torpedo establishment, tanks, slipways and magazines. A considerable reclamation of land became necessary, 47 acres being recovered from the sea, while 215 acres have been dredged to a minimum depth of 30 feet, and the total amount of money estimated to be spent upon all these works up to the end of the financial year 1904-5 is 5,812,000l.

The transformation that has been made is truly wonderful, and there are certainly no such interesting and varied constructive operations in progress anywhere else in the world. Practically a new dockyard has been created, involving many different classes of work, temporary and permanent, including breakwaters, docks, quays, torpedo slipways, retaining walls and dams for displacing the sea and reclaiming the land, dredging, blasting, quarrying, tunnelling, bridgework, railway construction, concrete-block making, dockyard buildings, drainage, water supply, lighting, &c. Sir Henry Pilkington, K.C.B., is the civil engineer-in-chief at the Admiralty, and the whole of the Gibraltar works are under control of Mr. A. Scott, M.Inst.C.E., Admiralty superintending civil engineer. Messrs. Topham, Jones & Railton, of London, are the contractors. More substantial and magnificent masonry it is impossible to conceive. Local limestone has been largely used, with stone from Peñarubia and other Spanish quarries, while granite has been



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brought from Aberdeen, Norway and Italy, the import amounting to between two and three million cubic feet. The Rock itself has supplied already over 3½ millions of tons of stone, sand and rough material for filling.

The blockmaking works upon the North Front are on a very extensive scale, blocks being made up to 40 tons, and there are Titan cranes and other lifting gear, with railways and barges for transport to any required point. It will afford some idea of the gigantic character of the work if I say that 13,127 blocks have been used for the extension of the South Mole, 8,268 in building the detached mole, and 62,000 for the various quays, &c., of the Commercial Mole. The Admiralty range of new coal-sheds has a length of 2,000 feet, while the new sheds on the Commercial Mole will be 3,175 feet long. A "coaling island" upon piles is also progressing in the harbour.

The docks are the most important of the works, and the smallest of the three, known as the King Edward VII. Dock, His Majesty having laid the coping-stone on April 9, 1903, will soon be ready for use. The steel sliding caisson for closing the entrance is now being erected. The other docks are less advanced, but are taking shape, and work proceeds energetically day and night so that they may be completed within the appointed time. The pumping-house is a marvel of efficiency, and contains the main pumping-engines, drainage-pumps and engines, and accumulators for hydraulic pressure. So powerful is the apparatus that the large dock will be capable of being emptied in 5 hours, this being equal to 105,000 tons of water, or 4,700,000 gallons an hour. The dockyard stores, buildings and offices are being erected upon piles, and the latest machinery and appliances will be supplied. The buildings cover an area of about 11 acres.

The policy pursued by the Admiralty in creating a new Gibraltar should command the approval of all Englishmen. The increase in number and size of the ships composing the Mediterranean Fleet has overtaxed the accommodation of Malta, and it is not improbable that the Western port may yet become the headquarters of the Cruiser Squadron. Battleships, cruisers and destroyers will find there all that is necessary for their life and service. Damaged in action, or disabled by accidents, in need of docking for under-water repairs, requiring coal or naval victualling stores of all kinds—whatever may be their class, they will find all they want at Gibraltar. Regarded, indeed, from every point of view, the great dockyard and harbour of the Western gate of the Mediterranean is a supremely important link in the chain of naval preparedness.

All the world knows that Gibraltar is magnificently defended by its guns, and a great magazine is now being dug in the very heart of the Rock.

ELECTRIC LIGHTING IN DUBLIN.

A REPORT of the electric-lighting committee of Dublin Corporation, to be submitted to a special meeting of the Council next week, sets out extra expenditure in connection with the new electric lighting system, to cover which the committee recommend that an application for a loan should be made to the Local Government Board. The committee submit a report from Mr. Robert Hammond setting out the items of extra expenditure incurred in connection with the complete system. The total amount of this is 48,000*l.* in respect of the city undertaking in addition to a sum of 5,961*l.* expended in the city under the Clontarf electric lighting scheme. The report goes on to deal with unforeseen difficulties which were met with, especially in the laying of street mains (the latter owing to the extraordinary number of old cellars which run out under many of the streets).

The report of Mr. Hammond, dated July 28, sets out the liabilities amounting to 302,500*l.* or 48,000*l.* beyond the 250,500*l.* loan sanctioned by the Local Government Board, but then incurred, in addition to the 5,961*l.* specified above. It then gives in detail the items making up this extra expenditure of 48,000*l.* They include:—Iron troughing for the mains, substituted for earthenware troughing included in my scheme, 6,000*l.*; extension of engine-house to provide space for additional plant and Lancashire boiler, 4,261*l.*; substitution of Lancashire boiler for water-tube (extra seatings), 500*l.*; coal steers and provision for mechanical coaling and ash disposal, 5,921*l.* less provision in original estimate, 1,600*l.*, 4,321*l.*; lowering gear for arc lamps, 1,400*l.*; culvert at Victoria Bridge, 2,700*l.* No provision, Mr. Hammond states, was made for this, but the consulting engineer understood that cables would be taken through culvert to be constructed in connection with the main drainage. Storing plant in consequence of delay in starting work in Pigeon House, 781*l.*; expenditure at Pigeon House on extra well, pipes, foundations, &c., 1,250*l.*; extra cost of constructing Sackville Street sub-station, underground, 44,000*l.*; extra sub-station at Trinity College, 575*l.*; Trinity College transformers, 514*l.* 16*s.*; removal of Thomas Street sub-station,

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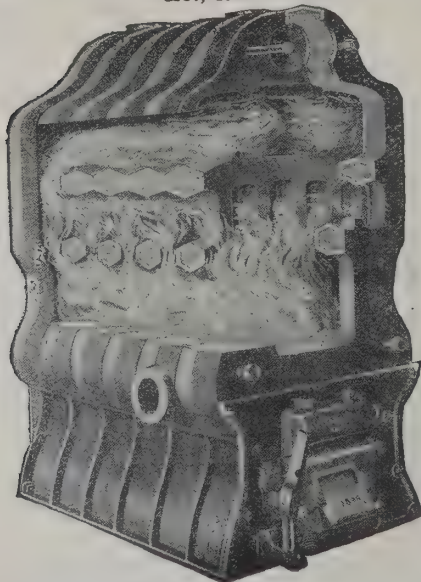


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The amount of contracts entered into in connection with the undertaking is as follows:—Total of contracts entered into up to February 7, 1903, 250,366*l*. Until complete measurements are made and agreed with the contractors, it is not possible, says Mr. Hammond, to deal with the exact figures; but subject to this proviso, I beg to submit the following statements:—Estimated cost of additions to building work at Geon House, including provision for Clontarf lighting already reported to Council, 5,106*l*.; additions to building work at Geon House not yet reported to Council, 1,259*l*. 1*0*s. 3*4*d.; additional substations and of additional work in connection with those contracted for originally, 2,139*l*. 14*0*s.; additional mains and additional work, including provision for Clontarf, 1,602*l*. 17*0*s. 9*4*d.; increasing the section of mains in certain streets and alterations to cellars, &c., 10,331*l*.; sundry extras and contracts not included in the remaining lists, 3,534*l*. 8*0*s.; total contracts entered into and reported on on February 7, 1903, 250,336*l*. The extra expenditure to be allocated as follows:—To city lighting, 48,000*l*.; to Clontarf lighting, 5,961*l*.

The lighting committee say they have very carefully considered the items of Mr. Hammond's statement and recommend them for the approval of Council, and recommend further, that application be made to the Local Government Board for its sanction to a supplemental loan of 48,000*l*.

THE WORKING OF SYNDICATES.

THE British Consul-General, Mr. Francis Oppenheimer, in his latest report to the Foreign Office on the trade and commerce of Frankfurt-on-Main, says that as much uncertainty prevails concerning syndicates, the German Government have appointed a commission to inquire into the subject.

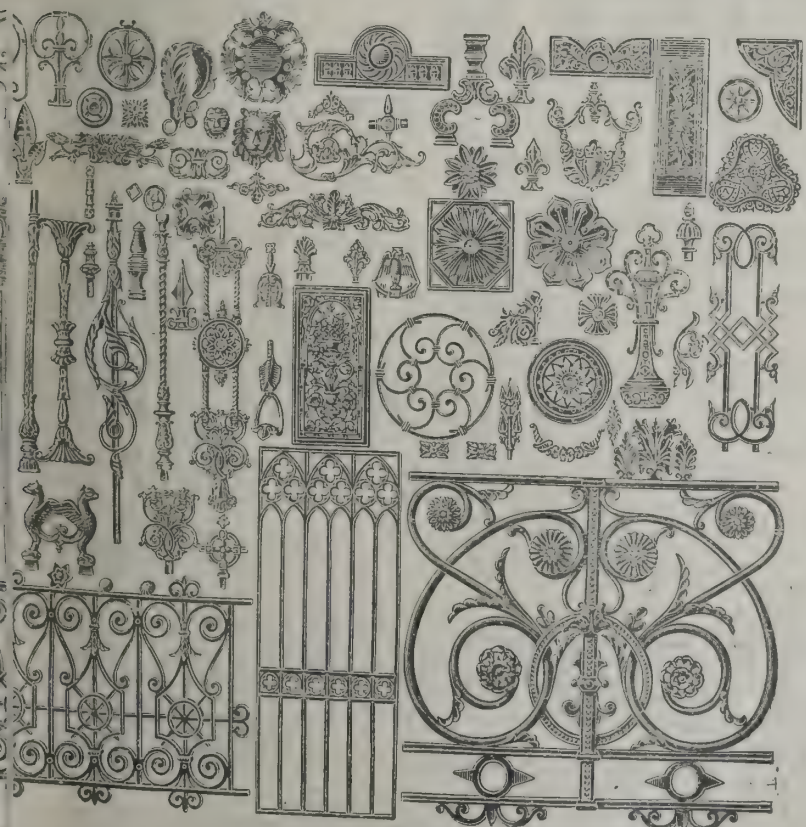
The task, he says, will not be an easy one, as the number of syndicates ascertained to exist during 1901 and 1902 amounted to 450. The inquiry can only be extended to the most characteristic types, which will be grouped under the headings of mining and iron industry, chemical industry, paper industry,

agricultural industry, finally the stone, earth and glass industry. The inquiry is to establish:—The numbers of membership of the syndicates; the number of their workmen; the character of their produce; quantity and value of their produce per annum; the causes leading to their foundation; their purposes and organisations; the means (and their consequent success) by which they pushed their sales at home and abroad; the prices obtained at home and abroad, and the causes of their difference of price (if any); the influence, if any, exercised upon dependent industries and merchants by their conditions of sale; their success in influencing the prices of raw materials and semi-finished goods requisite for the manufacture of the "syndicated" produce; the influence, if any, which they had upon workmen and wages in the syndicated concerns and the finishing traffic. Shortly, the inquiry is to pay special attention to:—(1) The number and species of existing syndicates; (2) the price policy of the syndicates; (3) the effects of syndicates and the means used for attaining their ends.

The result of this inquiry will no doubt confirm many of the benefits and disadvantages claimed for and against syndicates by theorists. There seems a general consensus of opinion that since the foundation of syndicates the old adage that "competition is the life of trade" no longer applies. Syndicates practically do away with competition, which had led to technical improvements and inventions. As syndicates take in tow also weak concerns, natural selection among the works of the same branch ceases. It has not yet been proved that this is counter-balanced by the endeavours of the various members of the syndicates to occupy a prominent position in the same. Syndicates, moreover, will endeavour to rule the market. This compels them to deal very summarily with any new competition that may spring up outside. Outsiders are fought with every conceivable means; they are underbid; their sellers and buyers are boycotted, and some of the steps taken by syndicates have led to litigation in the courts of law. Syndicates also interrupt all connection between manufacturer and customer, which is one of the causes of their strength, for all individual connection having been severed, the manufacturer, if he quitted the syndicate, would find himself compelled to begin all over again.

All agree that, since the formation of syndicates the capitals invested in trade have become less subject to risks arising from crises; prices remain more even and steady; the crumbling away of prices through underbidding—especially in times of receding trade—is no longer feared, and the expenses of pro-

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duction are reduced. Thus also the labour market must profit; employment and wages have become steadier; if during bad times the home prices are kept up artificially, wholesale dismissals of workmen need not be resorted to; the various trades will more easily acquire an old and experienced stock of workmen.

Whatever advantages or disadvantages individual syndicates may cause to the producer, the public and the workmen, it must not be forgotten that it is the tendency of syndicates to call into existence other syndicates—whether it be in support or in opposition—and thus the advantages or disadvantages become multiplied over the country. Concerning all this, the above-mentioned commission will no doubt furnish the Government with much valuable information; and the information will be all the more welcome as the time must come when the Government will be forced, actively and prominently, to participate in syndicates.

Though the Government owns coal mines within the geographical limits of the Rhenish-Westphalian Coal Syndicate, it has so far stood aloof, because its participation there in the production of coal is as yet insufficient to give it a leading voice. A Bill has been brought in empowering the Government to acquire additional coal mines, and it is hoped that some day the Government possession of coal mines and their output may be made sufficiently important to establish a "fiscal coal cartel;" that is to say, a coal syndicate in which the Government will be able to dictate terms.

One such fiscal cartel indeed already exists, viz. in the rock salt industry, and it is claimed that it offers all the advantages of a Government monopoly without its disadvantages.

From time to time complaints are raised in the German Press against the German syndicates generally, or some special syndicate, and a Government interference is demanded. The "extremists" demand direct legislative interference, a suggestion which finds little favour with the public; others claim but a Government supervision, which would enable an insight into the contracts and books of syndicates; others wish to introduce into the new customs legislation a provision enabling the Bundesrath to suspend or diminish from time to time the customs duty on such goods which, by a combined action of sellers, are artificially raised or maintained high in price. A suggestion, based upon the American practice of refunding the customs duty upon goods which, after having been imported for finishing are again exported, finds but little favour, as the official control of such goods would entail a greatly increased

staff of officials, and the system itself so easily leads to a veiled system of private export premium.

So far the only concession made by the Government in reply to such claims is the appointment of the commission above referred to—a step undoubtedly accelerated, if not altogether prompted, by the circular published by the Russian Minister of Finance, in which he suggested an international conference to deliberate upon the commercial situation created by the price policy of the syndicates on the world's market. This document certainly raised the loudest alarm as yet raised against the syndicates by pointing out that fair trade on the world's market was at stake, more especially since various syndicates in different countries had arrived at an international understanding, and that when shortly new commercial treaties would be under negotiation all over Europe, the proper occasion would present itself for an international exchange of opinion. It also pointed out that an international conference would be but a further step in that same international policy which had been entered upon by the Brussels Conference, which had internationally regulated the national export bounties upon sugar.

The question of syndicates has certainly acquired international importance; leading German trade papers admit it boastfully, as one of the most widely circulated said not so long ago:—"It cannot be denied that the large commercial concerns have shown apparent indifference during these times of politico-commercial agitation. Such indifference can only be explained by the fact that these large concerns no longer attribute to the customs policy its former importance; it cannot be denied that the protection offered by syndicates is continually being more appreciated, and that the commercial concerns are generally of opinion that the syndicates offer to industry a protection which robs the customs duty of that force which it has so long enjoyed. The commercial policy alone is no longer decisive for the prosperity of a trade; the policy of syndicates has become a most important item of commercial development."

Such a statement, when put forward by those most competent to judge, must imply international agreements among syndicates, which if carried to their full length might in the end render superfluous any national commercial policy. Such glances into the future cannot appear altogether fantastical, as there already exists a certain number of such private international understandings, but it is hardly likely that such considerations will enter into the deliberations which will bring about the next set of commercial treaties.

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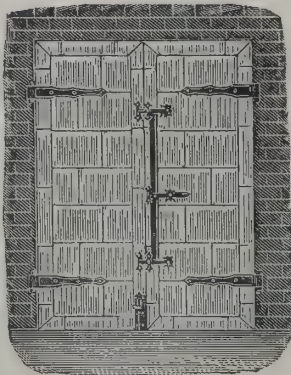
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The Architect.

THE WEEK.

The inaugural lecture of the new session of the School of Architecture, University College, London, will be delivered by Professor F. M. SIMPSON on October 7. The subject will be "Architectural Evolution." There will be three terms in the session, the first beginning on October 6. The college certificate will be granted to students who have passed the special matriculation examination or some other examination (such as the London University matriculation) accepted in lieu of it, have presented certificates of attendance in three of the subjects mentioned under "first year," and have satisfactorily passed through the full architectural course of three years. Students not wishing to go through the certificate course can take merely the architectural and drawing from the antique classes, devoting the whole of their time to these. The lectures will relate to building construction and design, and the history of architectural development. Students can join either course without attending the studio classes. A course will also be delivered by the Professor of Mechanical Engineering dealing with iron and steel construction in buildings (roofs, girders, stanchions, &c.) and laboratory tests on cement, bricks, stones, concrete, timber, iron, steel, &c. In addition there will be classes for instruction in working drawings, building construction, measuring and estimating.

THE Brighton Grand Aquarium has ceased to be a novelty. It now belongs to the Corporation. But the money which is required to realise Mr. TILTMAN'S plans is not forthcoming. An ordinary speculator would see the necessity of a change, but the councillors are without experience in working places of entertainment. By the irony of fate a building which stands in need of rebuilding has been selected as the place for an exhibition of building improvements and decorative art from September 23 to October 10. Preceding exhibitions in the Aquarium have succeeded. According to the prospectus, "It is the desire of the committee to organise an exhibition of all those things which are novel and attractive in the building world, giving due prominence to artistic, decorative and modern improvements (rather than to ordinary and staple articles of utility long since recognised). At the same time exhibits of historical interest and those illustrative of the progress of British architecture will be welcomed." Brighton possesses a great many architects, most of whom are members of the consultative committee. It cannot be denied that a large amount of money is expended every year on buildings, for London enlarges, its marine satellite must keep pace with it. It may be mentioned that the Aquarium committee, having decided to introduce a new heating system in the building, offer a special prize of twenty guineas for the best proposal, to be accompanied by plans and estimates, with or without illustrative working models, the cost not to exceed 600*l.*, under the conditions more fully set out on forms to be obtained from the manager.

SINCE trade has of late almost become omnipotent, it is exerting its power in novel ways. We pride ourselves on our peculiar system of weights and measures, but foreign merchants derive a part of their strategy from its inconvenience, or, what comes nearer to them, its dishonesty. For example, about thirty Chambers of Commerce in Germany entered a protest against the English pound weight, which they say is equivalent to only 454 grammes, as against 500 grammes under the decimal system, so that the dealers as well as the makers are damaged, inasmuch as the former expect and the latter actually furnish 500 grammes, while the foreign manufacturers, who can offer their shorter and cheaper prices, are unfairly benefited. It is to be expected in consequence of the agitation that sooner or later British manufacturers will have to supply the market with packets complying with the decimal system. Otherwise they will be put out of the competition. The Americans, meanwhile, with their customary shrewdness, are adapting themselves to countries where the decimal system prevails as well as Great Britain.

This concession gains favour in decimal-loving countries because it is supposed that the United States desire to be emancipated from English weights and measures. It is remarkable, however, that the metre, which is the best known representative of decimalism, is not finding favour with many scientific men in France. It is assumed to be the ten-millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of the meridian. Although great mathematicians like DELAMBRE and BIOT superintended the calculations, the instruments of which they made use, and which were provided by the Constituent Assembly, were too clumsy to allow of more than an approximation to exactitude. If considered in relation to a meridian, the metre is found to be too short. It is, therefore, an impostor which has obtained recognition under false pretences, and one, moreover, which is likely to have caused great error in all astronomical or terrestrial calculations of which it was a unit. A new metre is proposed as a substitute, and this is based upon the medium height of a barometric column at the sea-level. In that way the metre would be increased by 0.033. Of course, it could only be considered as temporary, for the atmospheric pressure varies, but it would at least serve better than the existing metre for some millions of years.

So many accounts have appeared in newspapers describing the facility with which Americans raise, lower or transport their buildings to a distance, there is a belief in other countries that they can be imitated. In Switzerland especially, where there are so many timber-framed houses, it is almost natural that the idea should gain a firm hold on the people. A catastrophe which has occurred in Amriswyl, in the canton of Thurgau, and close to the Lake of Constance, has demonstrated that more skill is required for safely conducting those experiments than is found in all places. A shopkeeper desired to raise his house about 10 feet in order to provide additional accommodation. A master-builder from St. Gall was entrusted with the work. Baulks of timber were introduced in the basement, and having secured a timber foundation the elevation commenced. It was so slowly and equally carried on as to be hardly perceptible to the occupants. An elevation of about 9 feet had been obtained, and practically not more than a foot remained to complete the operation. Care had been exercised to shore the sides of the house in order that it might be kept in a vertical position. Through a heavy fall of rain the ground became soddened. Some of the raking shores in consequence sank. The building inclined, and then suddenly collapsed by heeling over on one side. An assistant of the owner and the building inspector were killed and others were injured; a heap of *débris* represents the house.

AT one time busts of Roman emperors were considered desirable accessories for palatial mansions in England. But although much has been said and written about these rulers, there has been no public recognition of them in this country. The Emperor of GERMANY, who is nothing if not original, has decided that their connection with Germany should be manifested in a way which cannot be ignored. He has started by giving commissions to Herr GOTZ, the sculptor, for figures of HADRIAN and ALEXANDER SEVERUS, which are to be placed in the Saalburg, the re-created Roman castle which two years ago was converted into a museum, and is suggestive of the hill forts erected for the protection of the great line of Roman fortifications. A colossal figure of ancient Germany in a different part of the district is another memorial of the great contest between two races. The heads of the two emperors are modelled after antique busts. HADRIAN stands with his right arm uplifted and holding a lance. ALEXANDER SEVERUS is represented as very young, for he was murdered in his twenty-seventh year. With his left hand he appears grasping the hilt of his short sword. Both are to be cast in bronze, and will be larger than life-size. HADRIAN was acquainted with Britain. He constructed a rampart in the North of England, but it was little used after the more important masonry wall was constructed by SEPTIMIUS SEVERUS. The two statues, we suppose, are only the beginning of an imperial series.

A RENAISSANCE CRITIC AND BLACKMAILER.

THE Renaissance period is supposed to be a great endeavour to attain a standard which was almost of an ideal kind, viz. the production of works of art and literature equalling those of antiquity. But as at all times human weakness appears, many of those who took part in the struggle were not as sincere or as competent as they professed. Hence there arose an opportunity for satire to point out abuses and frailties. There was generally a fear of disclosures, and writers who could become libellous were either honoured and bribed or put out of the world. We may mention three cases of the former variety, viz. ERASMUS, who was born in 1467, PIETRO ARETINO, who was born in 1492, and RABELAIS, who was born in 1495. They represented the most civilised parts of the Continent, where the power of the Renaissance was most at work. Popes, emperors, kings and princes were anxious to conciliate them. Although the Church, the universities and civil governments would have gladly adopted some means to prevent those men from writing books, they were able to survive all efforts against them. Each could have attained an exalted position, and all of them died as quietly as any ordinary citizen of the period. We do not intend to follow out those remarkable lives or to explain what correspondence in character existed between them. We propose simply to glance at the career of PIETRO ARETINO, the most discreditable of all, because he was connected with great and petty artists, and as far as he could he endeavoured to victimise them.

He was the illegitimate son of a cobbler of Arezzo and was early thrown on his own resources. He received little education except from the books he assisted in binding, which was his first employment in Perugia. Then he went to Rome and found patrons. He became also a friend of artists. He might have succeeded in that city if it were not for his co-operation in a production which even in those lax days was considered immoral. A set of plates engraved by MARC ANTONIO from designs by GIULIO ROMANO appeared, and they were accompanied by sonnets of ARETINO. Whether the verses originated the plates or *vice versa* is unknown; but the engraver was cast into prison, GIULIO fled to Mantua, and ARETINO escaped to Florence and finally to Venice.

He could write prose as well as verse, and was an adept in most forms of composition. His comedies, according to HALLAM, are reminiscent of Athens rather than of Rome, for they showed more of the effrontery of ARISTOPHANES than the pleasant freedom of PLAUTUS. According to the historian:—"In a literary sense the writings of ARETINO are unequal: the serious are for the most part reckoned wearisome and prosaic; in his satires a poignancy and spirit, it is said, frequently breaks out; and though his popularity, like that of most satirists, was chiefly founded on the ill-nature of mankind, he gratified this with a neatness and point of expression which those who care nothing for the satire might admire." With all his cleverness he was likely to have failed if he followed the ordinary course of legitimate authorship. But, like the man in the "Vicar of Wakefield," he gained money by offering to dedicate one of his writings to any patron who paid for the distinction, and he accepted compensation for the omission of names or anecdotes from his pages. He seems to have possessed an unlimited capacity for accepting bribes or presents of all kinds. Venice was a commercial city, and we presume the merchants around allowed him similar latitude in selling his wares to that which they insisted on for themselves. Venice at this time was a centre not only of trade, but of diplomacy, and it was easy for ARETINO to manœuvre in such a way that apprehensions of his libels were excited in remote courts. Not even HENRY VIII., with all his bluff courage, was able to escape paying a price for exemption. When ARETINO called himself the scourge of princes, there was more truth in the phrase than in many others which he set down.

He was not always the satirical rogue, or it may be he was only ridiculing his subjects still more when he attempted to write on the most sacred themes. He saw Italian painters around him who could alternately take up Pagan and Christian legends. There was then little consistency among artists or authors. One effect of his devotional writings was to win some regard from a Pope, for JULIUS III. embraced him as if he were a pillar of the

Church. It is also remarkable that he sometimes became the severe moralist when judging paintings. From an early age it was customary to introduce portraits of the people who gave commissions as auxiliaries in Scriptural or ecclesiastical pieces. But in ARETINO's time in Venice there appeared to be no limit to the intrusion. Out of the five figures in TITIAN'S *Supper at Emmaus*, now in the Louvre, four are known to be portraits. In the glorious *Wedding at Cana* by PAUL VERONESE, in the same gallery, several artists are represented. ARETINO denounced the practice, and with good reason, but he was near suffering his temerity. TINTORETTO, who had been dismissed from TITIAN for his refractory character, and who, according to VASARI, possessed the most determined hand with the boldest, most extravagant and obstinate brain of any artist in Venice, made a pretence of preparing to pistol the critic, and that was sufficient to scare ARETINO. On another occasion he reproved the medallists of Italy for degrading their art by making portraits of nobodies, which, he declared, should be restricted to notabilities. As often happens with censors, the law he laid down for others he never thought of obeying in his own practice.

We can obtain a glimpse of the respect in which ARETINO was professed to be held by some of his great contemporaries from letters which have survived. The Marquis FREDERIC of Mantua in 1529, addressing himself to the magnificent and most learned signor, tells him of the pleasure his letter gave, because it revealed that ARETINO was inspired by affection. The duke said he wished to recognise him as the dearest of all his friends, and he was resolved to do everything necessary for his success at profit. There was a famous portrait of PETRARCH'S LAURENCE by SIMON MEMMI which, it is evident, ARETINO demanded. The duke declares he has not been able to find it, but when he does it is to be at ARETINO's service. The scribbler sent an engraved gem by VALERIO to the duke, which the duke promised to faithfully preserve among the most cherished objects he possessed, and for the sake of the satire he consented to patronise the engraver. ARETINO evidently took care to have two strings to his bow. He would write to a patron for an example of a painter's work, and he would also write to the artist making a similar request. If one failed to bring him what he sought, he was sure to succeed with the other. GIULIO ROMANO was then employed in Mantua, and ARETINO wrote to the Bolognese Prince CARLO, a relative of the duke, begging for the design which the artist had prepared. GIULIO apparently was too busy and had not despatched it. But the grandee sent a picture of DIANA instead, and at the same time informed ARETINO that he has only to send orders and it will afford him great pleasure to carry them out.

We have a letter of another kind from SEBASTIAN DEL PIOMBO, the friend of MICHEL ANGELO, by whom he is said to have been aided in order that he might become a rival of RAPHAEL. In Venice he was one of ARETINO's best companions, but Pope CLEMENT gave him the appointment of Keeper of the Leaden Seal. Whenever he witnessed the stamping of the papal bulls it was necessary for him to wear a monk's robe. The painter writes to his friend in Venice that he was no longer the good fellow of former days, but he had become FRA DEL PIOMBO, and he bids him inform SANSOVINO, who was an angler, that leaden seals, red tape and other offices were to be fished for, whilst in Venice he caught only eels and gudgeons. Another artist, LEONARDO BARTOLINI, a sculptor, writes to say how much he has been pleased by ARETINO's contrast between the gates of Heaven and those of Florence. On one was inscribed "All he who abandon ye who enter," while on the other it was "Abandon hope all ye who go out," and he announced how he and his friends desire to make ARETINO patriarch of the Temple of Solomon.

Among the most characteristic of ARETINO's epistles is one he wrote to MICHEL ANGELO on hearing about a commission for the *Last Judgment* in the Sistine Chapel. He begins by affirming that, as a man would be worthless who was forgetful of the Deity, so it would be to despise knowledge and fail in judgment if one did not venerate a great artist on whom Heaven had poured all its graces and favours. He dared to address him because he (ARETINO) had already acquired more or less celebrity among princes by his courage in bestowing blame as well as praise.

though the world might have many kings, there was only single MICHEL ANGELO, who was one of the most perfect creations of nature, and imparted to his works not only the grandeur and majesty derived from nature, but the power and style which were his own. No one who had seen MICHEL ANGELO need regret they had not looked upon PHIDIAS, APOLLO and VITRUVIUS, for their genius was only the shadow of the Florentine artist's. It was, indeed, fortunate for the reputation of PARRHASIUS and the other great masters of antiquity that their works had not come down to us, for the artists themselves would recognise the inferiority of what they did, and would declare MICHEL ANGELO to be the unique painter, the unique sculptor and the unique architect among men. Then ARETINO gave an imaginary description of the artist's last Judgment, and it must be owned there is vigour in the sentences and a knowledge of BUONAROTTI's terrible manner. He added that people would tremble on seeing just as much as they would on the Last Day. It has been suggested that ARETINO in anticipating the future should be able to announce that he had given MICHEL ANGELO inspiration for his masterpiece.

The artist had then so many enemies, he probably concluded it would not be wise to have so unscrupulous a stretch added to them. His reply is laudatory, but could hardly be otherwise than insincere. He tells the magnificent signor, whom he calls a brother, that his letter caused him at once joy and sorrow. Joy at receiving such a testimonial from the only model of knowledge that existed, and sorrow that he could not utilise so much imagination, for the design had been completed for a part of the work. There must have been sarcasm in the suggestion that ARETINO would make known his opinions of his merit, since both kings and emperors considered it one of the greatest favours to have their names written with ARETINO's pen. The true meaning of his flatterer's epistle is expressed by the artist when he said:—"If I have anything which can afford you pleasure, I offer it to you with all my heart." In other words, MICHEL ANGELO was willing to be blackmailed by surrendering some design, picture or model. Whether he carried out his intention is unknown. It afterwards ARETINO, posing as the champion of Christianity, roundly abused the artist for the indecency of painting and the introduction of Pagan figures.

Poor GIULIO ROMANO must have been dilatory in attending to ARETINO's behests, for he excuses himself on the ground that he is suffering such torture with his eyes he was hardly able to make his Easter Communion. The Duke and Duchess of MANTUA were so exigent, it was with difficulty he was able to obtain an hour to prepare a drawing he sent with the letter; he admitted it was not good in composition, and it was the first time he made a drawing with a pen, but he was willing to do anything with his feeble forces could accomplish in order to please a friend, by whom he hoped to be pardoned for being slow and negligent. Perhaps the best evidence of the impotence of ARETINO is to be found in an appeal from a poor painter and engraver, FRANCESCO TERZO, of Bergamo, whose name is unrecorded in any history of Italian art. He begins by apologising for the meanness of his present, and says the cause is the avarice and ignorance of rich people who keep down men of talent. It is in vain for a man to go through a thousand fatigues in order to acquire an art, and then to give proofs of his capacity. The difficulty remains of discovering patrons. Where would MICHEL ANGELO be if the pen of ARETINO had not made the triumph of his work? Wanting that aid he, TERZO, had difficulty in obtaining even bread. But if poor in goods he was rich in talent. All he was able to send was the portrait of a honest girl, but she was of a humble class, and in her that her position might not be recognised he had represented her wearing clothes unlike her own. But ARETINO could dispose in any way he liked of such ability the painter possessed. The letter reveals how the fame of MICHEL ANGELO was spread among all classes of artists. It was needed he was the arbiter of taste for Europe, and it was necessary to have his good word in order to attain fortune and fortune.

What a wonderful collection must ARETINO have accumulated. From MICHEL ANGELO to TERZO there were every varieties of artists, and they were all likely to have

contributed to his booty. When the GONCOURTS visited the small house of THÉOPHILE GAUTIER they were amazed when they saw only a few trifling sketches which expressed the gratitude of painters to the most eloquent of all Parisian art critics. GAUTIER did not make any complaint; he was an honest man, he loved art and was gratified when, by his words, he was able to make the way easier to success for artists of ability. Fortunately a similar rule is adopted in England. There are worthless artists who say they have not gained commissions because they were unable to pay the price for favourable notices in journals. Although the pen is still as powerful as ever, there are no ARETINOS who would degrade it for mercenary considerations.

ARETINO must be acknowledged to be the first professional art critic. There were connoisseurs before his time, but they never attempted to put on record their opinions. By printing his criticisms he helped to extend the reputation of many Italian painters. No one would believe that he was always impartial, but if he had a scale of charges TITIAN must in honesty have rewarded the critic by enormous sums. Judging by what he wrote, he considered TITIAN to be the foremost artist of the time. Even if we allow that he was enamoured of the painter's facility—which, as he possessed a similar gift, he declared to be the principal proof of excellence—yet from his remarks we can perceive he was capable to realise the greatness of the most enjoyable of all pictorial poets, the one man who could appreciate equally the beauty of man and this world. ARETINO was not entirely corrupted. Amidst his degradations his spirit could occasionally arise to purer and more honest convictions, but he was of the earth, and soon subsided. There are several portraits of him, but what seems to be more suggestive of his strange nature is the etching by MARC ANTONIO, in which he is seen in a bizarre costume that recalls the turbaned Turk. It suggests power which, under different conditions, might have been turned to more advantage to the men of that age and to those who were to follow them. He lived on safely in Venice until 1557. He was buried in the church of St. Luke. His portrait was introduced by SANSOVINO with those of TITIAN and himself in the bronze door of the sacristy of St. Mark's basilica.

NEW BOOKS.

THE inconsistencies of the weather not only drive holiday takers indoors, but suggest to them that winter is approaching. The true student is always willing to welcome it, because the long evenings enable him to turn to his books with more zest. Publishers are aware of the tendency. They give indications of their coming ventures, and in some cases they take time by the forelock and issue their books as if winter had already taken us in charge.

The record of the "Holiday Rambles among the Cathedrals and Churches of North Germany," by T. FRANCIS BUMPUS (London: T. B. BUMPUS & J. S. BUMPUS), will be familiar to our readers. Students of ecclesiology will find an advantage in having the papers collected within a single volume. It is written in the same spirit as the author's "Summer Holidays among the Glories of France," or, in other words, it testifies that the enthusiasm excited by the Cambridge Camden Society still survives to some extent among churchmen of a later generation. To Mr. BUMPUS churches are not merely architectural monuments, but "living temples of sacrifice and prayer." It is not always advisable to regard German congregations as coming under the influence of their ecclesiastical buildings. Mediæval *instrumenta ecclesiastica* are preserved, although the ritual may be Lutheran. Indeed, we have sometimes observed in the towns as well as in country parishes that Germans were not clear about the extent of the Reformation, and they accept pictures and statues as if they were architectural details like the flowers sculptured around the capitals or other ornamental accessories. Sentiment counts for much with them, and thus they find nothing irregular in the scene which VON ZEDLITZ witnessed, and which he made the subject of one

of his charming poems, in order that it might find imitators. In it a mother is represented as imparting to her baby the Holy Communion she has just received, and this act is described as if it were laudable for exemplifying the sweet power of maternal love and the spirit of the institution. Although it could not be considered orthodox, it suggests the liberality of interpretation in Germany. Sometimes one building serves for congregations who differ in belief, and indeed it is difficult for a stranger unversed in local ecclesiology to determine with what variety of worshippers he participates. On the other hand, the possibility of confusion arising has made the prayer-books in use more definite than is needed in England. As respects the buildings in which the services take place, Gothic and German have been so long associated, it is almost impossible to separate them. What is the true style of the Empire was suggested in Lord LEIGHTON's last Academy discourse as Romanesque, which was, as he said, supplanted, "not, indeed, by evolution and organic growth, as in the Ile de France, but solely by contagion; an importation from without, not a development from within, and therefore without normal inner life; Gothicism supplanted that national form of art in which Germany had till then expressed her powerful idiosyncrasy." Mr. BUMPUS is a zealot for Gothic, and it would be excusable if he confined himself to examples of the style. But the religious spirit is more important still in his eyes, and therefore he presents with equal interest the churches which preceded Gothic, and those which followed its decline. Lord LEIGHTON, for instance, considered the western apse which is so often met with as a violation of every fitness. The use of it is not plain. All Mr. BUMPUS can say is that "it is not unreasonable to assume that it was appropriated to parochial uses, while that at the opposite end contained the altar and choral fittings of the capitular or conventual body." Lord LEIGHTON, in speaking of the Apostel Kirche in Cologne, in which the entrance is through a western transept, points out the scattering of the attention to the right and the left at a point where it should be concentrated on the high altar. Mr. BUMPUS, on the contrary, considers the transept produces an undeniably impressive effect, since it constitutes an internal narthex free from benches. The difference is characteristic. Lord LEIGHTON desired unity of effect and a manifestation of purpose. Mr. BUMPUS is happy even with a partial view, and finds good in everything. The latter is also not afraid to express his own belief, although it may clash with theories, and his book consequently affords the satisfaction which is always to be obtained from an honest declaration of opinion about the impressions received in or before the buildings. There are other parts of Germany no less deserving of examination, and we hope Mr. BUMPUS will undertake the duty. In these days of commercial rivalry and the battle of tariffs much is said against the Germans which is not altogether deserved. They may have changed in many ways, but it is still possible to witness services marked by that old fervour which has accomplished so much.

At present schools ill-adapted for the purpose are used for technical classes. Teachers, however, rebel against arrangements which increase the difficulties of their own work and are not advantageous to students. It may therefore be anticipated that some nearer approach may be made to imitate Continental and American practice in the organisation of science schools, especially when it becomes known that with the makeshifts which have to be utilised economy is as little promoted as efficiency. It is a propitious time for architects wishing to demonstrate that they possess some practical acquaintance with the requirements of professors and students and are competent to satisfy them. In all such cases the first step is the hardest. Mr. T. H. RUSSELL, M.A., who has written a systematic treatise on "The Planning and Fitting-up of Chemical and Physical Laboratories" (London: B. T. BATSFORD), has, in his duties as an architect, worked out the details of the fittings of the chemical department at the Manchester Municipal School. He therefore personally knows how difficult it is to obtain information on the subject. He has accordingly in his book supplied the guidance of which at one time he felt

the need. He treats of elementary science-rooms, chemical laboratories and physical laboratories, including in each case detailed descriptions with illustrations which include working drawings on a small scale. He also gives suggestions on the ventilation, warming and lighting of schools. The book is excellently arranged, and the most successful examples to be found in England are noticed. Professors and teachers have afforded Mr. RUSSELL the benefit of their experience, and the book should be found beside every designer of a science school.

Mr. G. A. T. MIDDLETON has enlarged his useful series of manuals by one on "The Principles of Architectural Perspective" (B. T. BATSFORD). He believes it to be more complete than another, which for some time bore the name. What Captain JACK BUNSBY said of his mysterious platitudes is applicable to books on perspective. They are all good in their way, but "the bearing lies in their application." We suppose in bygone days there were civilians and military officers who plodded systematically through BRADLEY'S exhaustive book, and in earlier years the "Jesuit's Perspective" may have served as a potential exercise for Lent; but no one, unless they were content to see the world rush by, could afford the leisure to master them while training to be an architectural draughtsman. A fault in a perspective view of a building rarely does harm to an architect. He deserves to suffer if it does not show his work at its best. Once a man has discovered the knack of diminishing lines effectively, he rarely has recourse to any authority on the science. Mr. MIDDLETON'S instructions are expressed, so to speak, in the vernacular of the drawing-office. They are preferable, therefore, to what is contained in most of the geometers' treatises, and a novice will find some of his early difficulties removed by their aid. But we doubt if any book by itself will make a competent draughtsman, and as for perplexities they are only without their advantages. One thing is certain, and students never escape them.

As long as examinations take place there will be crammers. Their business is to anticipate the questions likely to be asked and to keep the candidates' attention concentrated on them. Some teachers adopt the wise plan of tearing from a book all the parts which however useful are likely to distract the student. Another way to attain the end is by supplying answers to questions which have been set. Under the title of "Municipal Engineering" (St. Bride's Press, Ltd.) model answers are given to questions put at former examinations of the Incorporated Association of Municipal Engineers. If any of the candidates could answer questions in the same style they might be model young men, for in some cases a single answer runs out to three pages of small print, with diagrams, formulæ, chemical analyses, references to law cases and so on. A surveyor who could be as exhaustive in the limited time allowed for examination would certainly, if he obtained an appointment, be liberal in the use of the stationery provided by the borough. Whether they are practical models or not, the answers supplied may be regarded as a series of essays on varied subjects in which an immense amount of information is contained. They form an epitome of the knowledge required by a municipal engineer. Their use is therefore not confined to men of that class. Building construction, sanitary science, Local Government questions as well as engineering are treated. The questions asked in such examinations lead a roving life and turn up unexpectedly in novel situations. Students submitting themselves to architectural examinations are likely to find questions in the book which they will have to encounter. It would have been an advantage if the authors of the model answers were named. They cannot, we assume, be the examiners, for the general belief of competitors is that every examiner could be "spun out" by his own questions. Indeed, we have heard of a case where a man lost an appointment because he was incapable of answering questions drawn from a book bearing his name on the title-page.

Few people with hobbies have been so fortunate as Dr. GEORGE VIVIAN POORE. In May 1893 he brought out the first edition of his "Rural Hygiene" (LONGMANS, GREEN & Co.), showing how people in the country can utilise sewage. The subject was one which had become a bore, owing to the number of projectors aspiring to

turn filth into gold. However inodorous, it was so simply and earnestly treated by Dr. POORE that three editions of his work were called for. We have already explained the author's system, which is very different to the sanitary methods which have to be adopted in cities and towns. In the third edition the matter has been rearranged and added to. But as before, it mainly relates to the Doctor's own experience. Country gentlemen, for whom life is oppressive, can have a subject for constant attention in imitating Dr. POORE'S example. Architects building country mansions will find it useful to be able to realise what is feasible in combining hygienic arrangements with agriculture on a small scale.

A fourth edition of Mr. J. P. ALLEN'S "Practical Building Construction" has been issued by Messrs. ROSBY LOCKWOOD & SON. It merited that sort of cognition. The author is lecturer on building construction at the College of Science at Newcastle-on-Tyne, and he has taken pains to render his descriptions comprehensible by young students. As there are over a thousand useful diagrams, some on a large scale, it will be evident that efforts have not been spared to make the subjects easily realised. The fourth edition has been revised and extended, containing about eighty additional pages.

A fifth instalment has appeared of "The Modern Carpenter, Joiner and Cabinetmaker" (The Gresham Publishing Company), which is especially remarkable for the clearness of its illustrations. Among them is the roof of the grand avenue of the Glasgow Exhibition, 1901.

"Practical Science for Plumbers, Engineers and Students," by Mr. J. WRIGHT CLARKE, lecturer at the Polytechnic (B. T. BATSFORD), is a praiseworthy endeavour to explain the elementary truths of hydrostatics, hydraulics, heat and temperature, in order that plumbers and others may be able to understand the reasons for what they are doing. The author has observed that classes for such subjects are not attractive, although the practical classes may be crowded. Simple experiments are suggested and examples drawn from things likely to come under the observation of students. The author is not afraid to adduce his own experience as a warning. He says, for instance, that he found in a bank "tinned copper pipes, with wiped soldered joints. The ends of the pipes were socketted into thimbles 1 inch long, well tinned inside and outside, and good bold joints, $3\frac{1}{2}$ inches long, were then wiped over the whole. Many of the joints began to leak within a few years of the work being done." This was owing to the solder being more than the copper, and eventually the two metals were separated. It is not often a teacher shows so much courage.

Another manual by a Polytechnic teacher treats of "Paints, Colours, Oils and Varnishes," published by SCOTT, BROWN & CO. The author, Mr. FURNELL, is a competent authority, and many useful hints are to be derived from the pages.

ROMAN DISCOVERIES IN THE PEAK.

EXPLORERS have come from all parts of England to Brough. The field in which the explorations are being made is the sight of Hope station, and there is nothing in its outward appearance to suggest the existence of archaeological treasures below the surface. The greatest importance is attached by archaeologists and antiquaries to the discovery of a bath believed to be a Roman bath, which supports the opinion that the Romans had baths here as well as at Buxton. An old Roman road known as Bathgate leads directly from the newly-discovered bath through the fields until it reaches Bradwell, and is proved to be in a splendid state of preservation for several miles until it reaches the old Buxton, 10 miles distant. It is therefore a complete ruin of a Roman town that has been buried since those who retired from this country 1,600 years ago.

The bath was completely filled with *débris*. Mr. Garstang and his men devoted all day to its removal, by no means an easy task, seeing that every stone and spadeful of dirt was carefully examined. Its form proved to be oblong, measuring east to west about 12 feet and about 8 feet from north to south. This was the exact shape of the ancient Roman bath at Buxton, though the latter was much larger than the one at Brough. The walls are of beautifully worked gritstone, and the bath is entered at the eastward end by a splendid flight of steps.

Very soon the men rooted out of the *débris* something which proved to be an exceedingly beautiful little Roman altar. It is of gritstone, magnificently worked, and although small is one of the most perfect specimens ever found. It was carefully washed, and was the object of much attention from visitors during the day. But a find of greater importance followed, in the form of a massive triangular shaped stone with an inscription, yet to be deciphered, but which it is believed pertains to the sixth legion. Reared in one corner of the bath was a portion of a massive Roman column or portico, and among the contents were stones about 3 feet square, which tested the strength of half a dozen men. A few bones were found, but they are believed to be chiefly those of cows, sheep or deer. The bottom of the bath was reached, when another piece of stone was found, with Roman characters inscribed thereon, but it proved to be simply a piece to connect with those found, the whole making an inscribed tablet with moulded cornice. The floor is not flagged nor tiled, and in the centre is a tank about a yard square by 18 inches deep. It is a remarkable coincidence that when the ancient Roman bath of Buxton was discovered, the floor was neither flagged nor tiled, but consisted of a composition of lime mixed with coarse sand saturated with blood. There was also a cavity in the floor resembling a boat in shape. Its breadth was about 6 feet, and its depth below the level of the floor and the deepest point of curvature was about 18 inches.

At the north-east corner of the camp, close by a precipitous bank, at the bottom of which flows the river Noe, have been found foundations of what seems to have been a circular tower, and there appears to have been a corresponding tower, somewhat larger in diameter, at the north-west corner.

When the Derbyshire Archaeological Society has completed its excavations for the present summer they will be covered, but such is the extent of the station that it is expected exploration will be continued for several years on the site. Members of the Society will probably visit the spot shortly. The Society is much indebted to Mr. Edward Nicholson, the leaseholder of the land under Colonel Leslie, for the assistance he is rendering. Mr. John Garstang, who is superintending the work on behalf of the Society, is accompanied by his sister. Mr. Garstang, it may be mentioned, conducted the exploration of the Roman fort at Ribchester for two years, and made similar researches at Whitchurch, in Kent, and at Melandra Castle.

The following circular has been issued by Mr. Percy H. Currey, hon. sec. Derbyshire Archaeological and Natural History Society:—

Excavations upon the Roman site at Brough, near Hope, in Derbyshire, have shown that station to have an area and importance which have exceeded expectation. The stout outer walls, the great size of the pretorium, and numerous stone buildings arranged symmetrically within the enclosure are indications of a fortress which has played a definite part in the military history of Roman Britain.

In addition to several altars and architectural remains, there have been found the portions of a large engraved tablet of the second century; the slab has been about 5 feet in length, with deeply-moulded border, inscribed in six rows of large letters; it seems to have been set up while Antoninus Pius was Emperor by a Prefect of the First Cohort of Aquitanians, under Julius Verus, then Governor of Britain. A full reading and an account of the excavations have been promised by the discoverer, Mr. J. Garstang, to the next Journal of the Derbyshire Archaeological Society, under whose auspices the excavations have been made.

The work hitherto has been of an experimental character. The Society is now determined to proceed systematically and thoroughly with the excavations; they are helped by a kind offer of the archaeologist who has made their preliminary exploration to place his services at their disposal in future. They therefore cordially invite a general and generous interest in this undertaking, which is of national interest and necessarily expensive.

BUILDING CONSTRUCTION.

THE science examiners of the Board of Education in their report for 1902 say:—

It appears to be necessary to say that this subject cannot be learned from books alone. More than in the case of any other of the subjects of the group, the practice of building differs from what is taught in the books. The student reads history in old buildings; buildings now being constructed are modified in various ways by the circumstances, the fashion of the time, the money available, the materials in the neighbourhood, &c. Building construction as seen in actual buildings in some degree compares with the development of animals or plants. We speak from experience. The young student requires to have it explained to him why the books differ so far from the house he lives in and from the other familiar buildings which he sees every day.

Every kind of construction may be seen in buildings—the compilers of books appear to profess that they give the best construction. The chief defect in the books is a want of proportion—the old and worn-out methods are retained, given at large, and the new methods are imperfectly given. An important duty of the teacher is to correct this want of proportion in the books; he should himself have a practical knowledge of building—indeed, to be a successful teacher, he must have practical knowledge; one may as well hope to learn anatomy from a book as building construction from books alone.

Judging by the whole results of the examination in this stage the questions were fairly within the present range of the candidates except in regard to their power to apply calculation. More attention should be given to this part of the work. The attention of students should be directed to locks and other fastenings. There are some experiments with materials which are easily made anywhere, as, for example, the mixing of sand and lime or cement, and wetting the mixture and then measuring the resulting mortar; this may be done using old cocoa tins, or other like things, as measures. The students, and perhaps the teachers, may not be able to explain the phenomena which will sometimes present themselves in such simple experiments, but they may be able to get help from others. For example, it is explained that the cement and water hide themselves in the interstices between the grains of sand, but this only goes part of the way, because if dry sand is put into a measure and moderately pressed, adding water makes the sand contract in the measure. An intelligent teacher will notice such things as that lime putty shrinks and cracks like starch in drying, and that mortar does not do so. If one observes the cracks in the plaster on an old ceiling it will be seen that no two cracks quite cross each other at a point. The teacher should ask questions, and he should, above all, encourage his students to ask him questions.

The answering in Honours, Part I., is not equal to what should be expected from honours candidates. The standard of marking was a rather low one, yet a very large proportion of the candidates failed to pass.

In preparing for Honours, Part II., Division I., it may be useful for students to remember that the elements of Classical architecture (the architecture of Greece) are reducible to a few forms. The orders, mouldings and ornaments may be all shown on a few moderate sized sheets of drawings. The student cannot know these too well; he should be able to sketch these from memory; he should be familiar with their marks and tokens. It is not necessary for this examination to burden the memory with the names of many temples, or to go minutely into differences of examples of any one order. With, first, a definite knowledge of the best Greek forms the student should endeavour to trace their evolution from the more ancient forms and also to follow them forward into what they became in the hands of the Romans. He may have his own theories as to architectural degeneracy. He may be able to see in what happened to Greek architecture in the hands of the Romans a suggestion of what has happened to the art of architecture in modern hands. Let us assume that the Parthenon was the most perfect example of Greek architecture—a model of the Parthenon will not serve for a railway station. The modern variety of purposes of buildings introduces great complexity, and we appear to make slow progress in evolving architectural forms suitable to the modern purposes. The best we can do appears to be to use the old forms as decorations. The decorations of the Parthenon were not its pillars, they were its sculptures. Fifty years ago mechanical engineers made use of Classical columns in their machines. They do not do so now, and the change adds much to one's comfort in looking at modern steam-engines. The development of Pointed architecture is comparatively recent, and it may be easily followed: notwithstanding great apparent complexity, the elementary forms are few, and the subject is again a simple one—a temple or church.

In the elemental forms of Classical architecture and also in those of Pointed architecture, the student has examples of the results of progressive development valuable in themselves and valuable for the lessons they teach. Every animal and every plant is exactly fitted for its life, and it is beautiful to the person who can see the fitness; there are, however, some animals and some plants which we think more beautiful than others, as, for example, a horse compared with a crocodile, and a rose compared with a mould. It is a safe rule to design a building with strict regard to its purposes, but there is much room for art outside this. These remarks are not to be taken as oracular; in no subject is there greater room for difference of opinion; it is intended to encourage students to think for themselves, to have opinions of their own, but these original opinions must be associated with enthusiastic work and study.

Thirteen candidates were admitted to the examination in practical design at South Kensington. No really good design was sent in, and the drawing was generally careless, inaccurate and untidy.

This part of the examination is particularly disappointing.

TESSERÆ.

Gothic Ironwork.

THERE are some broad rules which every workman employed in ecclesiastical work must be strictly kept to. The first is, of course, that all kind of casting is absolutely forbidden. Secondly, the file is to be used as seldom as possible. The sharp edges which the unpractised smith wishes to smooth off are just what we want to keep on. Thirdly, the punch is generally not employed enough. If they work with three or four, shaping their heads properly with a file before commencing, it is astonishing what beautiful construction they may effect. Fourthly, never allow them to model in first. The use of one material puts out their hands for another. It is—to compare small things to great—like a performer the organ hurting his touch for that instrument by constant practising on the piano. Let them do at once what has to be done, and there an end, not be perpetually touching and improving. It is better to spoil an article now and then, if so doing we put life and spirit in what is not spoiled. Fifth, teach them that they are not to stand about little prettinesses and neatnesses. When they make one great bold plating-door that are to stand the storms of centuries, they are not to go about it as if they were making filigree work for a lady's writing-desk. They are not to smooth off this rough edge with a hammer in that projection, file down this unevenness. We will excuse some faults for the sake of spirit. We do not want a tame exact copy so much as life. Quentin Matsys was as true a poet in ironwork as Canova was in sculpture or O'Connell in painting, and there is no reason why we should not have another Quentin Matsys: only we shall never get him by tying down our workmen to a mere servile imitation of quatrefoils, or oblong or circular holes.

Lord Burlington as an Architect.

Never were protection and great wealth more generously and more judiciously diffused than by this great person, who had every quality of a genius and artist, except envy. Though his own designs were more chaste and classic than Kent's, he entertained him in his house till his death, and was nevertheless studious to extend his friend's fame than his own. There were many other instances of the painters and artists he encouraged and rewarded. Nor was his munificence confined to his libraries and his own houses and gardens. He spent great sums contributing to public works, and was known to choose that his expense should fall on himself, rather than that his country should be deprived of some beautiful edifices. His enthusiasm for the works of Inigo Jones was so active that he repaired the church of Covent Garden because it was the production of a great master, and purchased a gateway at Beaufort Garden in Chelsea, and transported the identical stones to Chiswick, his religious attachment. With the same zeal for pure architecture he assisted Kent in publishing the designs for Whitehall, and gave a beautiful edition of the antique baths from the drawings of Palladio, whose papers he procured with great care. Besides his works on his own estate at Lonsborough, in Yorkshire, he new-fronted his house in Piccadilly, built by his father, and added the grand colonnade within the courtyard. Campbell, in his "Vitruvius Britannicus," assumes to give the new front of Burlington House and the gateway, but he took no credit for the colonnade, which was in a style far superior to his designs, we may safely conclude it was the Earl's own. His lordship's house at Chiswick, the ideal which is borrowed from a well-known villa of Palladio, a model of taste, though not without faults, some of which are occasioned by too strict adherence to rules and symmetry. Such are too many correspondent doors in spaces so contracted; chimneys between windows, and, which is worse, windows between chimneys, and vestibules, however beautiful, yet too little secured from the damps of this climate. The trusses that support the ceiling of the corner drawing-room are beyond measure massive, and the ground apartment is rather a diminutive catacomb than a library in a northern latitude. Yet these blemishes, and Lord Hervey's wit, who said the house was too small to inhabit and too large to hang to the wall, cannot depreciate the taste that reigns in the whole. The larger court, dignified by picturesque cedars, and the classic scenery of the small court that unites the old and new house, are more worth seeing than many fragments of antiquity, which our travellers visit under all the day's attendant on long voyages. The garden is in the Italian style, but divested of conceits, and far preferable to every style that reigned till our late improvements. The buildings are laid out and not equal to the purity of the house. The lavish quantities of urns and sculpture behind the garden front should be retrenched. Other works designed by Lord Burlington are the dormitory at Westminster School, the assembly-room at York, Lord Harrington's at Petersham, the Duke of Devonshire's house at Whitehall, and General Wade's in Grosvenor Street. Both the latter were ill-conceived and inconvenient, but the latter had so beautiful a front that Lord Chest-

as the general could not live in it to his ease, he had to take a house over against it and look at it." These are details relating to this illustrious person's works. His true praise is better secured in Mr. Pope's epistle to him.

Norman Architecture.

The Norman era may be stated to be from 1066 to 1154, is, from the Conquest to the death of Stephen. In a general comparison with the other nations of Europe, in that age, historians consent that the Normans were eminent, of superior, with respect to civilisation and the arts. In architectural science, as promoted by their religious zeal, they made a great proficiency, and many grand structures had been raised to embellish their own province before they had made an absolute establishment in England. Many dissenting opinions have been advanced concerning what really constitutes Norman architecture, and it has been confounded by the Saxon by several able antiquaries. But a still greater confusion occurs when the Pointed style, first practised in this island in the reign of Henry II., is called Norman. The principal discrimination between the Saxon and the Norman appears to be that of much larger dimensions in every part; but more lofty vaulting; circular pillars of greater diameter; round arches and capitals having ornamental carvings much more elaborate and various adapted to them; and a total absence of pediments or pinnacles which are peculiar to the Pointed or Gothic style. Among the monuments in the early Norman reigns were found men of consummate skill in architecture, which, aided by their munificence, was applied to the rebuilding of their abbeys. No less than fifteen of the twenty-two English cathedrals still retain considerable parts which are undoubtedly of Norman erection, the exact dates of which are ascertained. We have the following enumeration of Norman bishops, who were either architects themselves or under whose auspices architecture flourished:—Gundulf of Rochester (1077-1107), whose works are seen at Winchester, Canterbury and Peterborough. Mauricius of London (1106-1108) built old St. Paul's Cathedral. Roger of Salisbury (1107-40), the cathedral at Old Sarum. Ernulf of Rochester (1105-25) completed Bishop Gundulf's work there. They were followed by monks of Bec in Normandy. Alexander of Lincoln (1123-36) rebuilt his cathedral. Henry of Blois, bishop of Winchester (1129-69), a most celebrated architect, built the conventual churches of St. Cross and Rumsey in Hampshire; and, lastly, Richard, Archbishop of York (1154-81), where none of his works remain. By these architects the Norman manner was properly brought to perfection in England; and it will be supposed that the improvements made by any of them were adopted in succession.

Vases in British Museum.

The series of Greek and Etruscan fictile vases has been principally acquired from the following sources:—The vases were purchased by Sir William Hamilton when British envoy at Naples, and purchased with the remainder of his antiquities in 1788, and may be regarded as the nucleus of the collection, to which a few vases were added by the purchase of the Towneley collection in 1814, that of Lord Elgin's antiquities in 1816, and the purchase of Mr. Richard Payne Knight in 1824. In 1836 the Museum purchased a number of fine vases at the sale of the collection of the Chevalier E. Durand, and again, in 1841, at the sale of part of the Prince of Canino's vases. In 1842, a hundred select vases, chiefly from Vulci in Etruria, were purchased from the Princess of Canino. By these last three purchases the collection, hitherto very deficient in fine specimens from Vulci and Nola, was greatly enriched. The most valuable accessions which have since taken place are the vases from Athens and the Greek islands, purchased from Mr. J. D. Burgon in 1842; those from Camirus, in Rhodes, purchased from Messrs. Salzmann & Biliotti in the course of the years 1859-64; those purchased at the sale of the Pourtalès collection in 1865, and at the sale of the Blacas collection in 1866. Nearly all the vases in the collection have been found in Italy, Sicily, Athens, Corinth, the Islands of the Aegean and the Cyrenaica. From the circumstance that the specimens which first found their way into the museums of Europe came from Etruria, that country was regarded by the antiquaries of the last century as the chief if not the only place of their manufacture; hence they are still popularly called Etruscan vases. As, however, they are found in every part of the ancient world where Greek civilisation flourished, they may for the most part be considered as the work of Greek artists. The vases found in Etruria may be divided into two classes—those made by native artists, which may be rightly called Etruscan, and those which seem to be the work of Greek artists, or at least to have been executed under Hellenic influence. Some of these latter may have been imported into Etruria, others may have been executed by Greek artists in that country. All these vases, though found in different parts, are probably for the most part very similar in form and design, and the fictile ware used in the ancient Greek household

They were employed for a variety of domestic purposes. In most cases the shape of the vase indicates clearly what was its original use; and both in their design and fabric there is generally a happy adaptation to the end for which the object was made.

Mediæval Proportions.

Were it known that a particular architect or school of architects had followed secret rules about the proportions of their buildings we might apply the process of induction with a chance of discovering the rules—we say a chance merely, for besides the imperfection of induction itself, no one can tell that in any particular case the architect may not have been induced to deviate from the rules which his eye and his judgment approved of. The whim of his employer, the remains of former buildings to which he has to adapt his new work, or on whose foundations he has to rear it, and the religious and popular reasons which must have influenced in multifarious ways the rebuilding and enlargement of sanctuaries such as our cathedrals, and the shapes themselves rendered necessary for the convenience of the service—these disturbing causes might well make induction produce a wrong result. But the investigation becomes far more loose and vague when the induction extends over the works of all architects from the Classic times to the present day, and the assumption is not that a certain rule generally pervaded their works, but that there may possibly have been such a rule. We will not stop to compare such a course of reasoning as this with that employed on modern astronomy; to do so would be purely ridiculous. But taking no higher stand than the induction used on history or the study of language in which it has been the cause of so many errors and of so much ridicule, it is easy to see that the research is of a far more certain character than this after the rules of proportion in architecture, because there are prevalent habits of human conduct and human speech, the exceptions from which can be accounted for and the results tested by other circumstances; so that the historian or philologist may, if he exercises due diligence, come to a right conclusion on any subject he investigates for which he has sufficient materials.

Ancient Bronzes.

The names of few sculptors, or rather statuaries, of celebrity have reached us who were not chiefly distinguished for the excellence of their works in bronze. Theodorus of Samos, Gitiadas of Sparta and Glaucias of Ægina held an eminent place among the earlier artists in bronze. A list of the statuaries of Greece, who excelled in works in metal, would almost be a history of sculpture. It will be enough to state that Ageladas, the master of Phidias, Phidias, Alcámenes, Agoracritus, Polyclethus, Myron, Praxiteles and Lysippus exercised and contributed to bring to perfection this branch of art. Bronze-casting seems to have declined in Greece soon after the time of Alexander the Great, about 330 B.C. The accounts given of the number of works executed about that period almost exceed belief. Lysippus alone is said, according to Pliny, to have produced above 600, or, according to another reading, above 1,500. The Romans were never distinguished for the cultivation of the arts of design, and when statues were required by them in the earlier period of their history they were obliged to call in the aid of Etruscan artists. Afterwards, as their empire was extended, the city was filled with the works of the best schools of Greece, and numbers of artists of that country, no longer able to find employment at home, established themselves in the capital of the west. Zenodorus is said to have executed some magnificent works in the time of Nero, and the remains of art of the time of Trajan, Hadrian and the Antonines prove that artists of great skill were living at the date of those emperors. Many of the examples of bronze works that have reached us exhibit signs of having been gilt, and the writers of antiquity refer occasionally to the practice. It does not seem to have been employed till taste had much deteriorated—probably when the value and richness of the material were more highly estimated than the excellence of the workmanship. Nero commanded a statue of Alexander, the work of Lysippus, to be gilt; but Pliny tells us it was found to injure the beauty and effect of the work, and the gold was removed. The greatest destruction at one time of ancient works of art is supposed to have occurred at the taking of Constantinople, in the beginning of the thirteenth century. The collection of statues had been made with great care, and their number had accumulated to an amount which seems quite surprising when it is considered how long a time had elapsed since art had been encouraged or protected. At the period alluded to we are told that some of the finest works of the ancient masters were purposely destroyed, either in mere wantonness, or with the view of turning the material into money or for sale to the metal-founders for the value of the bronze. Among the few works saved from this devastation are the celebrated bronze horses which now decorate the exterior of St. Mark's Church at Venice. They have been ascribed, but without sufficient authority, to Lysippus.

NOTES AND COMMENTS.

THE most productive field possessed by French archaeological explorers is Timgad, or the ancient Thaumugadi, in Northern Africa. The latest discoveries on the site are remarkable. One is a stabulum, or a range of vast stables; four houses which, from the remains of the mosaic and decorations, must have belonged to wealthy citizens; the portico of a great thoroughfare, which was carried through the city from west to east; a double range of colonnades with Doric capitals; and a second market-place, having an area of more than 700 square metres. The last was one of the earliest constructions, for it was the work of the Third Roman Legion, and was supposed to date from the second century. Subsequently the city grew in size, and the old market-place was no longer its centre. The plan is peculiar, and is described as resembling the Greek letter omega. There were two immense basins or fountains, and as the conduits have been traced to hilly ground the water must have been forced to a great height. Both basins were surrounded by Doric or Tuscan columns, each forming a nymphæum, or place of repose, where the eye was delighted not only by the falling water, but by statues and other decorations. All round the wall of the market-place were shops. On account of the marks on stones, which are evidence of constant sharpening of knives, there is no doubt some of these shops were occupied by butchers. In others vegetables were sold. From the number of small terra-cotta figures of animals it is concluded that women visiting the market could bring home toys for their children. The figures may also have been used as substitutes for living animals in offerings to the gods. From its unique character the market-place is the most important archaeological discovery of the twentieth century.

IN 1910, unless administrative changes occur in Paris, the Eiffel Tower will share the fate of numerous other structures, and will be sold as old metal. The difficulty of disposing of its neighbour of the same age, La Galerie des Machines, suggests that seven years hence there will be a similar scarcity of speculators, and the tower may continue to dominate the greater part of Paris. The decision respecting it is connected with the plan which M. BOUVARD, the architectural director of the municipality, has prepared for dealing with the site of the last international exhibition. That enterprise inflicted a terrible loss on Parisians, and it led to an imbroglio which has to be settled decisively. The new scheme involves the transformation of the Champ de Mars, the esplanade of the Invalides, the banks of the river in the vicinity and the garden of the Trocadéro. The immense cascade in the last named, which always impressed strangers, will be cleared away. All available space is to be converted into gardens. The Jena Bridge will be allowed to remain, but it will receive sculptured decorations. M. BOUVARD's plan has been a long time on the tapis, but it has at length obtained the approval of the technical committee of artists and engineers appointed to consider it.

GREAT BRITAIN is the only important country in Europe which does not expend money in sending students of art to Rome. France of course is the most munificent in its outlay, but elsewhere much is done to gain the object by a modest expenditure. The Academy of Art in Berlin has just issued the proposals for 1904. The whole sum to be disposed of is no more than 18,600 marks, or 930,000, and only about a third of it is provided by the State. In other words, there are two Government prizes or bursaries, each of which is worth 3,300 marks. They are to be awarded to a painter and an architect. The remainder of the money is derived from contributions by individuals. The ROHR prize to the value of 4,500 marks is open to the competition of painters of all classes. Then there is the SCHULTZE prize of 3,000 marks for sculptors. Two prizes of 2,250 marks each were founded by MICHEL BEER; one is reserved for Jewish painters, and the other for sculptors, without regard to creed. In most cases the competitors are not to be older than thirty-two years. The subject for

one of the prizes in sculpture is a relief to be placed over the entrance of a library, and for another a relief for music-room. The architect who succeeds need not remain in Italy for more than six months, but the painters and sculptors are expected to live there for a year. The competitions will be held on February 20 and March 1, 1904.

TEN of the members of the Manchester Society of Architects visited Ashbourne, in Derbyshire, on August 1. Almost continuous rain prevented much outdoor sketching. The interior of St. Oswald's church is very interesting, including some good Early English windows and Decorated work, and some fine tombs. The curiously irregular triangular plan, with chapels, gives some very picturesque vistas internally, and a long day's sketching was all too short. On the evening of August 25 fifteen members visited Parr's Bank, Spring Gardens, by the kindness of Messrs. C. HEATHCOTE & SONS, the architects. Mr. HEATHCOTE jun., explained the building to the visitors, and the visit was a very interesting one.

ANOTHER appeal has been issued by the Liverpool Cathedral Building Fund. The diocese, it is said, is now not only an admirable site, but an extremely beautiful, original and exceptionally majestic design for the new cathedral. The sum of 25,000,000 is needed as a further contribution from the diocese during the coming autumn and winter, in order that the required amount of 200,000,000 may be in hand before the anticipated laying of the foundation-stone in the spring of 1904. A much larger sum than this will, of course, be eventually needed to complete the whole cathedral. The time has therefore now arrived when an earnest, fully organised and sustained effort must be entered on throughout the diocese, and it is requested that rural deaneries will now take active measures for pressing forward the important work of collecting funds in all the parishes of their rural deaneries. In order to minimise as much as possible the expenditure of time and trouble by those who have kindly undertaken to act as hon. secretaries or treasurers for the cathedral fund, whether in parish or rural deanery, proper forms have been provided on which the sums collected may be entered. It will conduce in the highest degree to ease and efficiency in the organisation for this important work if secretaries and treasurers will kindly follow the directions.

ILLUSTRATIONS.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C. GENERAL OFFICE.

FRIMLEY COURT, SURREY.

THIS house is to be erected on a beautiful site close to Frimley, in Surrey. The garden front (not illustrated) overlooks a large lake approached by a terraced garden. The intended materials are, for the walls, red brick from Bracknell, with Ham Hill stone dressings; the roof to be covered with green slates, with lead hips and lead flanges top. The architect is Mr. F. STEWARD TAYLOR, of Southampton and London.

CATHEDRAL SERIES.—EXETER: CHAPTER HOUSE AND CLOISTERS. SOUTH TOWER, FROM PALACE GARDEN.

HOUSE AT BOURNEMOUTH.

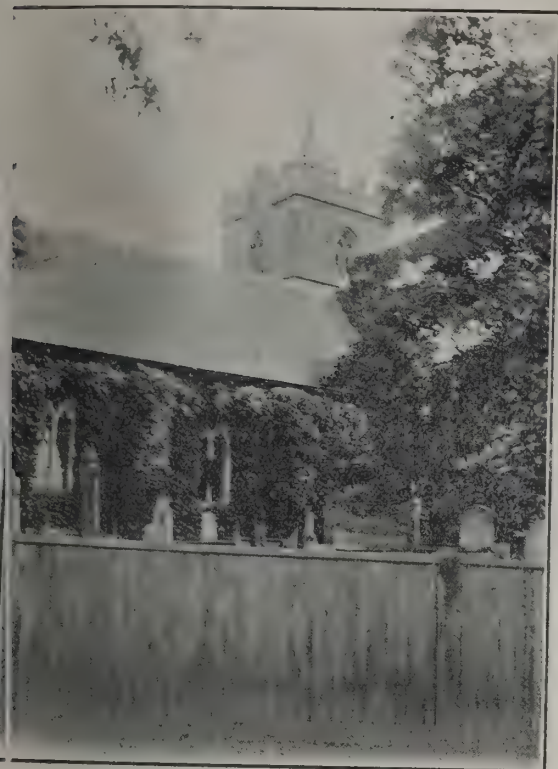
SOUTH AFRICAN WAR MEMORIAL TO BE ERECTED AT BOURNEMOUTH.

FOR the memorial now illustrated, Mr. ROBERT BELL, sculptor, of Newcastle-upon-Tyne, is the contractor. The stone is taken from Corncockle Quarry, Dumfriesshire. The four central panels are bronze. The flame portion of the grenade on top and of the four near the panels will be gilded, as well as one or two of the undercut mouldings. The architect is Mr. A. B. PLUMMER, F.R.I.B.A., M.I.A.E., surveyor for the diocese of Newcastle.

ROYDON AND NETHER HALL, ESSEX.*

Roydon.

has been assigned to me, gentlemen, by those who must be obeyed, to conduct as many of you as are willing to accompany me to Roydon, a pleasant village in Essex, situated on the borders of Hertfordshire and near the confluence of the river Stort with its neighbour the Lea, which can boast of great importance and has a conservancy to protect its course. Stort, which flows along through many a sunny mead, rises itself near Broxbourne. Roydon is on the east bank of the rising ground, with one long street from west to east, ending out near the church, and had once a market, for which, as Morant informs us, Edward I. granted a charter in 1271 "here every Thursday and a fair on the 1st and 2nd of August." As far as can be learnt, no such market or fair has been known for many years. A quiet, uneventful life may be passed. There are the usual cottages, houses and barns (at least seven), but with the exception of the telegraph post and telegraph office very little new business or improvements.



ROYDON CHURCH.

A village stocks, whipping-post and lock-up still exist on a green. The church, of fair size and importance, is situated in such a position that whether you enter the village by the railway station or walk down the long street, you get a very pleasant picture. Dedicated to St. Peter, it contains a nave with chancel of the same width, with a north transept from which it is divided by an arcade of three bays, with a tower at the west end. This, as usual at the period of building, is gabled; it contains six bells and has a clock. An oak screen divides, together with an oak-framed arch over the chancel from the nave, where there still remains the altar which Archbishop Laud desired should be placed in the church. In this he was but following earlier authorities who desired to keep out dogs. The pulpit is poor in material and design. The font is in close proximity to the north door; it has probably been removed and rebuilt in its present position. Much work, together with the attempt to make the stone-work inside and out "as good as new" by covering and painting it up with cement, give evidence of late repairs. This is very bad taste, and it is now difficult to at once distinguish our satisfaction the old work, but what we regret is that the carving is treated in the same manner, by painting it no carving at all. We notice this in a spirit of sympathy for we see how little these old buildings were studied, and how little had then been learnt of the various styles of architecture or of the better methods, whilst we do not depreciate

the paper read by Mr. H. G. Quartermain, M.S.A., before the meeting of the Upper Norwood Athenæum.

the efforts men have made or may make to preserve buildings once full of interest to all. There are a few remains of painted sixteenth-century glass. The church measures about 78 feet long east to west, and 37 feet south to north. Registers, 1653.

The general lack of good building materials in Essex has given rise to much of the decay, and ignorance of selection has done more, whilst the ready method found in the use of cement to stop a hole, gaping crack, or to smooth up a broken surface, commended itself to the churchwarden with restricted money bags.

The native stone was of a friable nature, and could not stand the weather in whatever position it was used. On the other hand, there was plenty of flint, small iron stones and a few of that curious conglomerate resembling our concrete, but so exceedingly hard that it could not be worked with tools. Therefore the finer work wherever used, and upon which the greater labour was expended, has been lost to us; it was worked in a bad material, consequently of the skill of the workmen we can learn nothing, although we know it existed, whilst the cheap, ready-to-hand, and probably despised materials still remain put together by the commonest labour.



BRASS IN ROYDON CHURCH, OF THOMAS COLT AND HIS WIFE.

But for many a long year brick has formed the very best building material to be had in Essex. This, however, we may call artificial, something taken from nature, prepared, moulded and burnt to requirements. Whether the art of brickmaking was an imported one (and it may reasonably be supposed to have been introduced from the Low Countries) we will not discuss; but there are many examples of both plain and moulded brickwork of the finest quality, put together in the best and most skilful manner. We could enumerate many such examples in this and the adjoining counties which are still solid, except where some of them have been wilfully damaged or destroyed, perfect in construction, some enriched with the charm of age, and glow of mellow colour upon them.

Nazing Church tower is a very fine example of red brickwork ornamented by that simple but very effective method of using the overburnt black brick headers in diaper work, as it is now called. We find this ornament in almost every old brick building we remember and are charmed with it.

Thus, having proceeded so far, I may venture to excite your interest by quoting the authority of Morant, or one's own notes, and remind you that we are told "Roy" and "dun" are Saxon words signifying "a sweet hill" which gave rise to the name "Mount Pleasant," otherwise "Reydone," "Reyndon," "Duindune," which in the Confessor's time belonged to Ingvar, a freeman, and to five other freemen. At the survey it was holden by Ranulf, brother to Ilger; there was adjoining it a berewich or hamlet, which Richard held of the said Ranulf. These lands were divided into four manors, viz.:—1st, Manor of Roydon; 2nd, Manor of Temple Roydon alias the rectory;

3rd, Manor of Downes; and 4th, that of Nether Hall. Apparently the Baynards were heirs to Ranulphis, and from them it came to the noble family of Fitz-Walter by grant from



ROYDON, SHOWING THE STOCKS.

the Crown upon the felony and forfeiture of William Baynard in Henry I.'s reign. In 1319 Robert Fitz-Walter was found to hold this manor of Reyndon of the king as part of his barony, and in 1285 King Edward I. granted him 200*l.* per annum beside the market, as above stated. In 1290, Robert Fitz-Walter gave this estate and several tenements with the church to the Knights Templars, but in 1311 they were conferred to the Knights Hospitallers, who held them until the general dissolution of religious houses.

The manor then fell to the Crown and continued to be so held until Queen Elizabeth granted it to Francis Lord Norrys, May 23, 1602. On June 23 following she made a grant of the same to Thomas Bellot and Rd. Langley, and they had license the same year to alienate to Sir Rbt. Cecil, afterwards Earl of Salisbury, this manor and rectory of Temple Roydon and advowson of the vicarage. He died possessed of them in May 1612. His great grandson James, Earl of Salisbury, sold them to Sir Josiah Child, Bart., from whom they have descended to the Right Hon. John Earl Tilney.

Nether Hall.

Mention has already been made of Nether Hall, and as we have a little to say of some of its former inhabitants, I think it still best to quote what Morant has recorded.

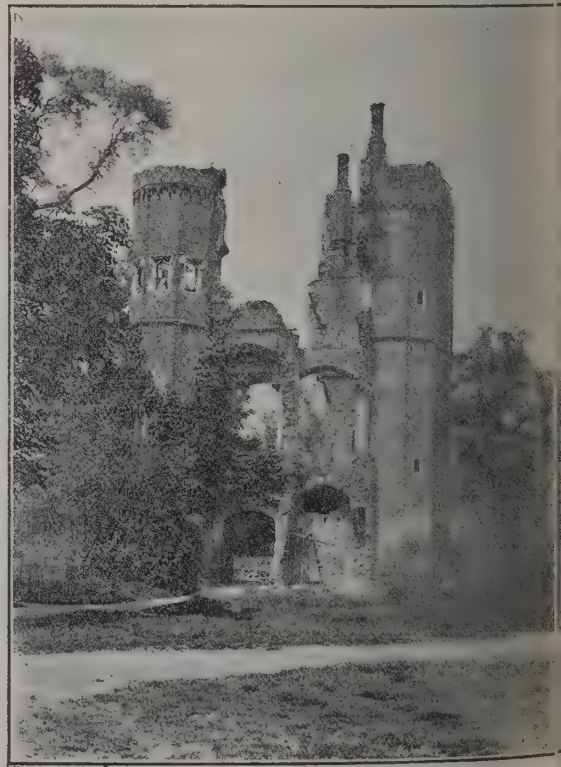
He informs us that "Nether Hall and land has been holden of Waltham Abbey, which in 1280 purchased here one messuage of twenty-five acres arable and five of pasture of Alex de Abrichesey." The manor is first mentioned in 1401, when the son of John Organ, of London, mercer, conveyed all his tenement called Nether Hall in Reydon and Nasinge to Nicholas Collern and others; and Thomas Prudence, who had it before of the gift of the said John Organ and Margery, his wife, released in 1407 all his right unto Simon Barnewell, of London. It was next in the Colt family and they made it their residence. The first mentioned was Thomas Colt, of Carlisle, and his son Thomas became his heir.

The Colts were parishioners of Roydon, intimately connected with the parish, and recorded by several good brasses to be found in the chancel of the church, most probably over the spot where they were laid 500 years ago. The earliest, from which I have taken a rubbing, is that of Sir Thomas Colte and his wife; he was living in the reign of Edward IV., and employed by him in some honourable post abroad. He died August 10, 1476. It is similar to one of the effigy of Sir Thomas Peyton, of Cambridgeshire, which Planché describes as "a fine specimen of the knightly harness of Richard III.'s reign." The wife of Thomas Colt was Joan, daughter of Trusbutt, of Suffolk, and her costume presents a new-fashioned head-dress. The hair is entirely confined in a cap or caul of gold net or embroidered stuff, and covered by a kerchief of the finest texture, stiffened out as in the previous reign, to resemble a pair of wings. We see that part of the dress of this lady is the ermined jacket, or waistcoat, then fashionable; but from age the enamel now decayed has lost its colour. Still, the engraved lines present to us beautiful forms, and we gain a very shrewd idea that the dress was made of rich materials; the graceful jewelled neck pendant and finger rings all indicate this. It is curious to note the number and positions of the rings; although so many, no indication of what we call the wedding ring.

Other brasses to the Colt family record John Colte, died in 1521; he had two wives, Joane, daughter of Sir Elrington, of Hackney, and Anne, daughter of Sir John Elrington. His family consisted of two sons and five daughters, among whom we are glad to learn married well. There are brasses to Elizabeth Stanley and children, 1589, a civilia 1580, and others. We pick up these threads and joining them we can so connect an old family with places once inhabited and frequented by them.

In connection with John Colt, there is told a tale of Thomas More by his biographers, and repeated by Mr. W. Gerish in the *Home Counties Magazine*, vol. i., which quote:—"In 1505 Sir Thomas having determined by the advice and direction of his ghostly father to take a wife, it was at the time a pleasant conceited gentleman of an ancient family in Essex, one John Colt of New or Nether Hall, invited him unto his house. Being much delighted in company, he proffered unto him the choice of any of his daughters, who were young gentlewomen of very fair complexion, fair complexion, and very religiously inclined, with honest and sweet conversation and virtuous education ended Sir Thomas not a little, and although his affection most set him to the second, for that he thought her fairer and favoured, yet he thought within himself that it would be a grief and sore blemish to the eldest to have the younger preferred before her; he out of kind compassion settled his fancy upon the eldest and soon married her with all her friends good liking."

The situation of Nether Hall may be determined as being enclosed by the ruins of walls, which in all probability form part of the building, together with the larger portion of the remains of the gate house. The site is found to be an oblong of about 160 feet from east to west, and about 110 feet north to south, exclusive of the ground upon which the house stands. The walls are now reduced in height, and a moat, a further means of defence, still exists. There is at the north-west corner of wall an octagon-shaped apartment projecting from main walls, which is pierced with cross loopholes; these are placed so as to command the sides of the walls. This apartment is now unroofed, and an opening has been cut on the south-west side by which the moat can be approached; but there is no indication that this opening is part of the original defence. There are traces of other machicolations in these walls. On the land side of moat, to the south and west, and partly on the east, there are walls of the gate house, which may be the remains of outbuildings and stables. The principal entrance must have been over a bridge which spanned the moat, and so passing through the gate house where traces exist of massive gates. The bridge at this point and part of the moat is destroyed, so that the walls and arches of the two semi-octagonal towers now constitute the main remains. The spiral stairs are partly of brick and oak with handrail cut into thickness of wall. These are well built.



THE RUINS OF NETHER HALL.

construction and solidity. One need only to mention the known legends of the strength, and of the attempts to destroy them, the last of which occurred and failed in 1773. The materials consist of the Essex red brick and black headers with which the walls were decorated in diaper patterns; the size about 9 by $4\frac{1}{4}$ by 2 or $2\frac{1}{4}$ inches; we see that never stone has been used it has perished. I think we may assume that the walls of the house bordered the moat and enclosed by it; that the remains of those we now find are the probability part of the house itself. This leads one to an estimate that the house was but of moderate size. Nether Hall has often been in some way associated with Rye House near by; it is of the same Tudor period of building, of the same material, and both possess some of the ornamental tiled brick arcading and chimneys, but neither of them large houses. They were both defended by moats and now ruins—with this exception, that part of Rye House is in better condition. On the whole, I am led to believe that Nether Hall was the better house, the remains of which show excellent work.

There is, however, to be noted by most of us, with great pleasure, the wonderful resemblance that Nether Hall must have had to the still perfect building belonging to Sir Henry Ponsonby-Bedingfeld, viz. Oxburgh Hall, Norfolk. To gain a true idea of the one, Oxburgh Hall should be seen; for to my

ing were the greater perfection." Professor Huxley says, "It will be admitted that the garden is as much a work of art or artifice as anything that can be mentioned. The energy localised in certain human bodies, directed by similarly localised intellects, has produced a collocation of other material bodies which could not be brought about in the state of nature. The same proposition is true of all the works of men's hands, from a flint implement to a cathedral or chronometer, and it is because it is true that we call these things artificial, term them works of art or artifice, by way of distinguishing them from the products of the cosmic process working outside of man, which we call natural or works of nature. The distinction thus drawn between the works of nature and those of man is universally recognised."

Sir Walter Scott says, "Nothing is more the child of art than a garden?" Wordsworth, in writing to a friend, says, "Laying out grounds, as it is called, may be considered as a liberal art, in some sort, like poetry and painting, and its object is, or ought to be, to move the affections under control of good sense—that is, those of the best and wisest; but, speaking with more precision, it is to assist nature in moving the affections of those who have the deepest perception of the beauties of nature, who have the most valuable feelings, that is, the most permanent, the most independent, the most ennobling with nature and human life."



THE RUINS OF NETHER HALL.



THE FARM YARD, NETHER HALL.

It is clear that not only was it built of about the same materials, except stonework, at the same time, but by the same master builder and workmen.

The illustrations are from photographs by Mr. A. I. Romain, Mr. C. Wheeler and Mr. H. Virgoe.

GARDEN DESIGN IN RELATION TO ARCHITECTURE.*

THE thoughtless people say that a garden is nature, but that a building is not, and my object this evening is to illustrate that a garden, properly speaking, is no more a work of nature—or to be designated as natural—than the house. This appears to me to be so because a garden is formed by human labour, on a most careful system of selection of one material and rejection of another, as is the case in the design of a house.

I propose this evening to emphasise what appears to me to be of no small importance to those who lay out gardens—nevertheless one that is often overlooked—viz that a garden is a work of art, and that there is indeed most distinct unity between the design of gardens and the design of architecture; that the rules of art that apply to the design of the one stand necessarily therefore as a test of merit or failure in the design of the other. In support of the view that gardening is an art, I will quote from the writings of three great men.

Bacon, the prince of gardeners, says, "A man shall be that when ages grow to civility and elegance men shall build stately sooner than to garden finely, as if garden-

Then, if a garden is as much a work of man's art as his house is, it is—owing to their oneness and inseparableness—as much the architect's business to design the garden as to design the house. For the garden is a kind of "betweenity" wherein man has cajoled nature into aiding him in making his house sit comfortably in her midst. It is a place in which her flora and living green are pressed into service as the introduction from primeval wildness to the complete artificiality of the house. And so the garden, with its "host of golden daffodils," its "daisies pink and violets blue," its gay parterres and sweet-scented borders, its wildness and walks of solitude, becomes the outdoor house as the building is the indoor house of the home. The moment you step inside the garden's entrance gates, you come into the region of the home, and as your own arrangement of order commences when you leave the highway, there should be unity in that order; there should at once prevail a harmony in design that shall spread its influence over the whole work of the habitation down to the minutest detail of the house and its equipment. And this unity is scarcely attainable except under the guidance of one designer. This ideal of unity in design is actually what prevailed up to about the end of the seventeenth century; but, owing in general to the break in continuity of traditional art in all its phases at about that date, and in particular to the extravagances into which the art of formal gardening had fallen, there sprang up an aversion to all gardening of the form in which it had been practised from time immemorial and a popular craving for "the wildness of nature," which it was held had been forsaken in the pursuit of visionary ideals of art.

The people had scarcely thought of art in a garden prior to this, nor until they were told by Kent and Brown—the "immortal" Brown, as he was named in his own day—that they had sinned, had violated the laws of nature, and that they must destroy all their fine terraces and make ruins of their gazebos, and return to nature's wildness by adopting his system of "landscape gardening."

* Paper read by Mr. W. R. Butler at a meeting of the Royal Institute of Architects.

And, lo and behold, knowledge seemed to come upon them as it did upon Adam and Eve when "they knew that were naked," and they marvelled that they could have cut nature into trim shapes and wild fantasies, and they verily did destroy the things that this "immortal" told them to. The woodman's axe rang up and down the land as it felled many of the finest avenues the world had ever seen. Terrace walls and steps, fountains and sundials such as have never been erected since, were ruthlessly swept away in order that what was termed nature might be brought up to the very threshold of the house, and all, forsooth, because nature never grew trees in rows or built terrace walls in the forests.

And in place of all that was destroyed what did these champions of nature give to their generation? Among other things they made all their paths and roads to wriggle (the shortest distance between two given points was no longer desirable); they destroyed cut hedges and sunk their garden enclosures into haw-haws, destroying all the charm of seclusion that English gardens had hitherto been so rich in. They made ruins of old architectural adornments in the gardens; nay, more, they built ruins to represent architecture devastated by the ravages of time; they actually erected dead trees among the living ones on their boundaries, the more to counterfeit the primeval forest. They carted boulders to their gardens, and grew the wild things of nature over them, as a make-believe for rocks. They formed watercourses with huge stones in their beds—utterly regardless of the fact that their land was not of a stony nature—over which the water might gurgle and make weak and fraudulent representation of the rushing of the mountain torrent, and rumour has it that they tied stuffed birds of fine plumage in the trees, to the distress of nature's songsters, who, being scared from so unholy a place, built their nests in the clipt hedge of the peasant's garden and sang him their songs instead.

Of beds for flowers they must needs have a few, so they made them of many shapes, because they argued that one of nature's proudest distinctions was her wealth of variety, and therefore the garden must be filled with variety too; so they made beds "shaped as crescents and kidneys, beds like flying bats or bubbling tadpoles, commingled butterflies and leeches, stars and sausages, hearts and commas, monograms and maggots—a motley assortment, to be sure . . . and the pretty flowers smiled a sickly smile, out of their comic beds, as though Paradise itself could provide them with no fairer lodgings." And the wonder is that Brown and his followers were not consistently mad enough in their much-talked-of love of nature to extend their work of destruction of art to the house also, and advise the mud hut or the rock cave in place of the beautiful homes England had so great cause to be proud of. But he went just far enough to insure his system gaining a hold of the people; and although for more than a century now his vacant orbits have been choked with earth's clay, it is only of late years that men of letters have sounded the death-knell of his system, and that we have realised that gardening is an art and not an haphazard product of nature.

Before the end of the seventeenth century the art of formal gardening was in its dotage. Following on Renaissance influence it had run into the wildest extravagances and architectural absurdities. After the Restoration in England, when the intimate relations between Charles II. and Louis XIV. brought the people into closer touch with their neighbours across the Channel, the British mind became much affected by the luxurious extremes in the gardening of the French and Italian schools.

At this time that extraordinary genius Le Nôtre covered 200 acres of ground at Versailles with some of the most wonderful gardening the world has yet seen, and which had it stopped there would probably have been better thought of than it is to-day. But it did not stop; one extreme led to another, and in England the eclectic spirit bespattered the land with innumerable vagaries of Renaissance design, with gigantic water basins among other things, pools of Apollo with dolphins, stone swans and sea nymphs, aplaying at leapfrog in the plash of the fountain, and in the water's midst they placed the artist-god, old Vulcan.

Before, deep fix'd, the eternal anvils stand;
The ponderous hammer loads his better hand.

And over against the willows Artemis turned Actæon into a stag because he had seen her bathing, and there they were, all in the same pool, higgledy-piggledy, many of them the grossest sculptures, and more of them used in execrable taste. And in company with the architecture of the garden the topiary work of the period had gone cranky too; temperance nowhere remained; knots and little geometrical beds, the use of coloured earths and tiles, and a thousand-and-one other tricks and artifices had piloted the art of garden design through the enticing waters of luxury, straight on to the rocks, as like practices have mercifully done in termination of periods of luxury in all branches of art.

Yet I cannot resist a plea for extravagance in gardening, or help thinking that intemperance in it is one of the mild offences against the laws that govern its opposite virtue, man. Aristotle says, "We call not men intemperate so much with respect to the scents of roses or herb perfumes as of ointments and of condiments." You may have the temperance of the miser, and may conceive of intemperance in charity, but the latter is less ignoble than the form, and so in gardening money may be spent intemperately, but this form of extravagance bears with it a certain palliative feeling that at the bottom of it was the love of nature and beauty.

It is, however, not surprising that the effect of the excesses on garden design was a swinging back of the pendulum to primeval nature. But the spirit of the age was bent on follies, so they went to the other extreme, and out of the chaos caused by disgust at excesses sprang the before-mentioned school of landscape gardeners, and its hero and author was the memorable name of Brown, and who, however, happened in 1783. Rest be to his soul.

A few of the far-seeing soon perceived that landscape gardening was not all that it might be. For the advocate of the new system must of necessity still select his trees and shrubs from far and near; he could not let them grow random as in nature; he must clip his hedges or they would outgrow him; he must cut his lawns or they would become prairies; the wild fowl's wings on the pool he must clip too, she will fly away from his unnatural "nature."

He could not entirely exclude design, so his effort was devoted, as before stated, to the attainment of counterfeits of nature. And this creation of counterfeits, or attempted reproduction of nature, is the meanest use to which man has ever put his God-given faculty of art. Nature refuses to be counterfeited, and man's intelligence is too keen to be deceived so long by the profoundest efforts of the warped genius of a straggling fellow mortal.

And this mimicry of nature, this landscape gardening, the only form of garden design that never had, or ever could have, any relation in it to architecture, or for that matter, "anything that is in heaven above, or that is in the earth beneath, or that is in the water under the earth." It cannot be denied that there was nothing original about these new methods of the landscape gardener. They were sheer mimicry made with the deliberate intention of deluding the eye into believing that the hand of man had not interfered with the common processes at work under her natural laws; and failed, as all such systems must fail. For there are certain laws of proportion and curvature, of balance and contrast, that underlie all systems of design; and except these principles, laws of life, exist in them no system of design will live over the passing day until the coming of the final doom.

There can be but two broad types of garden design—the formal type, which was acknowledged from Homer's day till the time when Brown visited us, and is now again acknowledged amongst men of letters and art; and its opposite, known as landscape gardening, which has fruitlessly struggled in the race for a century or so, but has long shown strong signs of distress.

The picturesque name of "landscape" gardening was given to the system it was intended to describe by its foster-parents, who likewise christened the old style "formal"; a term that is not in itself likely to give popularity to the system. These two phrases of "landscape" and "formal" gardening are by no means properly descriptive of the two varieties that stand in the mind for, except perhaps in the extremes of the "formal" type, in which objection can hardly be taken to the term when applied to some of the stiff and soulless designs that are produced under this designation. The line of demarcation between these two extremes, like all imaginary lines between good and bad work in art, is very difficult of definition.

A garden may be more or less "formal," but as it becomes less "formal" it approaches the nearer to its opposite, which might be named more appropriately the formless garden, instead of the "landscape" garden, as the pot-hook path and the kidney bed no more resemble the landscape than the straight path or the bed of geometrical figure. But there is a meeting ground between these two extremes in which we may all confer with the common object of strengthening the elevating and ennobling love of idealised nature in a garden.

I do not say that a garden cannot be interesting and beautiful without cut trees, trimmed edges, geometrical beds, and so on, for the flowers have a happy way of asserting their own beauty wherever you put them. But I do wish to stress most emphatically that for all these things in their proper places a garden is a nobler creation, and that the flower is therein given the greater opportunity to display its grandeur, and, what is more, in this style of garden there is unlimited opportunity for the individuality of the designer; there is also infinite scope for the skill and artistic ability of the owner, seeing that he may develop it this way or that, at his own will, with deeper imprint of higher faculties than

possible in a system that gives to art only a secondary place, if place at all. Any one with a little water and manure can grow a Banksian rose over an old stump—and a very beautiful thing it is, too—but there are very few owners of gardens who have the skill and patience to maintain a well-cut hedge with some good sculptures of his own in it. Any one can plant a shrub, and grow it well with a little care, and it will be a beautiful shrub if grown as nature grows it. A block of marble may be beautiful, too, but it becomes more so if, when we put it into a building, we turn it into a statue of Venus. And so with a shrub; if we bring it into a garden we remove it from its natural bed, we bring it under the influence of art, and we may then add to its natural beauty by putting a little of the soul of man into it in the form of a beautiful bird, such as a peacock.

I do not deny a considerable skill in the growing of plants, but that is the skill of the horticulturist, and is of a less exalted quality than the designer's skill, as it is in all branches of human labour. The horticulturist is the right man to plant and grow a daffodil or a rose, but in matters of designing and laying out of gardens the horticulturist or landscape gardener of the common description is to the garden designer just what the miller is to the architect, what the foreman of the works is to the engineer of a great bridge or sea embankment; and as gardens are so mixed up with architecture, and their constructional designs are so dependent upon the principles that govern architecture, it is almost as much the business of the architect to qualify himself to design the garden as to design the house—and, I may say, his privilege, too, because there is hardly any more pleasurable part of an architect's work than the arrangement of the gardens about the houses of his own design.

It is well known that certain styles and periods in architecture employ varieties of the same geometrical figures, and have often distinctive features common only to themselves. The skyline in one style is broken by the dome or the cupola; in another by the sharp point of the Gothic gable. The windows in some are intricate, in others are square openings in the wall, all of which may have their counterparts in the well-designed garden.

But the everyday house has no very decided architectural functions, neither cupolas nor sharp-pointed gables are common in this country; nevertheless, they do occur, and all of our houses have some features to counteract, or characteristic of, to conform with, that may be met in many ways, as, for instance, in the adoption of the tall and slender or the low and rounded tree, in intricacy or simplicity of beds; or a plain wall may be advisable on this side to supply some deficiency in the design, or on the other side to give stateliness and height to the building.

There are always conditions of site and of aspect, of boundaries and adjoining roads, that must be taken into account, provision should be made for shade from the western sun, in the case of many flowers for protection from the north wind, but on this side it should be of such a nature as not to shut out the winter's sun, which is very low in the northern sky during that period when the garden needs it most.

The planning and laying-out of homely gardens such as are in our reach, and as should surround every house in the country, are matters of constant occurrence. And we have our public gardens also, which, in order that the best results may be obtained in the maximum of pleasure these gardens can give, should be laid out on proper systems of design. Unfortunately the designs of many of them consist chiefly of winding pathways and irregular curves that are utterly devoid of beauty of line or any attractive feature—curves that destroy the feeling of repose and dignity, and that fail to attractively lay the flowers in the borders, or to do aught else than distract your attention from the beauties with which nature has blessed to fill the beds, and to rivet it on their own inherent mess. And as I have said before, there is no relation to architecture in such treatment of a garden, or to nature.

For the laws of nature work as surely through man's intellect of art as they do through any of its processes; a line that is discordant with the laws of art is offensive to the susceptibilities of the mind, and in that respect is unnatural, and this wriggling path in a garden and the other devices of the landscape gardener in no way accord with the laws of art, and are consequently unnatural in every sense of the word. There are hard-and-fast rules of first principles, of proportion, of proportion and curvature, underlying the devices by which all bodies or figures—be they a number of beds, tiles in a pavement, or threads in a fabric—are ordered in juxtaposition so as to present a gratifying result as a uniform whole. And these principles are as necessary in application to the art of garden design as to anything that is apparent.

For to something less than two centuries ago men appeared to do all these things without knowing precisely why or how they did them. They appear to have been done by rote—in fact; but nowadays we seem to have eaten too freely of

the tree of knowledge, we have learnt what good and evil in art is, and unless we apply to our work the plummet and rule of systematised and tested traditional principles of art, we seem to go astray, and shall find that it will not pass muster in the generations to come.

Art in a garden is not opposed to nature in a combative sense; it is the vehicle in which man's attribute of the Deity—his creative power—fashions the materials of nature after the model of his own mind; it is the medium through which he is able to play at being a god himself; and by the aid of this power he has wrought, and put his soul into, many wonderful works on the face of nature, and works that have added to the magnificence of nature; but the moment he tries to make things as nature makes them, he abandons the exercise of his own higher powers and merely proclaims his own folly.

To return to the consideration of the garden, it should first of all be a part of one general scheme with the house; then its individual parts should be uniform, as is the case in the building and its details. De Caux, the architect who designed and laid out the gardens at Wilton House for the Earl of Pembroke, early in the seventeenth century, made twenty-six copperplates to illustrate his design in detail, and in all the more important work of this and earlier dates there seems little doubt that the architect, or rather architect-builder, as he was usually called, designed the house as well as the grounds; and with their designs they supplied much detail, by which means the uniformity was maintained throughout the house and its garden. In the case of a large garden, it must have its parts or plots properly divided off from one another, to give shelter and seclusion and the idea of enclosure, and these blocks should be rectangular, with the greater formality in those next the house; and this principle may be accepted as a guiding rule for both large and small gardens. For the step from outside nature into a beautifully planned and well-kept garden should be manifest immediately, but its choicest prospects should not be thrown into the sight of the casual visitor and unfledged courage; let there be concealed beauties in it to be sought for and prized the more for the finding—beauties that are not open to the view of the uninvited, where one may go

In that sweet mood where pleasure loves to pay
Tribute to ease.

Seclusion is one of the greatest charms in a garden, and it is only to be obtained by its subdivision into parts. You may divide it by the trim and stately hedge—which shall be thick enough to cut recesses in it for a seat here and there if you so fancy. "Little low hedges round like wells, with some pretty pyramids, I like well, and in some places fair columns upon frames of carpenterwork," and you may add a cut peacock or so among the pyramids, if you will, that their weird outline may, alike, add to the solitude of a moonlight reverie and the merry moods of the morning sunshine; or you may divide the parts of the garden with walls and form terraces with steps in infinite variety of design. For there is no stronger link between the house and its garden than walls, steps, garden houses and other architectural accessories, all of which should be of the same character as the house in style and material and in quality of workmanship. The walls should not be built of rustic fashion unless the house is; it is as necessary to build them well as it is the walls of the house. Brickwork makes good colour against the green, but there should be no undue striving for too smooth a face and regular a colour—in Melbourne, at any rate, because our hard-pressed bricks are very little modified by the action of the weather. The light colour of softer bricks one gets in the country gather much finer colour, as you may sometimes see in the older country wayside inns, where reds, yellows and browns mingle in exquisite blending, and with green creepers make the most charming effects.

The use of walls for gardening in Australia is unhappily very rare; our public gardens, as far as I know, have none, and there is no finer effect in garden design than the well-ordered terrace wall, with fine flights of steps and garden houses at its ends. There are men in Australia who might build terrace walls of brick or stone, as fine as those in the old world, with half the money they fool away on horse-racing, and horse-racing is "but nothing to the true pleasure of a garden." And terrace walls, sun-dials and garden houses, if well built, cost nothing to maintain either; in fact, the paths and beds are better sheltered and more easily kept with enclosing walls than in any other way. The walls and steps and other architectural adornments of a garden are the tendrils by which it clings to the house; they stand as peace-makers between the living things and the building, for the ivy, the musk rose and the honeysuckle twine themselves about their stones. They are the loadstone by which the building draws the garden to itself, and the elements in which the unifying characteristics of architectural style may be most readily expressed.

The great terrace wall which Le Nôtre built at St. Germain-en-Laye is a mile and a half long, but many a garden is made

beautiful by such walls of a very limited number of feet in length. And most garden architecture may be built advantageously in a small way, and very economically, too, when occasion requires—as it nearly always does. For instance, when the building is of a more or less rustic, or country, character, thatch or shingle may be sometimes used to cover the summer house or boundary walls—or both—against which an outside background of trees makes a most picturesque and homely effect. One of the reasons we are so devoid of interesting and permanent features in our gardens is that we want everything done in so grand—and in many cases—ostentatious a manner. There are almost innumerable houses that would have made much more refined and complete homes if the money spent in their erection had been better distributed over house and garden; for as a rule a man wishing to build starts with spending on his bare house what his total outlay should be, with the result that in the end there is nothing left for the garden at all, and where the boundary walls should be, he erects fences just good enough to keep the cattle out, and trees are planted where the terrace walls should be, which makes it harder to get the garden into trim ever after.

There are many details about a garden that we may show a sympathetic feeling in, as, for instance, in the entrance gates and gates that may be needed to divide it into different parts. For gates no material equals wrought-iron; cast-iron being brittle must be made heavy to withstand the jarring, and so it is unwieldy and unsuitable, and the repetition of design that we get in it makes it wearisome. Of whatever material the gates may be they should be in accord with the enclosing walls or fences. There are the most unsightly incongruities in many of our outlying suburbs, where you may see gigantic cast-iron gates and pillars—the vulgarity of which is added to by quantities of gilt paint or gold leaf—standing in the midst of the commonest description of wood fencing; and, indeed, you may see the same thing on our country roads, where enormous wood or cumbrous cast-iron gates, and more enormous gate pillars, are set in the ordinary post-and-rail fence; or what is worse, in the fence composed of droppers and barbed wire.

Drinking vessels for birds and suitable shrubs and trees for them to build in attract the thrush and other songsters, which, happily, are increasing in number in our gardens, where they often sit on the highest branch of a lofty tree and sing the evening out or the morning in.

... Is it night or day yet?
Somewhere the birds seem singing still,
Though scarcely now the sun has set.

And as to trees. In the design of a garden it is most important that no trees of the larger kind be planted within the garden proper, or be planted at all for that matter, except with the most careful consideration as to their ultimate growth. The value of trees, both for effective beauty and for shade and shelter, is inestimable, but their being planted thoughtlessly has ruined gardens innumerable, and their eventual removal is a cause of great pain when it at last becomes a necessity.

As to the dimensions of a garden it need by no means be enormously large; some of the most delightful effects are produced in cottage gardening, and a garden of the moderate dimensions that are possible on a fair-sized suburban site may be of the most delightful interest and of "the greatest refreshment to the spirits of man."

Of different types of gardens there are many, all having relation to the architecture of which they form the setting, and in building a house in any style or period the garden should follow the traditional custom also.

The Dutch house should have its small patches of very closely-decorated spaces, after the Dutch style of garden; the Italian house its flight of steps, mighty walls and cascades of water in the Italian type; and the Japanese needs its magic stones, its manufactured hills and dwarf trees and shrubs, all in its own especial character; and some day, if we can get an architectural style of our own, we shall also have an Australian type of garden which, though founded on the English type, will have its own peculiarities arising out of the use of our indigenous ligneous flora—of which we have a goodly number and some of great beauty—and the drier, warmer climate in which we may—with comparatively little care—have a wealth of flowers in our gardens that would make any old English gardener green with envy.

It is foolish to think an Australian garden must be wild because the Australian bush is wild. Far the reverse. There is no reason on earth why we should stultify the art of gardening because our paddocks are full of dead trees. The wild weirdness of our bush country, the vast expanse of our plains, and the romantic splendour of our ranges, have more power to delight the eye and fill the soul with wonder when it has become familiar with the extreme opposite—a finely kept garden. And I am anxious that it should not be thought that because I despise the weak and maudlin methods of the landscape gardeners that therefore I despise nature. On the contrary, I hold that a garden can in no way satisfy a man's

craving for the wildness of nature; in times of extreme sorrow or peril, the garden with its charms and beauties is comfortable, the very flowers seem to mock at one's sorrow; such moods can find sympathy in wild nature only, where there is no sound save the sigh of the wind in the trees or the thundering of the ocean billows. Nothing that man has ever made or ever will make can estrange him from his love of nature or satisfy all his moods. "Art's sounding line it never fathom human nature's emotional depths." Nevertheless it would seem that the food of that love which worships nature is art, as we see that those who hold nature in the highest esteem are painters and poets nursed in the lap of art; and it were as reasonable to expect a great painter to lose his love of nature through painting ideal pictures of it, as to expect a catastrophe to happen to one whose inclinations lead him to the making of a fine garden.

In concluding let me say that I hope some will be convinced and others confirmed in the belief that a garden is a product of man's art—that it is a human thing, as a house is, and although it need not necessarily be stiff or over formal, yet it must be designed in sympathy with the architecture it surrounds, that it must have the mark of human intelligence in it. And as you come back again from a lengthened stay in the Snowy River, and your eye catches the outline of a park and stately hedge, it tells you that you are nearing home; when you see a shape of ideal beauty cut in that same hedge, it brings to your mind that in the midst of nature there is something that is above it all, and that that something is the soul of man. And as you draw nearer and come within the garden and see the dance of the daffodils at the side of the path you will say with Wordsworth—

For oft when on my couch I lie,
In vacant or in pensive mood,
They flash upon that inward eye
Which is the bliss of solitude,
And then my heart with pleasure fills,
And dances with the daffodils.

ROTTEN ROW.

THE local antiquary has been much perplexed by the place-name, says a correspondent of the *Scottish Antiquary*. Camden, the great English antiquary (ob. 1623), explains from old English—*roteran*, to muster, *ridan*, to ride—in an open space in each district used as a muster-ground for Teutonic forefathers. But there are many other shots or suggestions. Everybody is familiar with Rotten Row in Hyde Park, the track reserved for people a-horseback; it has been said about it that in the eighteenth century it was dressed in "rotten" or friable stone. A historian of Edinburgh tells that the Ratounraw at Leith was so named from being a up of houses built of "rattins," which he explains as rotten timber. The author of "Arbroath and its Abbey" suggests that it signifies houses or trees following one another by rotation or in regular succession. Another idea is "route de la place or track reserved for people on horseback; in the Middle Ages the queen's was the only carriage way on such a track. Again, it is said that Rotten Row is a row, retinue row, the route wont to be taken by church processions; this is favoured in Chalmers's "History of the fermline." And again, that it is Norman-French, rather the roundabout way, the way corpses were carried to avoid public thoroughfares. The scribes who wrote Latin charters make it appear as *via Rattonum*, *Vicus Ratonum*—this is, say, Rat Street, ratoune, rottin being Old English for rat. Finally we have a choice of Celtic explanations, and four of them—*rathad'n righ*, sc. the king's road; *rathad'n ra*, sc. the road of the going or proceeding; *rat-hat-an-ra*, sc. the road to the fort; and *rawdenn-rhos*, sc. meadow path. The last is distinguished as a Brythonic etymology.

Besides Rotten Row in Hyde Park, there are Rotten Rows south of the Tweed, particularly in Yorkshire. Just beyond the Border lands called Rotten Row occur in the parish of Caldeck, Cumberland. Where in Scotland do Rotten Rows occur? And in what earliest collocation?

There are at least a score of them still in use or once used as place-names. The Rotten Row of Glasgow is described now "one of the sleepest and most commonplace streets in the city. As a street in the Bishop of Glasgow's burgh (founded in the reign of William the Lion, 1175-1184) it runs from the High Street and the Cathedral Close toward where stood one of the ports or gates of the burgh. It appears on record as early as the year 1283 under the name "Ratonraw;" it was then not a street, but a tract of land in cultivation. It is not associated with rats till the year 1540 when it is described as *Vicus Ratonum*. About that time the Bishop set apart the ground as a site for the college. It has just been authorised to found by Pope Nicholas V. The college was transferred to an area on the east side of the High Street. At the time of the Reformation five

anons of Glasgow Cathedral occupied manse, or "ludgings," the street called the Rotten Row, which then formed the king's highway to Partick.

As early as 1373 (temp. Robert II.) two perches of land lay "the Ratonrav," within the burgh of Haddington. By a deed of 1464, the Carthusians at Perth acquired a land there which had on its west side "the Common Vennel, extending to a church which is commonly called the Rattoun Row." In a charter of 1467 we come upon "the lands of Rattoun Raw" situate in the barony of Ochterlony and shire of Forfar, that a couple of inches east of the burgh of Forfar. At Leith in 173 we hear of the "Vennel, commonly called the Ratouneraw;" and in 1491 of the "Common Vennel, called the Rattounrawe," the barony of Lestalrig, on the south side of the Water of Forth. In 1476 there is mention of a Ratoun Raw at the burgh of the Seytoun of Panbride, in Angus; in 1568 this burgh is referred to as the Westhaven, called "the Ratoun Raw." The name still attaches to a farm on the west side of the road leading from Carnoustie northward to Carlogie. At Arbroath in historic times the Ratoun Raw consisted of a plot of the High Street facing the walls of William the Lion's castle at abbey; it first appears in the abbey cartulary under the year 1496.

Later charter and record references are these. In 1550 a charter passed under Queen Mary's great seal of "the lands of Balfouris-Bochquhoppill, alias Rattoun-row," lying in the barony of Menteith; on these lands the burgh of Kincardine-on-Forth was set up in 1695. A charter of 1562 comprises a house and garden called "the Rattoun Raw" in the burgh of Lauder. Another of 1586 refers to "the one-merk-land of Rattounraw," within the barony of Ochiltree, in Ayrshire; by 1686 this has become a two-merk-land. In 1593 there was a Rattoun-row at the High Street of the then populous burgh of Pittenweem. A man described as William Polwarth, of Rottonraw, appears in the Privy Council register for 1594. In 1640 the burgh of Hilltown, of Dundee, occupied by a colony of net-makers, was set up as a burgh-of-barony; the ancient name of its site was "the Rotten Raw." On Pont & Gordon's map of 1640 there appears another Rottonrow, betwixt Arbrat and Arbrat, in the county of Angus. In an Act of Parliament of 1685, we read of a Rotten-row on the barony of Menteith, near Kirkliston, near Edinburgh. There was a Rottonrow in or near each of the ancient burghs of Montrose, Aberdeen, Brechin and Whithorn. Seven of these sites are in the county of Forfar, two in Fife, and two in the county of Perth. Four are in the ancient earldom of Fife. The furthest north is at Aberdeen; the furthest south at Whithorn. The greater number are beside or near the water.

Of "row" as a street name in the Middle Age there are many instances. We have Newrow, Southrow, Thieffrow, Rottonrow, Buthrow, Quhortor-row, Chakkar-row, Curfew-row, Rottonrow, Nunraw, Skateraw, Gallowraw. But the word was applied to land in the open country. In different parts of the country we have the lands of Cotraw appearing 1372 A.D., 1406, Northraw 1408, Row of Stenchar 1494, Angelrow 1529, Over-row 1537, Langraw 1585, Cauldraw 1586. A daur misca' a Gordon in the Raws o' Strathbogie?"

Some of the explanations of Rottenraw which have been proposed deserve little attention. Via Ratounum does not appear in the charters till the fifteenth century. The black rat came to its way to Europe about the beginning of the sixteenth century, and the brown rat in the eighteenth century, so the Rottenrawists tell us. It would rather seem that the clerks who used the charters of the fifteenth century were already familiar with the rat tribe. But what concerns us here is that Rottonraw had by that time become a word these penmen find difficulty in interpreting; it was already archaic. Then on the list of the Rottonraws in the above list we may be sure there are no timber structures in rows or otherwise. When they used their names they were more than roads or paths, but they were tracts of lands within which a road or street ran very readily and naturally arise. The route de roi of the days was the king's "hie gait," via regia, free to all the king. Neither king nor queen possessed such a thing as a Rottonraw. If church processions are to explain the word, we expect to find each rottenrow in the neighbourhood of a church, such as Glasgow or Arbroath, and not on a remote land of Ochiltree. The sea-town of Panbride, a fertile land of Ochiltree. The ratounraw was something forefathers knew all about when they still worshipped Thor, or Teutates, Hesus and Taranis. If a row or Rottonraw was more than a road or path, as seems clear from the Celtic derivations are inadmissible. Moreover, it is asked of those who support them, can a single Ratounraw within the Highland line be pointed out?

Then Rottonrow was muster-ground, what more natural than that it should be part of the route of church processions or that it should be near a burgh or town or port, or that buildings should arise which afterwards became burgh,

town or port, and that in later days the place suitable for muster-ground should be found suitable for the plough or for horse exercise? The antiquary's word roteran, to muster, survives with us in the form "roster," a muster-roll, and "route," the line of travel for soldiery, and with the Germans in the form ritter-reune, a tournament. In the seventeenth century a "rot" or "ratte," of soldiers was a file of six. With Cromwell, nine "rots" of pikes and twelve "rots" of muskets made a complete company of 126 men. The Parliament of 1650 thought "two rait" of men with a sergeant a sufficient garrison for Inchgarvie. In the sixteenth century a raid, rade, or rode was a military expedition, not a mere foray. In 1457 it was enacted that "na man duellande within burgh be fundyn in manrent nor rout in feir of war with na man bot with the king or his officiaris;" a "routing," contrary to the statute, was prosecuted in 1513, as appears in Pitcairn.

The word or the root has some curious survivals in England. At the time of Domesday the county of York was already distinguished into three ridings—Norttreding, Westtreding and Sudtreding. It appears as roding or rothing on the maps of Essex. A district called the Roothings comprises nine parishes, six in the hundred of Dunmow and three in Ongar—Readings, High Roothing, Aythorp Roothing, Leader Roothing, White Roothing, Margard Roothing, Abess Roothing, Berners Roothing and Beauchamp Roothing. They are connected with the very ancient "Tale of the Wardstaff in Ongar Hundred." The staff, evidently a sort of Teutonic fiery cross, on Hock Day every year was carried from point to point with much ceremony, and finally thrown into the sea at a place called Attewood. Again, once a year a singular spectacle may be seen on one of the Duke of Buccleuch's manors in Warwickshire. At daybreak on November 11 a number of persons representing twenty-seven parishes assemble round a mound on Knightlow Hill, near Dunchurch, and deposit in the hollow of a cross there moneys varying from a penny to over 2s. in value. The penalty for not attending is 20s., with the option of delivering a white bull with a red nose and red ears. The moneys deposited, taken up by the duke's steward, are known as "wroth silver."

In Scotland the word is met with, or seems to be met with, very often as a place-name either alone or with some other affix than now. The remark that it never occurs with gate, vennel, road, street or wynd seems to be well founded. The connections in which it does occur suggest that every Ratouneraw was originally situated in the open country. In a record of 1672 the lands of Redding occur in the parish of Polmont. In 1630 the burgh of New Galloway was set up on the lands of "Roddings," part of the barony of Kenmure. In 1612 there were lands called "the Roddings" near the burgh of Irvine. In a charter of 1565 we read of "the place of Rodding" upon the barony of Rothven, in Banffshire. In 1546 there were lands called "Riding" on the barony of Monkland, in Lanarkshire. The affixes in combination with which the word occurs express some natural feature. Thus, in a charter of 1575 we have the lands of Rydingmure, Lanarkshire. There were lands called Redding-hill or Riddinghill in Ayrshire, and a Rodinlaw in the parish of Ratho, near Edinburgh. A Rydynland occurs as early as 1459 in the shire of Lanark. The Rodaneburn, Reddenburn or Roidenborne, in the parish of Sprouston, Roxburghshire, was in 1553 a recognised place for holding the Days of Truce according to the laws of the Marches. There was a Rottenburn or Routenburn in the parish of Largs, Ayrshire, and a Routingburn in the parish of Dalry, same shire. In Lanarkshire there was a Rottenburn, also a Rotten-caldar, where calder is a synonym for stream. In 1633 there was a Rodding-brae near the Bowbuts at Kinghorn. In 1536 there was a Roder-dike in Stirlingshire; in 1546 a Raddindyke near the Blacklawbuts, on the barony of Kilbryde, in Lanarkshire, and on the coast near Annan the maps show a Riddindyke. Dyke in these cases may have meant a wall or a ditch, or both. In Lanarkshire there was a Riddinburn; in Nithsdale a Reddingwood, and in Ayrshire a Routingbridge. The word even occurs as the Rottenmoss, near the abbey of Crossraguel, and in 1563 there is a charter of a messuage in "the Rottindub," in the burgh of Eyemouth. The word occurs with a prefix in two instances—in 1546 there were lands known as Garrot-roding within the burghal territory of Ayr, and in 1554 there occur in charters lands called Bruce-rodding in Kyle-Stewart, in the same county. These seem to have a striking likeness to the Essex Roddings, and it may not be amiss to recall that Robert the Bruce held much land both in Essex and in Ayrshire.

The Rottenrow that goes furthest back in Scottish record is, as we have seen, that of Glasgow. To the south of the street and within the close of the Greyfriars Church lay a place called Craignaught, at which the great yearly fair of Glasgow was "fenced" or proclaimed regularly during the eighteenth century. There, too, every year betwixt 1550 and 1607 the fencing was enacted, though the Market Cross stood in the High Street, and though the ordinary municipality meetings were held in the Tolbooth or elsewhere. On July 6,

1607, the fair is described as proclaimed at "the Heid Court of Craignach haldin upone the Craig thairof." Then at a place called Summerhill, Simmerfield, or Limmerfield, a court used to be held every year by the burgesses of Glasgow for the purpose of Riding their Marches. After the Whitsunday head-court of 1574, the town's minstrels were, we read, "continued to the Summerhill." True, this ground lay to the east of the cathedral, that is to say, on the other side from the street now known as the Rotten Row, and to which that name has attached at least since the year 1452. But if Ratonraw was archaic in 1452 (as has been shown) and if it was applied to the muster-ground of the bishop's men before there was a burgh of Glasgow, may we not suppose that both Craignacht and Summerhill were parts of it, known to the bishop's men and eventually to the bishop's burgesses, as special gathering places or rallying points?

Old Camden would seem to be right, and the Rotten Row to be properly ranked with such place-names as the Ward, Wardlaw, Bowbutts, Blacklawbutts, Schutting-lewis, Justinlees, Justinghaugh, Barrasgate, Barreislands, Marshallmeadows, Trumpetersknow, Shottonlaw and Sheriffmuir.

ENGINEERING STANDARDS.

A SHORT review of the work of the engineering standards committee has been issued by the secretary, Mr. Leslie S. Robertson, who concludes that "the epitome sufficiently indicates the enormous importance of the work in hand to the trade of the Empire. The Premier, Mr. Arnold-Forster, Sir John Wolfe Barry and others have expressed opinions as to the immense value of its labours, the result of which it is difficult to overrate if they are loyally supported by the trade and commerce of this country as by the Government and its various departments."

The movement was set on foot in the beginning of 1901, when the five leading technical institutions, the Civil Engineers, Mechanical Engineers, Naval Architects, Iron and Steel Institute and Electrical Engineers supplied funds and formed committees in order to introduce into this country a national standardised system, and thus bring British manufacturers into line with their American and German rivals. The work grew enormously, and the Government, recognising its national importance, made a grant of 3,000*l.* towards the expenses, and now the leading manufacturers are also subscribing to the support of the engineering standards committee. No less than twenty-seven committees have been at work during the past three years, with 170 members, including twenty-five representatives of Government departments, and the results of their labours so far are very satisfactory.

Referring to the committee on bridges and general building construction, presided over by Sir Benjamin Baker, the report says that their labours have been confined principally to drawing up a series of standards so as to meet all the requirements of general building construction, and they have succeeded in making a considerable reduction from the large number formerly in vogue, and some of the leading firms are already adopting them. In the matter of tramway rails the sub-committee have agreed upon a series of standards which have been approved by the Board of Trade and have even been rolled abroad. The sub-committee on railway rails is at present engaged in drawing up a series of standard flat-bottom rails, standard bull-headed rails and standard specifications for the same. The work of this committee is nearing completion. The committee on cement, which includes all the leading consulting engineers, contractors and manufacturers, is proceeding with its work, as is also the committee on cast-iron flanges, over which Mr. W. H. Maw presides. Cast-iron pipes will also be taken in hand by this committee.

The standardising of electrical plant is presided over by Sir William Preece, and four sub-committees have been doing a lot of useful work. The sub-committee on generators, motors and transformers have been collecting evidence for the determination of standard voltages and frequencies, and the standard sizes for dynamos and motors. The other electrical committees deal with such subjects as cables and conduits, telegraphs and telephones and the temperatures of insulating materials.

As an evidence of the friendly relations existing between this country and our neighbours across the Channel, the French Government have sent over a commissioner to study the procedure and the lines upon which the engineering standards committee had been organised. While the object of the fiscal inquiry may be said to be to keep the trade of the country within the limits of our Empire and to mutually support the various branches of commerce, the work of the engineering standards committee is already effecting this without in any way disturbing the relations between ourselves and any other nations, by co-operation between the designers and producers and principal users, thus securing for our leading industries stability in manufacture and even raising the standard of work.

GENERAL.

Herr Lippay, the Viennese painter, is in Rome for the purpose of painting a full-sized portrait of the Pope.

The Bishop of Bangor last week placed the memorial stone of a church which is in course of erection, at an approximate cost of 4,000*l.*, at Nevin, on the Carnarvonshire coast. The structure has been designed by Mr. P. Shearson Gregory, architect, Bangor.

The Excavations at Caerwent are continued. The present is the fourth year of the committee's work, and it promises to produce satisfactory results. The most important features recently brought to light are some Roman houses, the schools, with a later house overlying one of them. It is impossible to fix the date of this later house, but it is certainly Roman. It includes a small subterranean chamber, or cell, built largely of Roman materials. The line of pipes which was traced near the north gate was again discovered in the field, with the addition of a small concrete culvert, and several interesting portions of streets have been discovered.

Excavations are in progress in the island of Santa Maria, the ancient Leucadia, which some archaeologists believe to be the dominion of Ulysses, instead of Ithaca. It is mentioned by Homer. In shape and size Leucadia resembles the Isle of Man.

A Painting by Paul Delaroche, which was exhibited in the Salon of 1837, has been added to the Bethnal Green Museum. The subject is "St. Cecilia and the Angels."

A Large Basin of water, measuring 1,639 square yards and 12 feet deep, is to be constructed near the bastion of the Boulevard Victor, Paris, for the purpose of conducting experiments with models of war-ships for the French navy previous to their being built. It is hoped by the arrangement to avoid making serious mistakes and wasting money.

The Camille Bernier Museum has been inaugurated at the Château Keriolet, Brittany. It comprises about seventy paintings, designs and engravings of the artist, who died in 1891, of his work in that part of France. The collection has been presented to the Department by the painter's widow.

The Zionist Congress at Basel decided to appoint a special autonomous Palestine committee of three members to engage in the scientific and practical exploration of Palestine. A year's grant of 600*l.* was voted to this committee.

M. Mercet's statue of William Tell at Lausanne has suffered by the fall of the cross-bow. The failure is owing to the stock being formed of two pieces of marble, and when the iron tenons followed.

Herr Kurtz began last week at Marienbad to paint a portrait of King Edward, in which His Majesty will be standing among the people undergoing the cure.

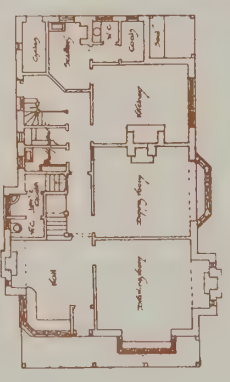
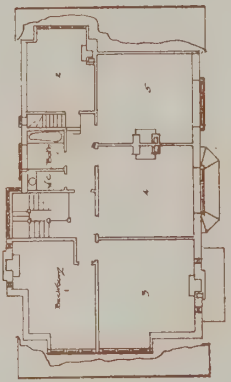
We regret to announce the death of Mr. Willy Brookes on Thursday, August 28, through an accident which occurred on the railway adjoining the sidings of Brookes, Ltd., at Hoxholme, Halifax. There was no gentleman better known to the stone trade or more respected.

The Furniture Trades' Provident and Benevolent Association has recently been formed in order to benefit and other members of the furniture trade in times of sickness and distress, and to provide for the education and maintenance of orphans. The offices of the Association are at 250 Finsbury Pavement House, E.C. The president, Mr. S. J. Warington, is supported by a strong board of management. A fund-raising dinner in aid of the funds will be held at the Criterion Restaurant on November 14.

The Columbia Fireproofing Company has had its system of floor construction for spans up to 19 feet approved by the New York Bureau of Buildings after the official tests.

A Memorial Cross to the late Lord Wantage, Viscount of Berkshire, has been erected on the Berkshire Downs. The memorial is upon an ancient beacon barrow; it consists of a stone pillar approached on the north and south by steps, and has on the two other sides a stone bench. In the centre is an octagonal pedestal of Portland stone bearing inscriptions; on top of the double-stepped grey marble circular base, from which a marble pillar supporting a short red marble shaft, terminating in a carved white marble cross. The height from the base of the platform to the top of the cross is 33 feet 6 inches. The column and cross are an exact copy of the fifteenth-century cross of San Zenobio at Florence, and were carved in Italy.

The Prospectus of the Architectural Association for the session 1903-4 has appeared. After March 25 the work will be carried on at the Royal Architectural Museum. The term of the Day School will commence on September 1st, and in the Studio in the evening of that day. The first general meeting will be held on October 16.



GROUND FLOOR





The Architect, Sep^r 4th 1903.



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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

To communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

BRIGHTON.—Nov. 9.—Designs are invited for a new hospital. Premiums of 50*l*., 30*l*., and 20*l*. will be paid to the first, second and third premiated designs respectively. Particulars up to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Brighton and Hove Hospital for Women, 76 West Street, Brighton.

DUBLIN.—Sept. 30.—Designs and specifications wanted for workmen's cottages, semi-detached or terraces, each cottage to exceed 100*l*.. The successful plan to become the property of the company on payment of 20*l*. Mr. Francis B. Ormsby, Great Southern and Western Railway, Kingsbridge Terminus, Dublin.

ELHAM.—Oct. 7.—For sewage disposal of the village of Stood. Report, plan and estimate of probable cost. Premium 30 guineas. Further particulars, Mr. R. Loneragan, Cheriton Place, Folkestone.

HEYWOOD.—Sept. 14.—Competitive designs are invited for library building to be erected in Church Street at a cost of 100*l*.. Premiums of 30*l*., 20*l*. and 10*l*. will be awarded for

designs adjudged of sufficient merit and placed first, second and third in order respectively. Mr. J. Ainsworth Settle, Municipal Buildings, Heywood, Lancs.

HOWDEN.—Sept. 12.—Plans and estimates are invited for improving and extending the sewerage of the contributory place of Howden. The successful competitor will be awarded a sum of 15*l* and the usual commission for superintending the execution of the works. Mr. Henry Green, clerk.

IRELAND.—Sept. 30.—The Great Southern and Western Railway Company offer a prize of 20*l*. for the best design and specification of workmen's cottages, built either semi-detached or in terraces. Mr. Francis B. Ormsby, secretary, Knightsbridge Terminus, Dublin.

LEYLAND.—Sept. 26.—Plans are invited for the laying-out and development for municipal and other purposes of about 11,902 square yards of land in Church Road and Sandy Lane, Leyland, Lancs. A premium of 15*l* 15*s*. is offered to the author of the plan considered to be the best design. Mr. M. H. Wilkinson, surveyor, 21 Towngate, Leyland.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75*l*. for design placed first, and one of 25*l*. for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100*l*., 50*l*. and 30*l*. respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 12.—Competitive plans are invited for alterations on and additions to the Stonehaven town hall. Mr. George Murdoch, borough surveyor.

SCOTLAND.—Sept. 22.—Competitive plans are invited for the erection of a hospital and offices. Conditions of the competition and full particulars may be obtained from Mr. J. E. Shaw, clerk to the Lunacy Board, County Buildings, Ayr.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100*l*., 50*l*. and 25*l*. will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

CONTRACTS OPEN.

AYLESBURY.—Sept. 12.—For the erection of a pair of houses at Hartwell, near Aylesbury. Mr. Fred Taylor, architect, 26 Temple Street, Aylesbury.

BARKING.—Sept. 8.—For the erection of eighteen four-roomed cottages and twelve six-roomed cottages, in two blocks respectively, adjoining the workmen's dwellings in King Edward's Road. Mr. C. J. Dawson, architect, East Street, Barking.

BERMONDSEY.—Sept. 8.—For the erection of buildings in connection with extensions to the dust-destructor house, electric-light station, boiler-house, &c. Mr. R. J. Angel, borough surveyor, Town Hall, Spa Road, S.E.

BERWICK-UPON-TWEED.—Sept. 12.—For the joiners' work of three dwelling-houses to be erected at Pier Road, Berwick-on-Tweed. Messrs. J. M. Edney & Co., Sandgate.

BIRMINGHAM.—Sept. 10.—For the construction of a retaining wall at Bordesley and of a culvert near Olton. Mr. G. K. Mills, secretary, Great Western Railway Company, Paddington Station.

BIRMINGHAM.—Sept. 16.—For the erection of engine and boiler-houses, including seatings for five Lancashire boilers and the construction of a new flue, adjoining the present pumping station at Monument Lane, Edgbaston, Birmingham. Mr. Edward Orford Smith, town clerk, Council House, Birmingham.

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BIRMINGHAM.—Sept. 23.—For the erection of the Council school in Oldknow Road, near Victoria Park, Small Heath. Mr. A. Rowse, surveyor, 3 Newhall Street, Birmingham.

BOROUGH.—Sept. 17.—For repairs, &c., of the St. George's workhouse, Mint Street, S.E. Mr. A. J. Wade, architect, 36 Fifth Avenue, Harrow Road, W.

BRADFORD.—Sept. 8.—For the erection of the industrial hall of the Cartwright Memorial Exhibition, Bradford (1904) Messrs. Ledingham & Edwards, joint-architects, District Bank Chambers, Bradford

BRADFORD.—Oct. 1.—For the erection of office, store, shed, &c., at Gouthwaite Lodge, near Pateley Bridge. Mr. James Watson, Town Hall, Bradford.

BRANKSOME.—For the erection of proposed public library, Lake Road, Branksome, Dorset. Mr. Samuel J. Newman, architect, Branksome, Dorset.

BRIDLINGTON.—Sept. 17.—For the erection of a greenhouse near Quay Road. Mr. E. R. Matthews, borough surveyor, Town Hall, Bridlington.

BRIDLINGTON.—Sept. 19.—For lengthening the Clough bridge and the construction of a retaining wall to hold up the proposed widened roadway of Clough Bridge Road. Mr. E. R. Matthews, C.E., borough surveyor, Town Hall, Bridlington.

BRIDLINGTON.—Sept. 19.—For the erection of a public urinal on the Crane Wharf. Mr. E. R. Matthews, borough surveyor, Town Hall, Bridlington.

BRISTOL.—Sept. 10.—For the erection of school buildings in Hanham Road, Kingswood, near Bristol, to accommodate 990 children. Mr. John Mackay, architect, Richmond Place, Kingswood, near Bristol.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CANNOCK.—Sept. 7.—For the construction of an iron and wood infectious disease isolation hospital, comprising administration and mortuary blocks and wards to accommodate sixteen patients. Mr. Herbert M. Whitehead, surveyor, Penkridge, near Stafford.

CANNOCK.—Sept. 8.—For certain works at the workhouse, Cannock, Staffs, in connection with (a) rebuilding and additions to the laundry and washhouses, and (b) the provision and

fixing of steam-engine and laundry machinery. Mr. Ashton Veall, architect, 84 Darlington Street, Wolverhampton.

CHIPSTEAD.—For the erection of a small residence and outbuilding at Chipstead, Surrey. Mr. H. G. Gribble, architect, Hill View, St. John's, near Woking, Surrey.

COLCHESTER.—Sept. 8.—For the erection of boundary walls and lavatory, alterations of existing buildings and other works at the Corporation Yard, Magdalen Street (now in the occupation of the G.E.R. Company). Mr. Herbert Goodyear, borough surveyor, Town Hall, Colchester.

CONSETT.—Sept. 8.—For the erection of fourteen cottages at Consett, Durham, and twenty cottages at Chopwell; also for construction of cement footpaths, &c., at Crookhall and Langley Park. Mr. Charles E. Oliver, architect, at the General Offices, Consett.

COVENTRY.—Sept. 8.—For the erection of science buildings at the King Henry VIII. school, Coventry. Mr. H. W. Chattaway, architect, Trinity Churchyard, Coventry.

COVENTRY.—Sept. 14.—For the erection of thirty-four cottages at Wolston, near Coventry. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry.

CROYDON.—Sept. 14.—For the extension of the electricity works, Factory Lane, Croydon. Mr. F. C. Lloyd, town clerk, Town Hall, Croydon.

EASTBOURNE.—Sept. 8.—For the erection of three football and cricket pavilions in the fields adjoining Hampden Park. Mr. Daniel J. Bowe, borough surveyor, Town Hall, Eastbourne.

EGREMONT.—Sept. 9.—For the erection of a dwelling-house at South Street, Egremont, Cumberland. Mr. James Cowan, surveyor, &c., Egremont.

EPSOM.—Sept. 17.—For the erection of destructor buildings, with shaft and other works, at the sewage farm, Hook Road. Mr. Edward R. Capon, surveyor, Council Offices, Bromley Hurst, Church Street, Epsom.

FINCHLEY.—Sept. 14.—For the erection of sixty dwellings in four blocks in Squires Lane, Church End, Finchley. Mr. E. H. Lister, clerk, Council Offices, Church End, Finchley.

FRYSTONE.—Sept. 10.—For the erection of fifty-two houses and shop at Frystone, near Castleford, Yorks. Messrs. Garside & Pennington, architects, Pontefract.

HALIFAX.—Sept. 7.—For the erection of playsheds at Sunnyside Board schools, Haley Hill, Halifax. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

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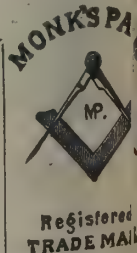
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HALIFAX—Sept. 15.—For the erection of a shed covering 200 square yards, and other alterations at the Albert Foundry, 1 Albert Road. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

HAMPSTEAD—Sept. 30.—For the erection of tenements, ablating, sheds, workshops, &c., at the new dépôt and stoneyard, Lymington Road, Finchley Road, Hampstead. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

HASTINGS—Sept. 11.—For the erection of superintendent's lodge at the Hastings borough cemetery. Mr. P. H. Palmer, borough engineer, Town Hall, Hastings.

HASTINGS—Sept. 18.—For the erection of a coastguard station, consisting of houses for an officer and seven men at airlight, near Hastings. Particulars will be supplied on application to the Director of Works Department, Admiralty.

HIGH WYCOMBE—Sept. 17.—For the erection of a care-aker's lodge to be erected near to isolation hospital, Clay line, High Wycombe, with hollow walls, rain-water tank (2 feet by 6 feet), drains and suitable outbuildings. Mr. B. L. Reynolds, clerk, 12 Easton Street, High Wycombe.

HULL AND SELBY—Sept. 16.—For the erection and com-pletion of station buildings, warehouses, weigh offices and stationmaster's houses at Hessle, Ferriby and Brough, for the North-Eastern Railway Company. Mr. William Bell, archi-tect, York.

IRELAND—Sept. 10.—For the erection of a labourer's cottage on the townland of Launtaggart, and another on the townland of Tullyskeherney. The Chairman of the Rural District Council, Workhouse, Manorhamilton.

IRELAND—Sept. 14.—For the erection of four cottages and conversion of single rooms into a dormitory at the Armagh District lunatic asylum. Mr. R. H. Dorman, Court House, Armagh.

IRELAND—Sept. 14.—For an extension to the fitting shops, Dundalk, for the Great Northern Railway Company (Ireland). The Secretary, Amiens Street Terminus, Dublin.

IRELAND—Sept. 14.—For the erection of cottages, Lima-ry, viz. two in the townland of Ballyleighry, two in the townland of Carrowclare, four in the townland of Crindle. William Crawford, clerk, Council Offices, Limavady.

IRELAND—Sept. 16.—For enlarging and repairing the Arch Street schools. Mr. W. W. Larmor, Banbridge.

KENDAL—Sept. 10.—For the erection of a stable and other improvements to farm buildings at Chambers Tenement farm, Brigsteer; also for lengthening the shippon and for manure yard walls, &c., at College Green farm, Levens, for Trinity College, Cambridge. Mr. J. Banks, land agent, Kendal.

LANCASTER—Sept. 19.—For the erection of a new produce market. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEEDS—For addition and stables in stone, and alterations to a house in Shadwell Lane, Moortown, Leeds. Messrs. Mosleys, estate agents, 6 Wormald Row, Leeds.

LEEDS—Sept. 8.—For the erection of a bakehouse at the workhouse, Beckett Street, Leeds. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LEEDS—Sept. 9.—For 200 window frames for workmen's huts at Masham. Particulars and samples may be seen at the City Engineer's office, Leeds.

LEVENSHULME—Sept. 16.—For the erection of the pro-posed Carnegie free library in Cromwell Grove and Barlow Road. Mr. James Jepson, architect, Guardian Chambers, Tiviot Dale, Stockport.

LIVERPOOL—Sept. 9.—For the erection of a new boys' wing, dining-room, &c., at Richmond Lodge, Wavertree. Messrs. Walter W. Thomas & Co, architects, 15 Lord Street, Liverpool.

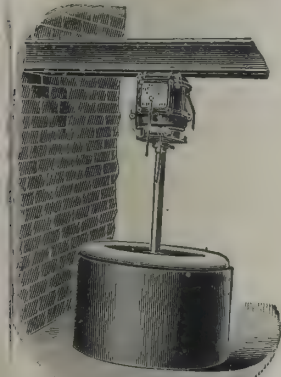
LONDON—For the erection of a block of shops and flats, Uxbridge Road, Shepherd's Bush, W. Messrs. Palgrave & Co, architects, 28 Victoria Street, Westminster, S.W.

LONDON—Sept. 11.—For the erection of a wooden band-stand platform, conveniences and shelter, boundary walls and iron railings at Brickfield Gardens, Spenslow Street, Limehouse, E. Particulars at the Architect's Department (General Con-structional Section), London County Council, 15 Pall Mall East, S.W.

MANCHESTER—Sept. 7.—For the construction of a spart roof greenhouse at the cemetery, Cheadle. Mr. E. Sykes, C.E., surveyor, Council Offices, 9 High Street, Cheadle.

MANCHESTER—Sept. 15.—For erection of a public wash-house and wash-baths at Pryme Street, Hulme. Particulars may be obtained at the office of the City Architect, Town Hall, Manchester.

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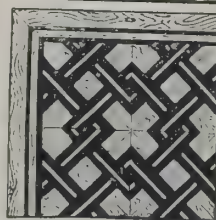
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NEWCASTLE-UPON-TYNE.—Sept. 7.—For the erection of senior and junior departments (in two blocks) at Forsyth Road, West Jesmond, for the Newcastle-upon-Tyne School Board. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

PORTSMOUTH.—Sept. 18.—For the erection of two additional manual instruction centres. Mr. Alfred H. Bone, architect, Cambridge Junction, Portsmouth.

RUGBY.—Sept. 7.—For the erection of a Board-room and offices at the workhouse, Rugby. Mr. T. W. Willard, architect, Rugby.

ST. PANCRAS.—Sept. 10.—For the erection of four bedrooms on the roof of Cook's Terrace infirmary, Pancras Road. Mr. Alfred A. Millward, clerk, Town Hall, Pancras Road, N.W.

SCARBOROUGH.—Sept. 8.—For the erection of an ice factory, engine and boiler-rooms, engine chimney, ice store and cold stores for the Scarborough Pure Ice and Cold Storage Co., Ltd, Scarborough. Messrs. Freeman, Son & Gaskell, architects, 11 Carr Lane, Hull.

SCOTLAND.—Sept. 7.—For the erection of an infectious diseases hospital at Heathfield Road, Newton-on-Ayr. Mr. John Eaglesham, architect, Wellington Chambers, Ayr.

SCOTLAND.—Sept. 14.—For the extension of Macdonald Road electric-power station, Edinburgh. Mr. R. Morham, city architect, City Chambers, Edinburgh.

TRURO.—For alterations and improvements to 8 Princes Street, Truro. Mr. Silvanus Trevel, architect, Truro.

WAKEFIELD.—Sept. 12.—For repairs and pointing, &c., to the stonework of the spire of the tower to the chapel at the cemetery, Doncaster Road. The Town Clerk, Wakefield.

WALES.—For additions to the Bridge End inn, Pontnewydd. Mr. Norman M. Brown, architect, Steam Packet Chambers, Dock Street, Newport, Mon.

WALES.—Sept. 9.—For the erection of a vestry and ante-rooms to the Methodist chapel, Cross Inn, Llangathen. Mr. David Jenkins, architect, Llandilo.

WALES.—Sept. 10.—For the erection of a bridge and alteration to road at Glanrafon, Rhosyllen, Wrexham. Mr. T. Rees Evans, highway surveyor, Johnstown, Ruabon.

WALES.—Sept. 10.—For the erection of a shop and dwelling-house on site of old premises at Pontmorlais. Mr. C. M. Davies, 112 High Street, Merthyr Tydfil.

WALES.—Sept. 11.—For alterations to premises at Ogmore Vale, for the Nantymoel Industrial Co-operative Society. Mr. J. Morgan, secretary, Nantymoel.

WALES.—Sept. 14.—For the erection of twenty houses at Cwmfelinfach, near Ynysddu. Mr. J. Boothman, Schoc House, Ynysddu.

WALES.—Sept. 14.—For the erection of two new departments for boys and girls at Penygraig, Ystrad-y-fodwg. Mr. Jacob Rees, Hillside Cottage, Pentre.

WALES.—Sept. 14.—For the erection of public offices Morgan Street, Pontypridd. Mr. Henry T. Hare, architect, 13 Hart Street, W.C.

WALES.—Sept. 17.—For the erection of a Calvinist Methodist chapel at Nantfyllen, Maesteg. The Rev. I. Solva Thomas, Garnwern Terrace, Nantfyllen.

WEM.—Sept. 14.—For the erection of a market house assembly-hall, &c., at Wem, Salop. Mr. James Brown, architect, 12 Castle Street, Shrewsbury.

WEYMOUTH.—Sept. 9.—For the erection of stables, harness rooms, chaff-house, horsekeeper's residence, &c., at Stavorda Road. Mr. W. Barlow Morgan, surveyor, 5 Market Street, Melcombe Regis.

WIGAN.—Sept. 22.—For the enlargement of the post office at Wigan, for the Commissioners of H.M. Works and Public Buildings. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WOOLWICH.—Sept. 24.—For the erection of public bath and washhouses on site adjoining 240 High Street, Plumstead. Mr. Frank Sumner, borough engineer, Maxey Road, Plumstead.

WORKINGTON.—Sept. 10.—For the erection of a shop and hall at Westfield, Workington. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

THE tower which has been added to the parish church of Bishopthorpe by the Archbishop of York as a thankoffering to the completion of twenty-five years of his episcopate will be dedicated by the Archbishop on the 29th inst., being the festival of St. Michael and All Angels.

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For widening, fencing, kerbing, &c., a short length of road near Newthorpe and Greasley station. Mr. GEO. W. HAWLEY, surveyor, York Chambers, King Street, Nottingham.			
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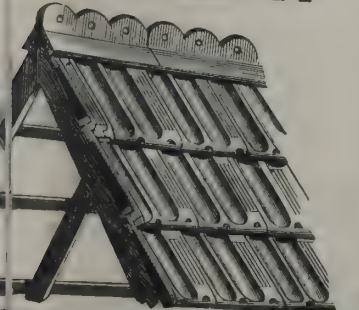
For the construction of roads and sewers adjacent to Mina Road, Bristol. Messrs. HOLBROW & OATEN, surveyors, 9 Clare Street, Bristol.			
Thatcher Bros.	£1,518	0	9
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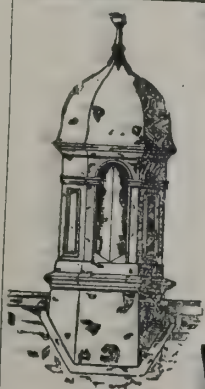
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For Index of Advertisers, see page x.

HUDDERSFIELD—continued.

For erection of five lock-up shops at Crosland Moor. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

E Pearson, Milnsbridge, mason.
L Kettlewell, Lockwood, joiner.
H. S. Brook, Crosland Moor, plumber.
E S. Jessop, Honley, plasterer.
G. & F. Burgoine, Moldgreen, painter.
A. Bower, Crosland Moor, slater.

For the erection of three dwelling-houses at Fenay Bridge Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

J. Capper, Almondbury, mason.
Crowther & Dawson, joiner.
S. Hale, Huddersfield, plumber.
W. Whittaker, Dalton, plasterer.
T. B. Tunncliffe, Huddersfield, slater.
H. Sykes, Moldgreen, painter.
J. Cooke, Huddersfield, concreter.

ILFORD.

For alterations at the White Horse public-house, Broadway, Ilford, for Mr. W. D. Golding. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E. Quantities by Mr. L. E. G. COLLINS, 31 Great St Helens, E.C.

Todd & Newman	£2,667	0	0
Harris & Wardrop	2,549	0	0
J. Maddison	2,526	0	0
J. & H. Cocks, Ltd.	2,516	0	0

KING'S CROSS.

For the construction of new staircases and entrance, with other alterations, decorations and repairs at the Welsh Congregational church, King's Cross. Mr. ALFRED CONDER, architect, Palace Chambers, Westminster.

H. Young	£3,787	0	0
L. H. & R. Roberts	3,539	0	0
W. H. Lascelles & Co	3,252	0	0
GROVER & SON (accepted)	2,974	0	0

KETTERING.

For the construction of the embankment for a storage reservoir, together with valve tower, outlet culvert, waste-water channel and other works near the village of Thorpe Melsor, three miles from Kettering. Mr. T. READER SMITH, engineer, Market Place, Kettering.

J. F. Price	£26,549	0	0
T. J. Dixon & Son	23,984	2	6
J. H. Macdonald	22,676	1	8
C. Chamberlain	22,564	13	9
T. Smart	22,299	0	0
H. Ashley	22,251	4	0
B. Cooke & Co.	21,866	0	0
G. Young	21,768	6	8
B. Firth	21,173	9	0
G. Bell	20,571	0	0
J. Hodson & Son	20,010	2	2
S. Wood	19,685	7	6
W. H. Pickin	19,500	0	0
Pethick Bros.	18,866	14	7
J. Moffatt	18,610	10	1
G. Henson	18,600	0	0
W. Jones & Son	17,354	10	4
A. Jewell	16,850	0	0
W. Cunliffe	15,990	0	0
F. Barlow	15,800	0	0

LEYTON.

For combined drainage to ten houses, Lea Bridge Road, N.E., for Mrs. Saunders and adjoining owners. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E.

H. G. Fryer	£197	0	0
H. Bishop	167	10	0
E. Jones	149	0	0

For six houses. Mr. J. M. H. GLADWELL, architect, Essex House, High Street, Stratford, E.

H. Bishop	£82	0	0
E. Jones	76	15	0

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LINTHWAITE.

For the erection of a branch store at Linthwaite. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

A. W. Quarmby & Son, Linthwaite, mason.
J. Varley & Sons, Slaithwaite, joiner.
T. Fieth, Marsden, plumber.
J. Walker & Son, Slaithwaite, plasterer and painter.
Pickles Bros, Huddersfield, slater.
J. Cooke, concreter.

LONDON.

For the erection of smithy and engineers' workshop, Wimborne Street, New North Road, Hoxton, for Mr. W. Hurst. Mr. A. W. HUDSON, architect, 87 Finsbury Pavement.

J. & W. T. Inkpen	£1,240	0	0
S. J. Scott	1,120	0	0
Hawkey & Oldman	1,032	0	0
E. Lawrence & Sons	998	0	0
J. Grover & Sons	974	0	0
E. H. Capon	897	2	5

LONGTON.

For construction of detritus and settling tank, supply and effluent channels, culverts, earthenware pipe sewers, manholes, and other works required for sewage-disposal works. Mr. J. W. WARDLE, borough surveyor.

J. D. Nowell & Sons	£9,974	0	0
J. Byrom	9,849	0	0
H. P. Embrey	8,306	0	0
J. T. Dawson	7,592	0	0
W. Williams	7,200	0	0
S. J. Forsyth	6,995	0	0
F. Barde	6,938	0	0

MAIDSTONE.

For widening Mill Street (west side). Mr. T. F. BUNTING, borough surveyor.

J. Coker	£4,220	3	0
R. Avar	983	0	0
Clarke & Epps	942	9	0
H. J. Smith	889	0	0
G. E. Wallis & Sons	828	0	0
W. T. Burrows	780	10	0
BARDEN & HEAD (accepted)	739	0	0

NELSON.

For the supply and erection of the steelwork required in the construction of a clock tower on the existing market hall. Mr. B. BALL, borough surveyor.

E. WOOD & CO, Ocean Ironworks, Ordsal Lane, Manchester (accepted).

NORWICH.

For painting the whole of the external work of the workhouse buildings formerly painted. Messrs. MORGAN & BUCHINGHAM, architects, Redwell Street, Norwich. Quantity by architects

Anderson	£310	0
F. R. Hipperson	248	17
W. J. King	248	0
Youngs & Son	225	0
Watson & Kirby	225	0
A. C. Taylor	190	0
T. Horth	177	0
J. J. Read	170	0
W. E. Bird	160	0
G. MARSHALL, Heath Road (accepted)	138	0
E. C. Huggins	103	0

RASTRICK.

For the erection of stabling, &c, at the George inn. Mr. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

Fearnley Bros., Brighouse, mason.
J. Crowther, joiner.
R. B. Lamb, Elland, plumber.
J. Hynes, Brighouse, plasterer and concreter.
H. B. Aspinall, Berry Brow, slater.

RAUNDS.

For extension of the gasworks.

Accepted tenders.

Smith & Son, Raunds, retort house, 636 $\frac{1}{2}$; Gibbons Bro Dudley, retort bench, 645 $\frac{1}{2}$, ironwork, 558 $\frac{1}{2}$.

ROCHDALE.

For painting and floor-polishing work required at Marlborough hospital. Mr. S. S. PLATT, borough surveyor.

HILL & THACKWRAY, Tip Place, Penn Street (accepted).

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E. Bradshaw & Son,
322 Fawcett Road, SOUTHSEA.

BRISTOL:

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Chapel Street, St. Philips M.

SCOTLAND.

For fitting-up the Aberdeen county buildings with electric light, for the County Council.

J. F. ANDERSON (*accepted*) £109 0 0

SOUTHWARK.

For the erection of out-relief stores at the rear of the offices, Tooley Street.

Balaam Bros. £1,130 0 0

Holloway 925 0 0

Pritchard & Renwick 894 0 0

Hall Bros. 873 0 0

Reeson 856 0 0

KENT, Lewisham (*accepted*) 850 0 0

STROOD.

For storm-water works near the Gardeners' inn, Upper Higham, Kent. Mr. WALTER BROOKE, A.M.I.C.E., surveyor.

Tuff & Miskin £67 10 0

J. Meston 65 0 0

E. H. Porter 63 0 0

J. Coker 61 18 0

G. Packham 58 10 0

W. & F. TUFFEE, Gravesend (*accepted*) 44 0 0

WALES.

For the construction of a storage reservoir at Blaen-cum-Clowyn, in the parish of Cwmdy, in the county of Glamorgan, to hold 30 million gallons, including an earthwork impounding dam, overflow, by-wash, tunnel, clay puddle wall, rubble pitching, soiling slopes, valve tower and foot-bridge, and the provision of all labour and materials, &c. Mr. JOSEPH HUMPHREYS, engineer, Town Hall Chambers, Maesteg.

H. Hill £36,662 0 0

Barnes & Chaplin 31,531 0 0

W. JONES & SONS, Neath (*accepted*) 28,347 0 0

J. E. Evans 26,367 0 0

J. Riley 23,731 0 0

G. Rutter 19,231 0 0

WALES—continued.

For the erection of an organ chamber and altering, repairing and renovating Llandilofawr parish church. Mr. DAVID JENKINS, architect, Llandilo.

Alfred Meredith £1,577 0 0

Wm. Morgan 1,425 0 0

E. & A. Frith 1,405 0 0

THOMAS BROTHERS, Llandilo (*accepted*) 1,350 0 0

George Mercer 1,315 0 0

For the construction of about 340 yards of retaining and fence-walls and widening and forming carriageways and footways on the Cardiff Road, Treforest, Pontypridd. Mr. P. R. A. WILLOUGHBY, surveyor.

Barnes, Chaplin & Co. £1,588 2 6

A. G. Cullins 1,293 11 0

R. Y. MATHIAS, Merthyr Road, Pontypridd

(*accepted*) 1,245 10 7

For the erection of steam laundry, stack, stables and other buildings, Abertillery. Mr. GEORGE C. HILLARD, architect, Market Chambers, Abertillery. Quantities by architect.

J. Hatherley £2,347 0 0

Burgoyne & Co. 2,037 0 0

N. Bagley 1,895 6 6

E. C. Jordan 1,893 7 0

D. W. RICHARDS, Newport (*accepted*) 1,850 0 0

WIMBLEDON.

For the erection of two blocks of flats in connection with the Soldiers and Sailors' Families Association, Queen Alexandra's Home, Wimbledon. Messrs. ERNEST GEORGE & YEATES and Mr. C. E. LANCASTER PARKINSON, architects.

W. Willett £27,870 0 0

Martin, Wells & Co. 24,199 0 0

L. H. & R. Roberts 23,997 0 0

J. Long & Sons 23,680 0 0

J. Britton 23,500 0 0

W. J. Renshaw 22,819 0 0

H. L. Holloway 22,528 0 0

C. F. Kearley 22,487 0 0

W. Johnson & Co. 22,463 0 0

Simpson & Sons 22,343 0 0

Carmichael 21,900 0 0

J. C. TENNANT & Co., London (*accepted*) 20,819 0 0

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WOOLMER FOREST.

For the erection of a terrace of ten six-roomed dwelling-houses at Whitehall, Woolmer Forest, Hants. Messrs. RAKE & COGSWELL, architects, Prudential Buildings, Portsmouth.

Rudd & Sons	£5,080	0	0
C. Baker	4,485	0	0
Strange & Sons	4,335	0	0
Chapman & Lowry	4,250	0	0
G. Gardner	4,240	0	0
G. Kenys	3,875	0	0
H. Tribe	3,800	0	0
W. Mould	3,446	0	0
Whiteman & Gauntlet	3,009	0	0
R. Foster	2,772	0	0

WORTHING.

For supply and erection of destructor boilers and engines at outfall works.

Hughes & Stirling, London	£4,387	0	0
Horsfall Destructor Co., Ltd., Leeds	3,858	0	0
Meldrum Bros., Ltd., Manchester	3,796	1	0
Refuse Destructors, Ltd., London	3,481	0	0
Goddard, Massey & Warren, Nottingham	3,048	14	0
HEENAN & FROUDE, Manchester (accepted)	2,880	0	0
Manlove, Alliott & Co., Nottingham	2,329	0	0
B. R. Rowland & Co., Ltd., Stockport	1,988	0	0

Received too late for Classification.

LYNTON.

For providing and laying about 2,300 yards lineal of 8-inch cast-iron water-main, together with the requisite sluice and air valves, hydrants, the erection of a filtering station and other works in connection with the Lynton water supply. Mr. W. H. CHOWINS, engineer, Town Hall, Lynton, Devon.

Rafarel & Co.	£3,237	8	8
F. Mills	2,953	11	0
R. Neal	2,505	0	0
B. Jones	2,331	12	10
G. L. GUNN, Lynton (accepted)	2,235	7	10

LONDON.

For the following works (separate tenders).

Painting works at Tooting annexes.

G. Mussard	£615	0
M. McCarthy	455	0
H. J. Butcher	440	0
J. Shelley	430	0
Chapman & Sturton	430	0
H. Wilson	417	0
Making	410	0
E. Heather	360	0
W. T. Harris	360	0
Page & Son	359	0
E KING, Wandsworth (accepted)	285	0
Sawner & Co.	279	1
Woollaston & Co.	130	0

Painting works at infirmary.

Chapman & Sturton	698	0
M. McCarthy	695	0
R. S. Ronald	545	0
W. A. King	495	0
Sawner & Co.	479	10
E. Heather	442	0
Woollaston & Co.	420	0
Page & Son	412	0
W. T. HARRIS (accepted)	350	0

WALES.

For improvements and renovating both the Tabor Congregational chapels, Maesycwmmmer, Mon. Mr. E. JONES, architect, Porth.

H. R. PAUL & SONS, Barry Dock (accepted) . £393 8

For additions and alterations to 9 Strand, Ferndale. Mr. EDWIN JONES, architect, Porth. Quantities by architect.

J. Lewis . £422 9
G. HALLETT, Cardiff (accepted) . 420 10

At Altrincham Urban District Council it has been decided that the general purposes committee should deal with the question of providing hospital accommodation for Altrincham only, Bowdon having declined to enter into a joint hospital scheme.

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SOUTH AFRICAN WAR MEMORIAL TO BE ERECTED AT
TYNEMOUTH.

BUILDING AND BUILDERS.

PE memorial-stone of a new Sunday school and parochial all adjoining and associated with the church of St. Augustine, rinksway, Stockport, has been laid.

IT is proposed to purchase a site for a church to be built the new district of St. Mark, Levenshulme, recently formed from the parish of St. Peter's, Levenshulme. The cost of the e was 340/. The population of the new district is 3,500.

IT is proposed to build a new vicarage for the parish of owe Bridge, near Atherton, at a cost of about 2,000/., on a e adjoining the church. The site has been conveyed to the ecclesiastical Commissioners, from whom a grant towards the est is expected.

WARDLEY HALL, at Worsley, near Manchester, one of the most picturesque buildings in Lancashire, is being renovated and beautified. It is reported that Colonel Davies, who is to take an active share in the management of the Bridgewater estates after their transfer to the Earl of Ellesmere, will be the next tenant of Wardley Hall.

HOLY TRINITY CHURCH, Southport (the Rev C. S. Hope), standing in one of the oldest churchyards of the town, has been for some time considered unsafe for the congregation to meet and services consequently have been held in the school-room. The fabric is now being taken down with a view to another church being erected on the same site.

THE old viaduct which crosses the Seine at Passy having become inadequate to the traffic of the Metropolitan Circular Railway and the ordinary traffic, the feat of removing the entire bridge is proceeding and side widening sections of enormous weight are being put in place. These sections are being transported by means of boats and huge cranes. Enormous crowds of interested spectators have gathered in the neighbourhood watching the scene, which was singularly animated.

SOME time ago the Barrow Town Council rejected Sir Benjamin Baker's scheme for a bridge to Walney Island owing to the cost, which was put down at 124,000/. Vickers, Sons & Maxim have offered that if the Council build a bridge and levy a twopenny rate the company will make up the remaining amount required to meet interest and redemption. On Thursday the general purposes committee decided to recommend the Council to accept this offer. Within the past two years the population of Walney has increased more than 5,000 owing to the building of Vickerstown North and Vickerstown South.

THE foundation-stone was laid on the 29th ult. of St. John's new church at Hopwood, Lancs. The new church is to be built on the site formerly occupied by an iron structure which had done good service as a place of worship for nearly twenty-two years, but which on account of not being weatherproof and being far from comfortable for the worshippers, has been pulled down since Whitsuntide. The portion of the new church to be erected under the present contract is estimated to cost about 4,000/., and will consist of the nave and aisle, up to and including the permanent chancel arch. The nave will be built of stone, but the chancel, which will be of brick, is temporary only, and will be replaced with a permanent structure as soon as funds will allow. When completed the edifice will be 110 feet long and 52 feet wide inside, and will afford accommodation for a congregation of 480. The east end of the north aisle will be arranged as a morning chapel; a dwarf wall and three steps will separate the chancel from the nave, and the chancel will be 33 feet long.

A CONFERENCE has been held at Flixton of representatives from the Lancashire and Cheshire County Councils and the local parochial committees with respect to the construction of a new bridge over the river Mersey between Carrington and Flixton. The existing bridge, which was erected over half a century ago, has long been in a dangerous condition for vehicular traffic. The conference recommended the construc-

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Telegrams, "Jennings, London."

Telephone 680 Hop.

tion of a new bridge, the site of which is to be situate nearer Flixton than the present structure, and the cost is to be borne jointly by the County Councils and the Barton Rural District Council, and the Manchester Corporation will pay a certain sum for the privilege of closing a road. A letter was read from the county bridgemaister enclosing a plan of the proposed bridge and the improvements which it will be necessary for the parish council to carry out in regard to the approaches of the bridge. The plan, after a brief discussion, was approved, and the County Council is to be notified to that effect.

THE Garden City Pioneer Company, Ltd., has acquired about 4,000 acres of land near Hitchin on which to build the first Garden City. The estate is about thirty-four miles from London, and the nearest point is little over a mile from Hitchin Junction, on the Great Northern Railway, the latter being reached in forty-two minutes from King's Cross. The site is well situated for establishing a residential and manufacturing town. It is intersected in the centre by the Cambridge branch of the Great Northern Railway. The district is also served by the Midland Railway, and the Great Eastern is within touch. The land is intersected by good roads with extensive frontage and adjoins the Great North Road from London. There is ample building material in the district to be obtained at low cost, and there is a good supply of labour. The soil is admirably adapted for residential purposes, the geological strata consisting of chalk partly overlaid with gravel, and there is an ample supply of good water to be obtained. The site is situated at an altitude of from 250 to 300 feet above sea-level, and there are magnificent views of the surrounding country to be obtained. Most of the site has a southern aspect; it is extremely compact, and is ready for immediate development. The land has been secured at a reasonable price, and no difficulty is anticipated in carrying out a successful commercial enterprise, without departing from the principles of the movement. A company with a large capital will shortly be formed to carry out the scheme. A cumulative dividend limited to 5 per cent. per annum will be paid to the shareholders, and the balance of profit will be used for the benefit of the town and its inhabitants. If the enterprise is successful this profit cannot fail to be large. It is proposed to have a Press view of the estate at an early date, and a public conference will be held on the site, probably in the first week of October. Further information regarding the scheme and these meetings can be obtained from the secretary of the company, Mr. Thomas Adams, 347-351 Birkbeck Bank Chambers, Holborn, W.C.

TRADE NOTES.

THE whole of the beautiful mosaic work in connection with the new Gaiety Theatre, of which Mr. Ernest Rüntz is the architect, has been entrusted to the well-known firm, Messrs. Diespeker, Ltd., of Holborn Viaduct, London.

THE Edinburgh Life Assurance Company have opened a West End office at No. 174 Piccadilly, W., under the charge, as West End secretary, of Mr. Alexander Robertson, late of the Law Union and Crown Insurance Company, Chancery Lane.

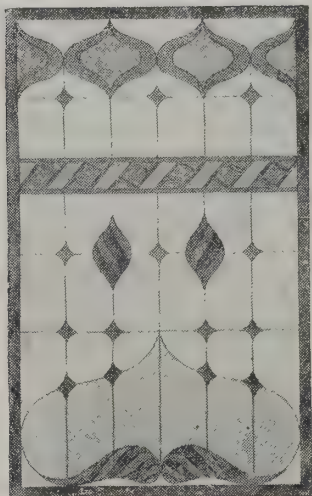
THE Planet Foundry Company's new works at Bridge have recently been painted with Hall's sanitary washable distemper, which was supplied to the decorators by the executors of W. H. Bridge, German Street Works, Old Trafford, Manchester.

A NEW Cambridge quarter-chime clock, showing the time on four external illuminated dials, has just been erected in the parish church, Ballincolly, co. Donegal, Ireland, with Lord Grimthorpe's latest improvements inserted by Messrs. Wm. Potts & Sons, clock manufacturers, of Leeds and Newcastle-on-Tyne.

WE have on previous occasions referred to the excellent qualities of Velure, a new and perfected Japan paint, and the satisfaction its use has given when applied to numerous purposes. Being sanitary and washable, and the fact that it does not crack, chip, peel, blister or fade, combined with its remarkable spreading, elastic and weather-resisting properties, meeting with a large and increasing demand, including a metropolitan and provincial boroughs. Messrs. Wm. Fairlie & Son, of Fairlie, Scotland, who designed for Sir Thomas Lipton his racing yacht *Shamrock III*, selected Velure, after several trials, for painting it above and below water on account of its beautiful colour and surface, elasticity, durability and perfect smoothness.

LIGVITIEM is a chemical preparation recently introduced by Messrs. Dennis & Roberts, wholesale druggists, of Church Street, Nottingham, for the protection and preservation of wood, bricks, stone, plaster, &c., a purpose which, it is claimed, it fulfils in a remarkable manner, as it penetrates into the material, forces out the moisture, makes it proof against water and all noxious agents. Under its powerful preservative qualities dry rot and premature decay are unknown, and its application, either by painting or immersion, requires no special

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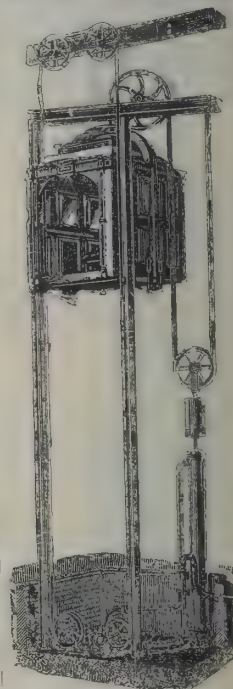
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VARIETIES.

THE new school buildings at Clutton, Somerset, were opened on the 28th ult.

MR HEPWORTH COLLINS, consulting chemist and civil engineer, intimates that his address is now—Care of Mr O. M. Wihl, B.A., LL.B., Messrs. Edward Wihl & Co., 17 Nicholas Street, Manchester.

WE understand that the next exhibition to be held at Earl's Court will be entitled "Austria in London." The management will be in the able hands of Mr. W. Höfler, of Soho Square, W. This should be a guarantee of its success.

THE new joint hospital for Kincardineshire, which has been built at a cost of about 8,000*l.*, was formally opened on the 28th ult. by Sir Alexander Baird, Bart., Lord Lieutenant of the county. The new hospital has been erected on a very fine site near Stonehaven railway station, and is built on the cottage principle.

NOTICES have been posted in several large engineering establishments in Belfast intimating that after the expiration of thirty days the workmen's wages will be reduced by 5 per cent. About 3,000 men are affected. It is stated that the reasons given by the employers are not so much declining trade as the keenness of competition with Continental and American firms in the production of certain machinery, the greater portion of which is manufactured in Belfast for export.

THE twenty-ninth annual congress of the Incorporated Sanitary Association of Scotland takes place at Stranraer this week. The honorary presidents are Provost the Viscount of Strathclyde and Sir Herbert Maxwell, Bart., M.P. The annual meeting was held on Wednesday evening. The proceedings proper began on Thursday morning, when Professor Glaister, Glasgow, delivered the presidential address. Other papers were read, and in the afternoon, on the invitation of Stranraer Town Council, the members drove to Castle-Kennedy. In the

evening the annual dinner was held in St. Andrew's Hall. To-day (Friday) several subjects are down for discussion. There will be a drive to Lochnan in the afternoon, and on Saturday it has been arranged to have a special excursion round Ailsa Craig by the *Princess Victoria*.

THE new home of the Little Sisters of the Poor which has been erected at Cobridge, Staffs, was opened on the 27th ult. The site of the new home abuts upon Cobridge Road, the main front being to the south and overlooking Wolstanton. The building just opened is only a part of the home as planned, and gives accommodation for about ninety old people and about twelve sisters. It is proposed at some future date to add another wing to the structure, and the present buildings will then be utilised as men's quarters, and the additional buildings will be set apart for women. When complete it will accommodate about 150 old people and twenty sisters. The lowest floor, which is a semi-basement, comprises sisters' refectory, kitchen, scullery, various store-rooms, a men's smoke-room and the heating chambers. On the ground floor is the main entrance, with reception or waiting-rooms on either side, a temporary chapel with its sacristy, men's infirm dormitory, men's day-room, with scullery attached. On the first and second floors are women's day-rooms, with scullery attached, dormitories, clothes stores, sisters' oratory and a bath-room on each floor. On the third floor are large box-rooms, and rooms that may be used as dormitories if necessity arises. The building is of the plainest and simplest character, as befits a charitable institution of its kind, but care has been exercised to provide a convenient and comfortable home. It is heated throughout with hot water on the low-pressure system and is well-ventilated. The cost, fitted complete, has been about 7,000*l.* The architects are Messrs. R. Scrivener & Son, of Hanley, and the general contractors Messrs. C. Cornes & Sons, of Hanley.

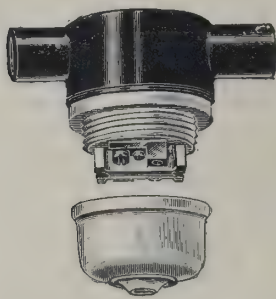
NEW CATALOGUE.

WE have received from the Simplex Steel Conduit Company, Ltd., of Westinghouse Buildings, Norfolk Street, Strand, and 20 Bucklersbury, E.C., a copy of their new "Abridged Price List," with which is bound up a reprint of the very useful new wiring rules of the Institute of Electrical Engineers. This list is an abridgment of and is used in connection with their 200 pp catalogue, which although only issued as recently as in

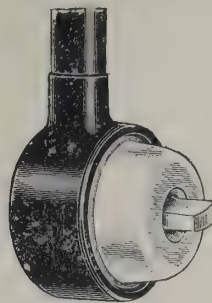
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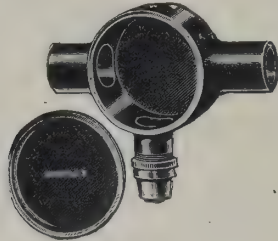
March last has already met with so large a demand as to be practically exhausted. It contains all prices in a condensed



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form, and the illustrations, of which there is a profusion, are reduced. Two additional types of conduit are now listed to meet special cases, viz. Simplex "wire duct" and Simplex "solid drawn" conduits. The illustrations which we reproduce represent a Simplex ceiling rose fitting which has a new type of special lug mounting, the simplicity of which is obvious. Other simple appliances are the Simplex miniature turn-switch fitting and the Simplex vertical pendant, of which we also reproduce illustrations.

This very useful little auxiliary list is especially compiled for those who have not already received copies of the current list, and for those who require the prices in a handy form for office use or for the use of their foremen, &c.

FIRE TEST OF "URALITE."

"URALITE" has again emerged triumphant from a fire which took place on Wednesday last on the Nottingham Forest Football Club's ground in the presence of a large number of architects, builders, fire insurance officials, Corporation officials, the fire brigade and other gentlemen. A screen was erected consisting of ordinary timber covered with "Uralite," and against this a huge bonfire was lighted, made of timber soaked in petroleum. In the middle of the bonfire a wooden box was placed constructed of timber covered with "Uralite," and inside the box were placed a quantity of papers, sulphur, paraffin wax and fusible metal. After the fire had burned itself out the box was opened (the temperature which it had been subject was at times as high as 1,850° Fahr.), and it was found that the contents were uninjured. The inside of the box was not even warm to the hand. The back of the screen never reached more than a few degrees above the normal temperature of the atmosphere.

All present expressed themselves as highly pleased with the results of the test, and predicted a great future for the material. It has already been adopted by 100 different buildings for a great variety of purposes, notably in connection with electric-railway carriages for covering the underside of the carriages for protection against fire caused by short circuits, for railway panels, for roofs of all kinds of buildings, for ceilings, partitions and doors in factories and workshops.

The War Office, Admiralty and Office of Works' official insurance companies and all who are interested in fire protection think very highly of the material. The representative of the British Uralite Company present were Mr. Armstrong, commercial manager, Mr. Watson, works manager, and Mr. Smith, assistant city manager.

STATUARY IN LEEDS CITY SQUARE.

At a special meeting of the Leeds City Council held on Wednesday, the Lord Mayor (Mr. John Ward) moved upon the occasion of the completion of City Square, the freedom of the city of Leeds should be conferred upon Mr. T. W. Harding, an alderman, and in the year 1898-99 the mayor of the city, in recognition of the able services rendered by him in the city for many years past, and of the public interest for which he had at all times been distinguished in the furtherance of the culture of art in the city, and of which a notable instance was to be found in the generous gift by him of



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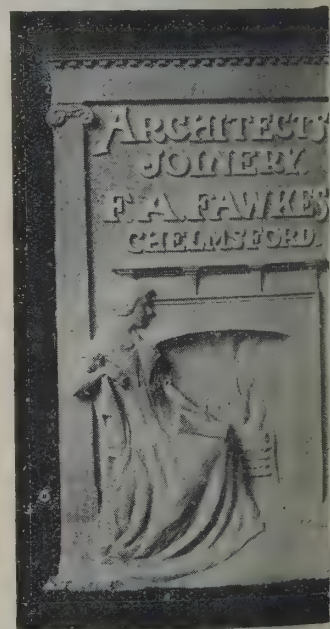
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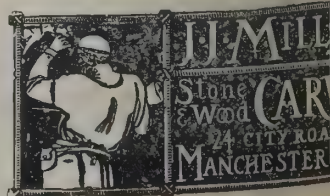


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estrian statue of the Black Prince and other statues for adornment of City Square. The Lord Mayor said that Colonel Harding had spent his means most liberally in the interests of the city. The motion was seconded by Mr. Drury, who said that, though he had strongly opposed the erection of the statue in City Square, this did not prevent him from heartily supporting the resolution. The resolution was carried unanimously.

The scheme for the adorning of the Square, says the *Mercury*, is now fast approaching completion. The equestrian statue of the Black Prince, by Mr. T. Black, R.A., is being placed in position. Round this central figure—the gift of Colonel Harding—are already grouped other smaller bronze statues of John Harrison, a Leeds benefactor of the sixteenth century; Dean Hook, the great vicar of Leeds; Joseph Priestley, the discoverer of oxygen, who one time was the pastor of Mill Hill Unitarian Chapel, close by the Square; and James Watt, the inventor of the modern condensing steam-engine. The statue of Priestley is by Mr. Alfred Drury, and those of John Harrison and James Watt by Mr. H. C. Fehr, whilst the statue of the Dean is the work of Mr. F. W. Pomeroy. In addition there are four pairs of nude female figures in bronze by Mr. Drury, representing "Night" and "Morning." These are as electric-light standards, and there are also large ornamental lamps rising from figured bases in bronze representing groups of children. The whole has been subscribed privately, Colonel Harding being the chief donor, whilst Councillor Boston and the late Mr. Wainwright have also contributed statues. Lord Rosebery has been approached with respect to the opening of the Square, but is unable to visit for the purpose, and it is now probable that Colonel Harding himself or the Lord Mayor will be called upon to inaugurate. The opening ceremony is provisionally fixed for the 1st inst.

SALFORD TOWN HALL.

At the meeting of the Salford Council on Wednesday Mr. Hodgson called attention to a proposal on the part of the town and markets committee to erect a suite of offices on the site bounded by the Health and Water Departments' buildings, Market Street, Ford Street and Cleminson Street, and asked what would be the probable cost?

Mr. Rudman said the estimated cost was about

12,000*l.* The time had come when something must be done in this matter, for the accommodation at the town hall was wholly inadequate. He was quite aware that some gentlemen held the view that something more than this should be done, but he contended that the present state of the borough's finances did not justify them in going in for a new town hall at a cost of three or four hundred thousand pounds. Moreover, so urgent was the need for increased accommodation that they could not possibly wait for eight or ten years whilst a new town hall was being built. All the details regarding the proposal mentioned by Mr. Hodgson would be placed before the general purposes committee as soon as possible.

GLASGOW SCHOOL OF ART.

THE Glasgow School of Art was founded in the year 1840 in premises in Ingram Street. In 1869 the school removed to the Corporation Buildings, Sauchiehall Street, and the trustees of the "Haldane's Academy of the Fine Arts" agreed to contribute towards its funds on condition that the words "Haldane Academy" were added to its title.

In 1892 the governing body was made representative of the principal public bodies of the city, and the school was registered under the Companies Act with the title "The Glasgow School of Art," the words "Haldane Academy" being deleted.

In 1894 the Bellahouston Trustees granted a sum of 10,000*l.*, the Town Council made a contribution of 5,000*l.*, and the Governors obtained public subscriptions of 6,000*l.* for a new building.

The memorial-stone was laid on May 25, 1898, by the late Sir Renny Watson, and on December 20, 1899, the new school was formally opened by Sir James King, Bart., in the presence of Lord Provost Chisholm.

In 1899 the Scotch Office took over the control of the science and art education of Scotland, and in September 1901 the Glasgow School of Art was established as the Central Institution for Higher Art Education for Glasgow and the West of Scotland. Payments upon results have been abolished, and an annual block grant has been made. "To obtain this grant it will be necessary that there should be an annual contribution to the funds of the school from sources other than the grant, but exclusive of income from fees, equal to the said grant." There is now no connection between the school and the English Board of Education. The system of examinations and national competition are no longer

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obligatory. The Governors are authorised by the Scotch Office to grant diplomas and certificates to students and to teachers. These diplomas are to be awarded upon the results of a course of instruction, together with special tests. They are to bear the official endorsement of the Scotch Office, and will be accepted by that department as proofs of technical capacity. Aided by a subsidy from the Scotch Office, maintenance and other bursaries are competed for by students; while free studentships and scholarships are open for competition among the students, and under certain conditions to outside candidates. About two-thirds of the building are completed, and the foundations are laid for the remainder. The Governors ask for funds to complete the building.

VALUE OF GENERATING WORKS.

THE award of Sir John Wolfe Barry as umpire in the arbitration which has recently been held to determine the amount to be paid by the London County Council to the Metropolitan Electric Supply Company, Ltd., for the compulsory acquisition by the Council of the company's generating works at Sardinia Street, Lincoln's Inn Fields, has been given. The London Improvements Act, 1899, provided that, in addition to vesting in the company a new site of equivalent area to their present one, the Council were to pay to the company a sum equal to the costs and expenses of erecting and fitting up a new generating station upon a new site with new plant of a capacity to generate and supply electrical energy to an output of not less than 4,000 kilowatts, and all expenses incurred in replacing, relaying and altering mains. The amount of the award is 183,150*l*.

PRODUCTION OF IRON AND STEEL.

IN his address as president of the Iron and Steel Institute, Mr. Andrew Carnegie described the increase in production in America, Great Britain and Germany. He said:—It would appear that in 1873 the Pennsylvania Steel Company made 20,000 tons of steel rails. They now made that amount in two weeks. The Bethlehem Iron Company were then engaged in raising a loan of the amount of 20,000*l*. for the extension of their works; that was 100,000 dollars; 5,000,000 would be comparatively less to-day. The great Cambria Iron Works,

near Pittsburgh, were credited with having made no less than 1,027½ tons of ingots in the week ended September 26, the largest quantity then ever made in a week. That would be a day's work at the present time. The total of pig-iron in the United States in 1872 was 2,897,000 net tons; to-day it produced 20,000,000 per annum. The product of steel, nearly 15,000,000 tons, was greater than the rest of the world. In 1874 Great Britain made 643,317 tons of steel, whilst last year the output was 4,909,000 tons. Germany in 1874 made 361,000 tons; last year there were made in that country 6,394,000 tons. In 1874 Great Britain made 6,054,000 tons of pig-iron, Germany 1,906,000 tons. Last year the corresponding figures were 8,517,000 tons and 8,403,000 tons respectively. In 1874 the world was producing nearly 14,000,000 tons of pig-iron and 280,000,000 tons of coal. There were now being produced 41,000,000 tons of pig-iron and 780,000,000 tons of coal. The largest output of a furnace known up to the week ended September 7, 1874, was 702½ tons, or about 100 tons a day. Two new Carnegie furnaces had recently produced 650 tons each day for months at a time. In 1874 the Carnegie works were considered scarcely worth noticing, as their steel plant was then under consideration. Continuing, Mr. Carnegie said that the work of a week was now done in a day, but, great as was the contrast, there was one still greater. There had been no loss and sold without loss hundreds of thousands of 4-inch billets at 3 lbs. for 1*d*. Surely the limit had been reached there. He thought it had been, and he considered it doubtful whether there would ever be a lower price for steel. On the contrary there was every indication that period after period the price of steel was likely to become dearer owing to the lack of material. To make 3 lbs. of steel at least 10 lbs. of material were required—3 lbs. of coke, 1½ lb. of lime and 4½ lbs. of iron stone. These materials had to be transported great distances and transferred twice, once from the cars into the ship and again from the ship into the railway cars. How it was done Mr. Carnegie did not pretend to say, but he knew the figures were correct. Every time he repeated them he doubted his possibility. The price mentioned was that which was obtained during the day of depression, when everything was at the lowest. Costs were several dollars per ton higher to-day during this period of boom in America. Such was the contrast between 1874 and 1903. What would it be twenty-nine years hence—what changes were to come? He had tried to imagine some of the features. It was scarcely possible that Great Britain could increase its product of iron and steel material. The vital element was

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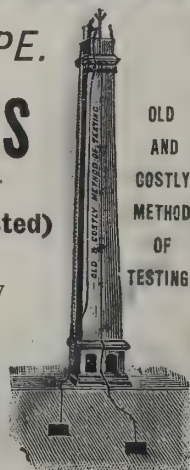
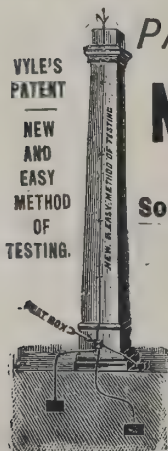
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For Index of Advertisers, see page x.

supply of iron ore, and the attention of iron and steel manufacturers should be directed to where and how they could obtain a supply. This was also a question which the manufacturers of America could not safely neglect, and it was for this reason that the United States Steel Corporation secured an abundant supply of the best ore obtainable. For sixty years the United States Steel Corporation could be supplied at its present rate of consumption, but that time was as nothing in the life of a nation. It was upon future discoveries of iron ore that the continuance of cheap steel manufacturing even in America would depend. There were immense deposits in now inaccessible parts. In Utah, for instance, and in Southern California large quantities had been found, so that steel would continue to be manufactured, but it would be no surprise if it were very greatly advanced in the future. It seemed almost miraculous that such an article as steel could be produced and sold without loss at 3 lbs. for 1d., and he was convinced that this was a thing of the past. It would be a question of increased cost, and therefore of increased price, so that neither Britain nor America need fear that steel manufacture would be wholly lost. The world would gladly pay the increased price. During the next half-century it would seem that America was to increase her output at a tremendous pace. The output of Britain would, perhaps, remain stationary, or even increase somewhat, if developments in Norway and Sweden proved satisfactory.

DANGEROUSLY CRYSTALLINE STEEL.

PAPER on "The Restoration of Dangerously Crystalline Steel by Heat Treatment," by Messrs. J. E. Stead and A. W. Richards, was read at the meeting of the Iron and Steel Institute on Tuesday. Mr. Stead said he wished to correct an erroneous statement which had appeared in the Press. It had been stated that he had made some discoveries which were revolutionary. The facts he was about to set forth were not in the least degree revolutionary. It was needful to say this, because the uneasiness had been caused in regard to plant and machinery being rendered obsolete. The authors commenced by pointing out that it had been completely demonstrated that even steel of coarse structure, but not necessarily brittle, is heated to a certain temperature, and then is allowed to cool in air or is quenched in oil or water, the original structure is destroyed, and is replaced by one of a very fine character. Mr.

Stead in 1898 had demonstrated that pure iron, when coarsely crystalline and of exceedingly brittle character, resembling cast zinc more than any other metal, by heating to the critical or just above the critical point A-C. 3 (840 C), was restored to very excellent qualities so as to resemble the same iron in the condition in which it left the rolls. The authors had for several years devoted much time and attention to the effect of heat on the mechanical properties of steel. They had repeatedly restored dangerously crystalline steel in large pieces by simple heat treatment, and obtained material which would be accepted by any engineer as excellent. They thought therefore an account of the work would not be without value, and would tend to show that the so-called generally received impression that dangerously crystalline steel must be formed in order to restore it to good qualities was, excepting in rare cases, quite unfounded. They had found dangerously crystalline steel to occur in three classes of the metal. The first class occurred only in mild steel very low in carbon, and in pure iron it was caused by annealing for a long period at too low a temperature in a slightly oxidising atmosphere. The second class, which was equally dangerously crystalline, was very common; it was produced by long-continued heating at high temperature. The third variety occasionally met with was produced by heating the steel until it was practically burnt. In the third class, although the metal could be gradually improved by heat treatment, it could never be thoroughly restored simply in that way. In the case of steel of the first and second classes no such difficulty was found, heat treatment making it equal and more often superior to the forged steel which had been worked and finished at proper temperatures. The authors proceeded to give at considerable length details of experiments made on rails, and also gave particulars of some tests made with 5-inch steel blooms. The question of resistance to repeated alternations of stress was next dealt with, the manner in which tests were carried out being given. The conclusions arrived at by the authors were that the microscope indicated that heating at high temperatures causes a great development in the size of the crystalline grains, and reheating to about 870 degs. restores the original or a better structure. They further found that if all structural steels in their normal rolled or forged condition are good, they can be readily deteriorated in quality by heating to a temperature a little above that to which steel is most commonly heated previous to rolling or forging. Steel made brittle by such heating can be completely restored to the best possible condition

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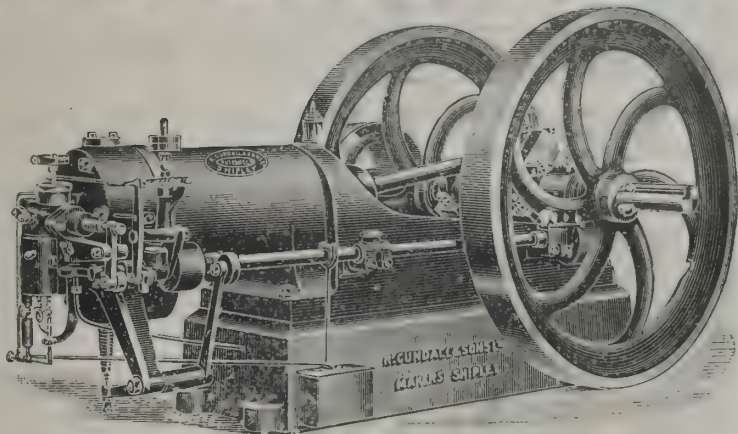
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without forging down to a smaller size or by remelting. Practically the results of the authors' investigations showed that not only the original good qualities of normal rolled steel after being made brittle are restored by the exceedingly simple treatment of reheating to about 900 degs. C. for a very short time, but that such steel is made considerably better than it was. That soft steel could be restored by heating was previously known, but that carbon steels could actually be made superior to the original properly-forged metal by reheating at 870 degs. C. and cooling in air was a fact retailed for the first time at the Düsseldorf meeting of last year. Mr. Stead had urged the imperative necessity of reheating all forgings to 900 deg. C. and allowing them to cool in the air to remove accidental brittleness, and the results given in the paper bore out the statement then made. The authors also urged that in every large forge and smith shop a Le Chatelier pyrometer should be introduced, and, in addition, suitable furnaces for reheating the forgings should be established. It is a fact that in many works steel is forged, rolled and finished at temperatures far above that which is the best for the endurance of the steel when put into practical use, and the authors feel confident that if the appliances to which reference has been made were to be intelligently employed the finished forgings would be greatly improved. If such a course were followed the great margins of safety now demanded by engineers would not be necessary. The authors aimed at making material which would be twice or three times as enduring as that commonly met with at the present day. Further, the authors stated that the system often specified by engineers that forgings when being annealed should not be heated to a temperature high enough to cause a scale was wrong.

WORKS IN SOUTH ITALY.

THE Consular Agent in Capri considers that British capital might be employed with considerable advantage in the acquisition of suitable building sites, which are yearly becoming scarcer and have doubled in value in the last ten years, and in the erection on such sites of small villas of from five to eight rooms, which could be let during the winter months at remunerative rents.

Another urgent need in Capri is a generous and unfailing water supply. At present the inhabitants are entirely dependent on the rain-water collected in their respective cisterns; this water is wholesome, but insufficient. With an increased and adequate supply of water not only would water be provided in generous measure for domestic purposes, but gardens would flourish throughout the year, and it would be possible to supply the entire demand for vegetables, which are now brought from the mainland. On the mountain above the town of Capri, at a height of about 1,000 feet above the sea-level, nature has provided a natural reservoir in an extensive valley. According to the opinions of competent engineers, this valley could be formed into an immense tank or reservoir at a comparatively small cost, there being sufficient pressure to force the water to the top of any house in the town of Capri. Here, again, there seems to be a favourable outlet for British capital and enterprise.

A company has been formed to supply electric light, and as an integral part of their scheme a funicular railway is to be constructed from the little port on the north side of the island to the village at the top of the hill. This will take the passengers up and down at a nominal price, and will be an undoubted convenience for bathing purposes to the residents, as well as of great utility in enabling passing travellers to see much more of the place in the limited time at their disposal than is possible in existing circumstances. It is quite likely that this railway will make Capri into a southern bathing station, which will do very materially to its prosperity.

An electric station is now in working order in Salerno and is distributing force to its customers. This will ultimately reduce the demand for coal and provide light as well as power to the factories.

The Government has promised several millions of lire for public works in the neighbourhood, but very little has been done. Small improvements have been made in the harbour works at Salerno, and something has been done towards excavating the harbour at Amalfi, which was filled up by a landslip some years ago. In February 1902 a landslip occurred near Vietri, which caused a good deal of anxiety both to the railway company and the Royal Engineers, as the main railway to the south was threatened. It was eventually determined to clear away the vast mass which showed signs of slipping. This turned out to be a very serious matter, but



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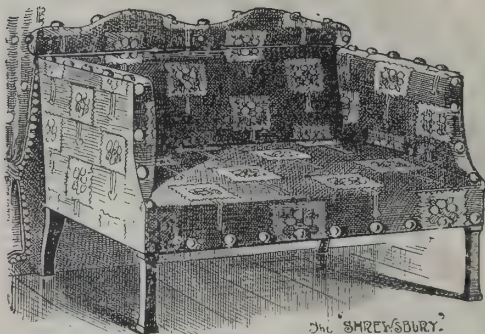
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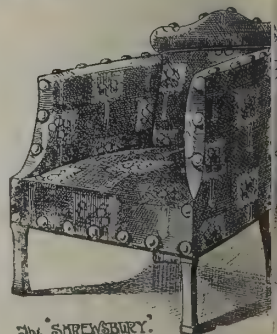


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impossible to blast owing to the Vietri station being below, the whole mountain side had to be removed by the spade and pickaxe. The line had to be closed during working hours, and, except for the night trains, the traffic had to take a circuitous route by one of the branch lines. The town of Salerno has an insufficient water supply, and had to be provided with proper waterworks. No serious proposals have as yet been made to the municipality for a concession, nor will they be made except by foreign capitalists. There was without water until a British company stepped in. They resold their concession at a profit before the works were completed, having joined issue with the municipality on a technical point, but the new company has been financially successful, and there can be little doubt that Salerno, with its 25,000 inhabitants, besides its populous suburbs, would form an excellent field for an enterprise of the kind. To this a large scheme should be added to carry away the sewage from the upper part of the town into the sea at some distant point among the marshes of Battipaglia. The lower part of the town presents great difficulties, as a pumping station would be required. At present the condition of the sea in front of the town is absolutely dangerous to the health of the population. The rains flowing into the tideless water at the doors of the houses. The Bill for the construction, upkeep and working of an aqueduct for the supply of potable water to the three Apulian provinces, Foggia, Bari and Lecce, has been approved by the Government, and meanwhile the Superior Council on Public Works has concluded the examination of the regulations and conditions, subject to which tenders from private contractors will be received; the international competition will take place on February 1, 1904, and British contractors wishing to tender will not fail to bestir themselves betimes and obtain particulars from the Italian consuls in the United Kingdom. For public works executed on account of the municipality of Salerno, 3,900,000 lire have been spent, the greater part of which sum has been appropriated to the paving and upkeep of the streets; new streets which are projected for 1903, and refer principally to the paving and paving the streets, would cause an expenditure of 600,000 lire. The large steel works at Terni were mainly established by Government assistance. The steel made there was excellent, and the Government insisted that it should be used by Messrs. Vickers & Co. for the making of guns for the Italian navy, although British steel would have cost less money. Messrs.

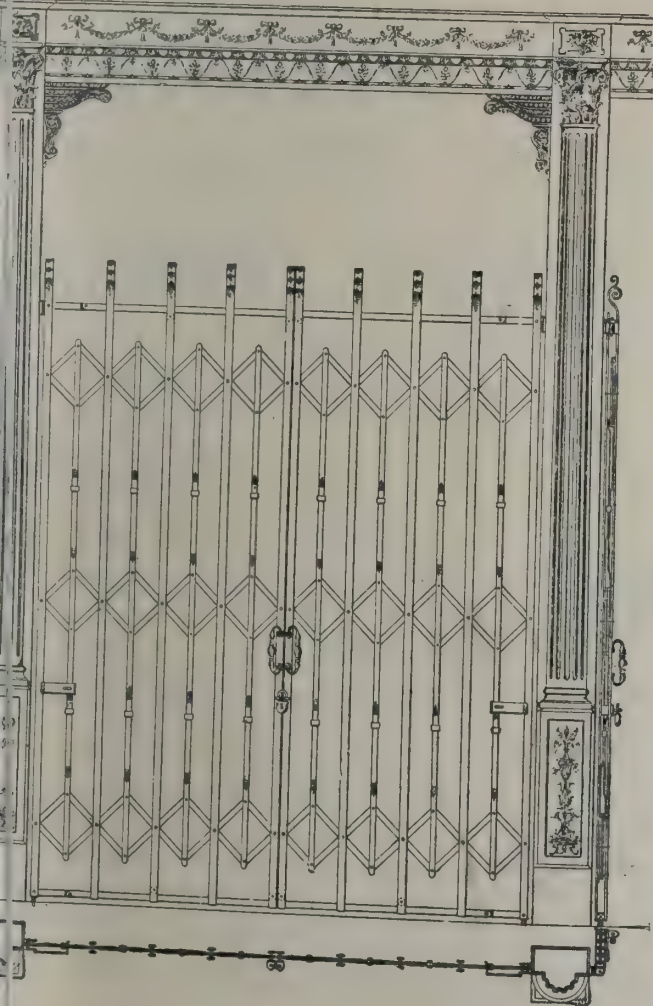
Armstrong now have their own steel works at Pozzuoli, and are consequently independent of the Terni works. These last have now taken the lead in establishing a steel trust of 60,000,000 lire (2,400,000,000 francs), and have obtained the adhesion of the following works:—Orlando and Odero (12,000,000 lire), the Siderurgica of Savona (9,000,000 lire), the Elba Steel Works (16,000,000 lire), Raggio, at Sestri Ponente (6,000,000 lire), and the Ligurian of Ancona (3,000,000 lire). The only steel works of importance outside the trust are those of Ansaldo at Genoa, the others being all small manufacturers.

GERMAN TRADE COURTS.

It is consistent with the protectionist spirit characteristic of the German commercial policy that German industry endeavours more and more to isolate itself; that it is anxious to safeguard real or imaginary business secrets, that it continues to press its claim that foreigners be as far as possible excluded from its technical schools, and that it bars its factory doors to every foreign visitor.

As the working and results of special trade courts have been most satisfactory a Bill has now been introduced in the Imperial Diet which is to create special "commercial courts." The trade courts, roughly speaking, consist of a president and a tribunal, one-half of which are employers and the other half employed, both groups being elected by the litigants. They are competent to decide questions arising out of the contracts of employment, and their procedure is very much quicker and cheaper than that of the ordinary courts. The creation of commercial courts on similar lines to decide purely mercantile questions seemed all the more desirable, as once the claim exceeds 300 marks the ordinary local court (Amtsgericht) is no longer competent, and the case goes before the county court (Landgericht), where litigation is more tedious and more expensive, because the parties must be represented by counsel.

Section 1 of the new Bill provides that in towns of more than 20,000 inhabitants special commercial courts are to be established to settle disputes arising out of the relations of merchant and clerk. In case of need such commercial courts may also be established in communities with a population of less than 20,000, or several communities may combine for this purpose. Before the establishment of such commercial courts the opinion of independent merchants and of a similar number of clerks must be taken. Once the court has been established



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the provisions of this Bill shall not apply to clerks with a salary exceeding 3,000 marks, nor to chemists' assistants nor apprentices.

Section 3 provides that these courts shall have jurisdiction in the following cases, regardless of the amounts at issue:—

(1) Concerning the commencement, continuation, termination of the relationship of merchant and clerk, and concerning the issue and contents of certificates; (2) concerning the duties under the contract; (3) concerning the return of sureties, testimonials, letters of identification or other articles which were in consequence of the relationship of merchant and clerk handed over; (4) concerning claims for damages or payment of fines or penalties in case of non-fulfilment or improper fulfilment of the duties under Sections 1 to 3; also claims, &c., for the illegal or incorrect entries in testimonials, in the receipt books for insurance against illness or for old age pensions; (5) concerning the calculation of the clerk's share towards the above insurances and respective entrance fees (*vide* Sections 53 and 65 of the law regulating insurance against sickness).

Disputes concerning obligations under contracts, limiting the clerk's freedom after the termination of the contract of employment, do not fall under the jurisdiction of the commercial court.

Besides the president, who must be neither merchant nor clerk, the tribunal is to consist of at least four members, one-half of this number being independent merchants, one-half employés; where trade courts already exist the new commercial courts are to work in connection with the same. These commercial courts will undoubtedly prove of special advantage to the clerks. Their incomes, as a rule, do not enable them to accumulate considerable savings; they have to rely upon the punctual payment of their wages, and can hardly afford the delay of payment which litigation in the ordinary courts would entail, more especially as it is difficult to find a new place while differences with the former employer are pending; in cases where the salary claimed exceeds 300 marks the compulsion of the county court to engage counsel no longer exists.

IMPROVEMENTS AT EUSTON.

By permission of Mr. E. H. Thornhill, the chief engineer, a number of members of the Civil and Mechanical Engineers' Society and others were afforded the opportunity on Saturday

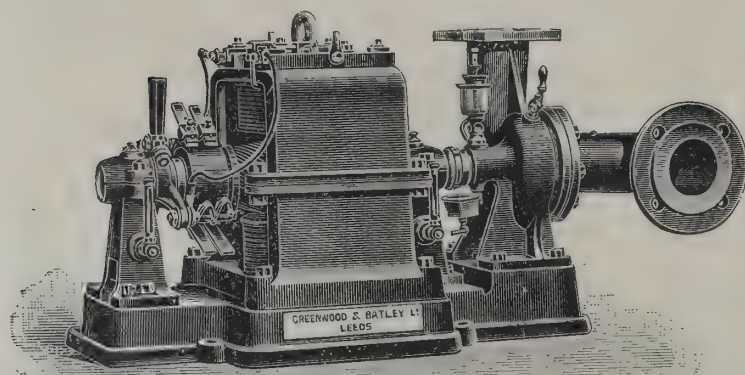
afternoon of inspecting the widening works which have been undertaken by the London and North-Western Railway Company near Euston. Good progress has been made with the scheme, which was commenced two years ago. The difficulties in the way have been various, but these have all been overcome. The ground, upon which hundreds of workmen are now engaged, was at one time covered by row on row of poor class dwellings. All these have had to be bought up and new homes found for the tenants—no easy matter in so congested a district as that between Euston and Camden Town. Practically three thoroughfares have disappeared, namely, Mornington Street, Stanhope Street and the old Serpentine Road. The main idea of the new works is to provide adequate accommodation for housing and shunting passenger coaches close at hand. At present, after an express arrives at Euston, the carriages have to be taken out again over the down main line to Willesden, a distance of five miles, and when wanted, brought back empty to the terminus once more. Thus, about ten miles have to be covered by this unpaying traffic, in addition to which the line is continually occupied, to the hindrance of other trains. The effect of the widening and improvements generally will thus be very marked. Near Mornington Crescent a large space has been cleared, and when necessary excavations have been finished, sheds are to be erected in which there will be space for 350 coaches, where there will be room for more on the sidings near by. The sheds will be reached by a subway which is being driven under the main line, so that trains can be run out of Euston direct through this to the sidings without any delay to more important traffic. In addition, a tunnel is being constructed through which engines can be run out towards Chalk Farm.

These operations, which have already proved very costly, cover an area, roughly speaking, of about 5,000 square yards, and have necessitated as much as 45,000 cubic yards of excavation. All this earth is taken out by truck to Willesden, where it is being formed into a bank on which a goods siding will be made. The contractors, Messrs. Joseph T. Firbank & Co., Ltd., have already had to put in a tremendous quantity of brickwork, as very strong retaining walls have to be built round the space for the carriage sheds and sidings to support roads and property in the vicinity. It is expected that all will be completed by the end of next year, and then, as well as having increased room for rolling-stock close to their terminus, the Company will be able to utilise the line which now is devoted to standing trucks and carriages as a second up-road.

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THE WEEK.

It was a bold stroke on the part of Sir NORMAN LOCKYER to suggest, in his address at Southport on Wednesday, that the British Association should become the guiding authority for the education which modern trade demands. His effort is the more remarkable if we remember how closely the President has been connected with governmental endeavours to give instruction on science that would be useful in manufactures. After experience in the War Office he was secretary to the Commission on Science and Art Department. But it was made plain from his address that neither in war nor in science has he much faith in the official system which wields supreme power, although it represents only the weaknesses of the British nature. The British Association, which dates from 1831, was always remarkable for its catholicity of spirit, and the men who have been most successful in applying science to industrialism have been found among its members. But can we expect that they would submit to be controlled by the class of men who are entrusted with the administration of Government departments? Sir NORMAN LOCKYER as an old official no doubt enjoys special privileges when dealing with circumlocutionism; but where is the busy engineer, chemist or electrician who could go through the ordeal which is imposed by even coming at a Government office on public business? In times of difficulty like the present there are alluring prospects of a reform of official ways, but they are only illusory. Whether Sir NORMAN LOCKYER speaks as an agent or as an independent follower of science, we need not inquire, but an alliance between the Education Office and the British Association would not be effectual in creating a system of teaching superior to that of the Germans or Americans. If the British Association is eager to co-operate it will be found that the City and Guilds of London Institute is the germ which is the most promising and therefore most deserving of support.

M. DAGNAN-BOUVERET is recognised as one of the great masters of French art. He is one of the few men whose picture pieces are looked at respectfully. His eastern scenes are remarkable, and he can paint rural and humble subjects with a success that arises from his apparent sympathy with them. His works are prized, and an unusual incident relating to some of them has occurred. On August 2 a police-inspector in Paris was informed in confidence that a band of thieves who frequented an establishment kept by a gymnast and boxer intended to make a nocturnal attack on a studio on the Boulevard Bineau, in order to carry off a painting of great value. The inspector came to the conclusion that M. DAGNAN-BOUVERET was destined to be the victim. It was arranged with him that the picture, which was worth 12,000*fr.*, was to be removed and only unfinished details left in the studio. One of the gang had served as a model to the artist. The inspector and four policemen took possession of the house. On the second night the attack was made. The model and another Italian, as well as the gymnast, were arrested. As nothing was removed they were found guilty of attempted robbery. The two Italians were sentenced to two years' imprisonment and the other to fifteen months. As a rule there was sufficient loyalty among models to prevent them from becoming thieves of artists who employed them, but the race is deteriorating. To remove a large and valuable painting which had recently appeared in the Salon would at one time be considered as an act which only madmen would attempt. Fortunately there are dealers who are willing to support robberies and so-called patrons of art who are ignorant of the origin of their acquisitions.

The description which THACKERAY gives of the life of Duke ANTON OF LÜNEBURG, the founder of the Royal Family of Great Britain, is well known. According to him Duke ANTON held his Court at Celle, a little town of 10,000

people, in the midst of great plains of sand. "It was a very humble wood-built place with a great brick church." Not far from Celle there stood in the village of Wietze an ancient mill which was often used as a court of justice by the dukes. There were certain special rights which the inhabitants could claim, and they were investigated in the simple building. Claims connected with evictions, tolls, fees, fires, heirship were determined with a primitive expedition that would now amaze German lawyers. In more ancient days plaintiffs and defendants filled up forms which were arranged as questions and answers, but afterwards there was a kind of code to which reference had to be made. The Roi d'Yvetot could not have administered justice in a more patriarchal spirit. Wietze was considered to be in the midst of a hunting district; sport and law could be combined. If a return to Celle was not considered desirable, the mill served as a palace. The mill is about to be demolished in order to make way for a different building. The interest which surrounds so novel a Temple of Themis is not enough to preserve it.

DINANT, on the Meuse, which stands in one of the most picturesque regions of Europe, offers now another attraction, for in it is an exhibition of early works of the coppersmiths and other metalworkers who some centuries back gained a reputation for the town. The examples are various. There are balustrades of brass and chandeliers which formerly belonged to some of the churches. The numerous fonts suggest the variety of styles which were in favour, and which the craftsmen of Dinant found no difficulty in producing. In order to make the exhibition more useful reproductions of works in other countries have been introduced. One is the great candelabrum in the form of a tree from the chapel dell' Albero in Milan Cathedral, and which is the work of several artists such as BRAMBELLA, FUSINA, GOBBO, &c. Gothic art is also represented by several excellent examples. Space is provided for metalwork of a more humble kind, used for ordinary domestic purposes. Belgium has preserved a marvellous quantity of old work, and every exhibition like that of Dinant excites surprise from its wealth, beauty and novelty. The exhibition will remain open until October 12.

It is expected that the sarcophagus of the Empress FREDERICK WILLIAM, the Princess Royal of Great Britain, will be placed in the Friedenskirche, Potsdam, towards the end of next month. Professor REINHOLD BEGAS has almost completed his work. By the desire of the late Empress the material used is Greek marble, which on account of its hardness has been difficult to chisel. The sleeping figure is complete and the sculptor is now engaged on the finishing strokes of the two reliefs, which are suggestive of life on earth and in heaven.

THE narrative of the difficulties encountered by BELZONI when he attempted to explore the Tombs of the Kings at Thebes can still be read with interest. Afterwards WILKINSON followed his example. His advice to others who contemplated visiting the subterranean chambers, which were ingeniously planned to insure concealment, was not encouraging. He said:—"For these, as for other tombs, candles are required, some water, and provisions may also be taken," in other words, there might be an error on the guide's part, and imprisonment followed. Torches are now often employed instead of candles, but when the light is flickering it is impossible to appreciate the sculpture on the walls. Thanks to M. MASPERO, it will henceforth be almost as easy to study the great scenes as the pictures in any public gallery. There will be also more satisfaction felt by timid people who in such a place are prone to imagine they may be forgotten and immured. The electric light has been introduced, and the intaglios and coloured works are seen under different conditions. Antiquity and modernity are consequently now combined in the Kings' Tombs, and the circle so often suggested by the serpent with its tail in its mouth is once more completed.

THE BRUSSELS CONGRESS OF HYGIENE.

THERE is much about Belgium which has interest for the sanitarian. Wherever men congregate there are dangers to health, and Belgium is in proportion to area the most populous country in Europe. It is one, moreover, that lends itself to statistical tests in a remarkable way. It began its separate existence in 1830, a year which many consider to be the opening of the modern era. Then it contained a population of about four millions, or 323 per square mile. At the close of 1899 the population had increased to 6¼ millions, which gave a density of 593 per square mile. In England and Wales the population was 558 per square mile at the last census, in Scotland it was 150, and in Ireland 140 per square mile. The figures will become more remarkable if we remember how few foreign immigrants seek a home in Belgium if compared with those who drift to this country. We possess also some aids to health which are absent in Belgium. There are only about forty miles of coast line. The mountains, or rather high lands, are not extensive, and, indeed, the traveller is generally struck by the flatness of the surface. The land is cultivated up to the edges of the railways and roads, for only in very limited districts is the wildness of nature tolerated. Industry flourishes to an extraordinary extent. Throughout the country self-preservation has enjoined the necessity for sanitary regulations, and economy dictates the study of sanitary science. For example, during the last ten years no less than 10,000,000 frs. have been expended on the destruction of cattle in order that tuberculous diseases might not be transmitted to man. Many bacteriologists now tell the Belgians the money has been wasted, for transmission is almost an impossibility. The Belgian taxpayer does not grumble at so costly an experiment, but he is resolved that henceforth money shall not be expended until he has acquired some certainty that it will gain the end sought after. On that account the international congress of hygiene held in Brussels between September 2 and 8 was assured of a welcome. It has also to be noted that the first of the international congresses took place in Brussels in 1852, for Belgium resembles Switzerland in being a territory where men of all races, professions and views can meet without any apprehension of molestation.

At the congress just held there were representatives of Great Britain, France, Germany, Austria, Hungary, Italy, Spain, Holland, Switzerland, China, Japan and Mexico. The proceedings were opened with a speech by Prince ALBERT, a nephew of the King, in the course of which he said that although laws might do much to affect sanitation their efficacy was limited. It must be found not only in codes but in the customs and ways of a people. An active and tenacious propaganda should be accepted by which the practice of hygiene should be promoted by pen and speech, but especially by works. A discourse was next delivered by M. BECO, the president, who is also principal secretary of the department of agriculture. In a country like Belgium, where fear of interference with the liberty of the subject is exaggerated, it becomes a difficult question whether sanitation should be secured by legal coercion or by the slow growth of public opinion. As the congress was sure to be on the side of the latter it was considered a welcome aid by the Belgian Government. M. PUTZEYS, the secretary, was able to announce that there were 1,900 members of the congress, of whom 500 were official delegates.

It is not possible to follow the proceedings of all the sections, however interesting. One of the earliest resolutions related to the purification of water, especially when found in sewers, including water from factories. In England the absence of an effective remedy is too well known. It was recommended that the study of the subject should be continued by municipalities or individual sanitarians acting independently or in a combined effort. That was a suggestion for neighbouring communes to co-operate. As we have said, it is not to be expected that the Belgian legislature would act promptly on the conclusions or recommendations of any congress. Indeed, there had to be limits to the discussions, and the resolutions were expressed in the most general terms. It was recognised that the work of the congress was only tentative. For instance, it had been agreed at two congresses elsewhere

that eight hours should be considered as the maximum duration of a day's labour, and especially when women and children were employed. A Belgian physician moved that the sanction of the Brussels congress should be also given to the proposal. But the question was set aside. Another economic difficulty arose in the same section, that of industrial and professional hygiene. Mining is one of the most important industries of the country, for there are about 120,000 people engaged in it. It was arranged that the subject of Ankylostomiasis, a disease to which miners are liable, should be discussed. Some of the speakers wished that there should be an immediate intervention of authority whenever a case occurred. It was also suggested that special courses for such diseases be opened in the medical schools of the universities, and so on. One of the directors of a large mining company explained the measures taken to combat the infestation. At first the workmen, he said, were willing to submit voluntarily to the regulations, but afterwards a reaction took place. Since the miner found that they were entitled to receive compensation they became utterly indifferent to precautions. Some doctors stated that simple remedies were available, but it was generally agreed that cleanliness was always four effectual. To a visitor the discussion revealed the impediments to be overcome in all efforts to deal with the working classes of Belgium, and it is left doubtful whether the congress is favourable or the reverse to State interference in mines.

A paper by Mr. KENDAL, an English geologist, gave rise to a long discussion concerning waters in which chalk lime was found. It was recognised that only through long and careful studies by specialists was it possible to discover whether the source of supply would yield a chalky water. A few experts explained what they had done in preparing reports, from which it became evident that costly experiments would have to be undertaken, and that delays would be unavoidable. An Italian representative declared that water derived from chalky formations was largely employed in Italy. It was found to be excellent and remarkably free from bacteria. If water of the kind were condemned a vast number of people would have to suffer. M. PUTZEYS pointed out that general conclusions on the subject were not philosophic, for water was most capricious in quality. In some cases it might be possible to adopt means of purification at the source, but filtration alone was insufficient. The most practical result that could be drawn from the discussion was that it would be an advantage to establish some central bureau where questions of water supply could be investigated, and from whence local authorities could obtain advice whenever needed.

The subject of the destruction of refuse gave rise to another discussion *à propos* of a report by Mr. ROECHER of Leicester, and others. The general experience related, was in favour of the employment of furnaces for incineration. The system was adopted in Brussels and other continental cities. A report was also read on heating and ventilation of private and collective dwellings from a central station. M. HEYNINX, the chief architect of civil buildings, described a new regulator, which by means of rarefied air showed temperature at a distance, and said that soon several of the instruments would be installed in the Royal Observatory. The advantage of heating by a central apparatus was explained by M. HALLER, and the method apparently continues to receive attention in Belgian cities. Attention was drawn to the subject of fatigue among workmen. In Munich a tract was published for their use in which advice was given about the choice of a calling. It was suggested that medical men should have authority at all times to enter factories and workshops and to examine the employes. Among the resolutions on the subject were the following:—That a special system should be instituted for the medical surveillance of workmen; that before entering on employment a medical certificate should be produced declaring physical aptitude; that inasmuch as it is difficult to furnish a numerical expression of what constitutes fatigue, it is advisable to make a special study by different methods should be made in various or more trades, and in order to obtain trustworthy results the Governments of various countries should facilitate as largely as possible inquiries relating to fatigue.

Another subject which came up for discussion was

disinfection of waggons serving for the transport of travellers, cattle and merchandise. It was agreed that disinfection was demanded. According to M. LODE, professor of hygiene at Innsbruck, the process of disinfection should be repeated twelve or thirteen times in cattle trucks. It was recommended that all classes of railway carriages should be treated with formaline, the seats, cushions, draperies and carpets being exposed for the purpose, and the action of the vapour lasting for seven hours. Some speakers maintained that as yet there were no effectual means of disinfection, but eventually systematic treatment which would facilitate cleaning and disinfection was advocated, and that it should be performed as often as possible. Trains for pilgrims or those which served temporarily for sanatoria should be operated on after each voyage. A delegate from Roumania explained how disinfection was practised in that country. A radical treatment with potash and chloroformal was in use twice a year. There was also disinfection every time there seemed to be a necessity for it. In all the railway stations and depôts medicines and instruments for first aid were to be found. In that way Roumania is ahead of more western countries.

Belgium differs from most continental countries in lending money for the erection of workmen's dwellings. More than a hundred millions of francs have been borrowed, and by means of the money 30,000 families, or 2 per cent. of the population, have secured dwellings. About fifty millions have been granted to 153 societies. The loans were made, however, only to workmen, and the most necessitous class has yet to be provided for. Much requires to be done in Belgium in order to secure sanitary conditions. A burgomaster has the right to prohibit the use of a building which he considers insalubrious unless the owner will carry out the remedial works which are necessary. But that right is seldom exercised owing to the influence of the councillors. The example of Holland was recommended to be followed. There every commune has its inspectors, who have to be assured of the sanitary condition of all houses. There are certain by-laws relating to construction which must be followed. In case the regulations are not carried out the communes have the right to take possession of the property under certain restrictions. A description was also given of the English system, and so favourably considered, it was decided to print and distribute a report on the subject. It was also recommended that facilities should be granted for the acquisition by the working class of suitable dwellings at a cheap rate, that measures should be adopted to ameliorate the lodging of the necessitous classes, and to secure the salubrity of habitations sanitary inspectors should be appointed who are to be independent of the local authorities. It was considered to be more important to immediately render salubrious the dwellings now occupied by the poor than to erect new houses. Sanatoria were not overlooked by the conference, which were considered to have a preventive as well as a curative object. Dr. GRYNs considered that much depended on the selection of the site, and a prolonged observation lasting two years at least was necessary. It was considered to propose that before the selection of a site the constitution of the soil, the drainage of the district and other characteristics should be taken into account. The erection of sanatoria in the neighbourhood of towns in tropical colonies, where there is a risk of malaria, was also suggested.

Several other questions were treated, but they would only have a remote interest for our readers. Much was said, for example, about the statistics of suicides; but it is believed that owing to the difficulty of information it is impossible to realise all the causes. According to one expert, the tendency was most marked in the spring, the period when human activity was strongest. Another speaker pointed out that strikes also were so frequent in the spring their periodicity could be considered as constant. In England strikes have occurred in all seasons. Perhaps more attention is bestowed on statistics in this country and there is a less general desire to compel them to become laws for the formulation of general laws. The work of the International Congress admits of local peculiarities, but there is no doubt the proceedings seem destined to lead to a more general recognition of sanitary laws in all countries. As no universal language is recognised, the proceedings are

not always as easily conducted as is desirable. But a comparison of what was said in 1852 in Brussels with the recommendations of this week and last, will prove that in half a century there has been unquestionable progress.

DAVID D'ANGERS.

ANYONE whose name stands at the head of one of BALZAC's masterpieces may be supposed to have some certainty of renown. That was not the only distinction which PIERRE JEAN DAVID gained through literary men. No artist of his time received as many dedications. VICTOR HUGO inscribed his poem on sculpture with DAVID's name. On the other hand, the claims of the sculptor to the gratitude of writers were undeniable. He appeared to have considered it as his mission to perpetuate their portraits by a material that would be more durable than canvas. Nor was his eagerness confined to his countrymen. On one Sunday evening in March 1830 GOETHE received an immense packing-case from Paris. When it was opened he found to his great delight that it contained no less than fifty-eight portraits in relief of such celebrities as PROSPER MÉRIMÉE, VICTOR HUGO, ALFRED DE VIGNY, EMILE DESCHAMPS, SOPHIE GAY, Madame TASTU and many others. No present could be more acceptable to the German poet, and he acknowledged that it was a provision for many happy days. DAVID afterwards modelled a great bust of GOETHE, which is now in Weimar, and another of RAUCH, the sculptor.

The number of portraits executed by DAVID is almost incredible. It has been calculated that he was the sculptor of more than a hundred large busts and nearly six hundred medallions. It is well to remember that the majority of those were loving labours, for which he expected no other reward than the consciousness of producing memorials of great men, and to have his name associated with theirs. But his large works are no less surprising for their quantity. He filled the pediment of the Panthéon with a collection of figures of representative Frenchmen supposed to be receiving laurel crowns from the hands of France. All of his works have distinct characteristics which are enough to suggest that he expressed his own ideas instead of imitating more or less his predecessors.

Although he has left so large a legacy, it must be admitted that DAVID does not hold in modern times the position he anticipated. A curious prejudice which is injurious to him has arisen. His addition of the name of his birthplace to his name has been interpreted as if he claimed a territorial possession like a prince or a noble. But the explanation of it is very simple. He worked in the atelier of DAVID of the "blood-stained brush," and looked upon him, like most of the young artists of his day, as a demi-god. In order that there might arise no confusion between the two artists he added an appellation which could not be mistaken, for, all Frenchmen, if not the remaining inhabitants of the world, were presumed to be aware that the revolutionary painter who voted for the execution of LOUIS XVI., who was a favourite of NAPOLEON, who died in exile, and whose remains were not allowed a burial place in France, was a native of Paris. With no less willingness JEAN DAVID would have appended "le petit" to his name if he imagined that would have prevented a misidentification of the two.

He was born in Angers in 1789, and could therefore consider himself as a child of the Revolution. He was faithful to its principles until his death in 1856, and on that account was looked upon askance in official circles. His father was a carver in wood, and modelling was consequently familiar to DAVID from his earliest years. But there existed another influence. His father became a revolutionary soldier, so his wife and child were allowed to follow the troops. In that way there was some resemblance between him and VICTOR HUGO. Both possessed a virile spirit that sometimes came near to extravagance. When the war, to some degree, was diminished in fury it was expected that the boy would enter into a business in which he could help his parents. His father was not successful, and when the son wanted to become an artist he pleaded his own example to deter him from that course; but the boy's resolution prevailed, he joined the school of

art at Angers and pursued its courses. When he reached eighteen he went to Paris with only a few francs in his pocket. He endured privations similar to those of hundreds of young artists, but he gained admission among the pupils of DAVID, the painter, and ROLAND, the sculptor, and that was sufficient compensation. He was awarded a medal, and in 1809 was allowed to compete for one of the Roman prizes. His namesake exerted his influence, and it was successful in one way, for the town of Angers allowed him a pension of 600 francs. That encouraged him and he gained a second prize in 1810, and in 1811 he received what is now known as the Grand Prix.

In Rome his efforts attracted the attention of CANOVA, who was then recognised as the greatest of European sculptors. But gratitude for the kindness could not take the form of imitation. DAVID was astonished by so much grace, but the inherent revolutionary spirit compelled him to rebel against mythology, as if it were part and parcel of the system which had been overthrown in France. It is true there were classic figures produced by his master DAVID, but they were of a different kind to the Graces, Hebes and Dancing-Girls of CANOVA. The languor, voluptuousness and morbidez then characterising sculpture had no charm or temptation for the young artist. He remained in Rome fitting himself for the creation of work in keeping with the French spirit of that time. But when he returned to Paris he found his occupation was gone. NAPOLEON had been overthrown, and with the restoration of the monarchy he anticipated a resuscitation of a style of sculpture which he scorned. He resolved to seek his fortune in England. Unfortunately he failed to gauge the extent of our insular prejudices. EDMUND BURKE, with all his philosophy, had worked himself into a state of frenzy over the excesses of the French Revolution, and there was still a belief that unless all Europe was steadfast in opposing France, the reign of terror would be renewed and expanded beyond the boundaries. English artists thought that the elder DAVID had done them a wrong by mixing himself up with the Convention, and so little was known about contemporary art in France, they were unable to distinguish between the painter and the sculptor. The gentle FLAXMAN was not free from prejudice against his forlorn brother artist. Some influential personage considered it would be a good joke if DAVID executed a Waterloo memorial which was then in contemplation. But that was adding insult to neglect, and he sadly returned to Paris.

Fortune was more favourable to him than he had anticipated. The new Government could hardly be altogether inimical to art, and it was judged politic to demonstrate that all the heroism of France did not begin with the fall of the Bastille. He received a commission for the statue of the great CONDÉ which was to be placed on the Pont Louis XV., but is now in the court of the Palace of Versailles with other works of the sculptor. Angers ordered statues for one of the churches.

The Revolution of 1830 revived the decree passed in 1791 for the completion at once of the Panthéon as a secular building. He obtained the commission for the sculpture of the pediment. It is always difficult to fill a triangular space. In the centre DAVID introduced a figure of France clad in Classic costume, crowned with stars and holding a wreath in each hand. Sitting on one side of the dais is History recording the names of the great men, and on the other Liberty is presenting to France the wreaths for bestowal. On one side are the civil representatives, such as MALESHERBES, MONGE, CARNOT, DAVID the painter, CUVIER, &c. Then, as the space decreases, are seated figures of VOLTAIRE and ROUSSEAU. Nearer the angle are youths seated on the ground studying, as well as BICHAT, the anatomist, who in dying lays a manuscript on an altar. A similar arrangement is adopted on the opposite side, which was assigned to arms. NAPOLEON is the only portrait, and he wears the uniform of one of the generals of the revolutionary forces. Near him are types of the soldiers of the army, and the drummer boy. BARRA is included. We then see a dying cuirassier, and finally students of the Military School with instruments of war. The grouping is varied, but the masses of figures are balanced in such a way as to suggest architectural decoration. He executed a frieze 100 feet in length which was

intended for the Place de la Bastille, but by another decree the well-known column of July was set up, and DAVID's work found its way to Marseilles and has been introduced in the Porte d'Aix. He had no share in the decoration of the Arc de l'Etoile, although he would have been proud of a commission. However, to give a list of his statues would occupy more space than could be afforded.

He is not to be tested by a classic standard. Like PUGET he believed in strength, and preferred to represent manly figures. He might be considered as one of the first representatives of modern realism. No painter could be more productive, and his works are known not only in France, but elsewhere in Europe and in America. There is a great difference between his work and that of his contemporary, PRADIER. With the latter we observe a survival of Greek influence, but DAVID suggests the restlessness and the desire for independence which characterised his early days. In the poem addressed to him VICTOR HUGO exclaimed—

La forme, ô grand sculpteur, c'est tout et ce n'est rien !
Ce n'est rien sans l'esprit, c'est tout avec l'idée !

And both mind and ideas are to be found in the masterpieces of DAVID.

M. SALMSON, the sculptor, says, in his Memoirs, he was attracted to the art by seeing some of the medallions of DAVID. He wished to become one of his pupils, but was rejected. He describes DAVID as small, and not handsome, in a coat that was buttoned up to the chin, and which gave him a sombre appearance. He compares his fingers to the spurs of cocks, they were at once so bony, delicate and strong; and when he corrected the exercises of the students at the Ecole des Beaux-Arts the clay seemed to be transformed as soon as he touched it, as if his fingers were steel instruments. He did not hesitate to correct defective contours in drawing by marking a different one with his nail. When competing for the Prix de Rome M. SALMSON became so dissatisfied with his model that he destroyed it. That was a crime, according to the rules of the Académie, which entailed not only the loss of position for the year, but exclusion from competition the following year, besides a public reprimand. At the suggestion of his master he made an appeal to each academician in turn. DAVID spoke to him from the door of his studio, which he could not enter, and told him that although personally he approved of what was done by M. SALMSON—for it showed respect for an ideal—yet officially he had to condemn it. It was necessary to make examples, and two students had been excluded for ever for a lesser offence. However, when the time came the culprit was let off very leniently, and he discovered that the clemency was mainly owing to DAVID.

It is possible that sculptors may arise who will excel DAVID D'ANGERS by the beauty of their works, but it is doubtful whether another will be found who had a similar ambition to secure for posterity enduring records of the greatest of his contemporaries. Perhaps there will be no necessity for such an artist, for some extension of photography or other scientific process will enable medallions to be produced which will be supposed to meet the demands of the future. DAVID thought little of a journey to London if he could see WALTER SCOTT, or to Italy to have a glance of BYRON, or to Athens to meet with some of the heroes of the War of Independence. It is to be hoped people will value his gifts, but DAVID D'ANGERS must have had the satisfaction of gratifying a conviction which had all the power of an instinct.

THE MANCHESTER INFIRMARY COMPETITION.

A "LIFE TRUSTEE" has sent the following letter to the *Manchester Guardian*:—

Designs are now being obtained for the new infirmary proposed to be erected opposite Whitworth Park. Twelve architects have been invited to prepare designs, and it is stated that each is to be paid 100*l.*—1,200*l.* in all.

If the Board, before incurring this reported expenditure had placed themselves in communication with the Corporation of Manchester they would have ascertained that in the recent chief fire station competition the Corporation paid 300*l.* and for the technical school 325*l.* in premiums. In both cases some

twenty to thirty designs were submitted by prominent architects from all parts of the country. Both these buildings are more complex and technical in planning and construction than an infirmary. Anyway, the three buildings may be placed on a level as concerns expert requirements.

If the infirmary Board had offered similar premiums they would have obtained some twenty or thirty or more designs from the best men, as the proposed buildings will be so extensive and prominent that every architect who has had experience in this class of work would have been tempted to compete.

The Board by their unfortunate policy have therefore involved the institution in a probable loss of about 800*l.* without obtaining any advantage in return whatever, and they have, moreover, prevented a large number of experienced architects willing to compete from doing so, obviously to the direct injury of the institution whose interests they are expected to safeguard.

The Corporation system tempts the best brain power available and keeps the preliminary expenditure within reasonable limits.

The choice of architects invited to compete has been crude in the extreme. Thirteen in all are concerned—twelve competitors and one assessor. Three of the thirteen are Glasgow men. Two or three years ago the Glasgow authorities required plans for a large infirmary of 1,200 beds, and plans prepared by Messrs. Schultz & Howard, of London, were selected. Everyone would naturally expect that these architects would receive a pressing invitation to compete for the Manchester infirmary, and that the Glasgow architects, either unwilling or unable to provide their own city with suitable plans, would have been passed over. But the reverse is the case. Messrs. Schultz & Howard (whose plans may be seen at the reference library) are not competing, and of three Glasgow architects two are competitors and one is the assessor.

Precisely the same want of consideration has occurred with reference to Manchester architects. In 1896 the late Board arranged a competition for an infirmary to be erected on the present site. Most of the unsuccessful Manchester architects on that occasion have been asked to compete a second time, instead of others being offered an opportunity of doing so. One would have expected the Board to argue as follows:—Those invited to compete in 1896 having been tried and found wanting, preference, or at least opportunity, should now be given to others. But the natural course is precisely the one that has not been adopted. Several of those who failed in 1896 have received a second invitation, and other architects desirous of competing have been rebuffed.

The attention of the Board has been drawn to their mistaken policy, and it has been pointed out to them that without in any way disturbing arrangements already made, it was still open to them to obtain a larger number of designs from Manchester architects; but at a Board meeting held only a week ago the original policy was reaffirmed by a unanimous vote. The Board consists of twenty-five members, and one wonders why a vote the direct result of which is so detrimental to the interests of the infirmary should be unanimous.

In due course the designs for the proposed new infirmary will be exhibited. Trustees and the public will know that a large proportion of the competitors (if not a majority) have failed in similar competitions, that successful competitors are conspicuous by their absence, and that local architects desirous of competing have not been allowed to do so.

There is no valid reason why the unanimous decision of last week's Board meeting should not be rescinded. The interests of the infirmary make it most desirable that it should be reconsidered.

Not only should all local architects desirous of competing be invited to do so, but the successful architects of the great Glasgow hospital should be directly encouraged to submit designs.

RESTORATION OF SCOTTISH CATHEDRALS.

A CORRESPONDENT of the *Scotsman* writes:—The work of restoring our Scottish cathedrals, which has been going on prosperously for some years, naturally awakens the interest of many people who do not belong to the Church of Scotland. The somewhat perplexing question as to the ultimate end of these restorations perpetually presents itself. In so far as the movement is æsthetic, it is intelligible and praiseworthy. Several of these cathedrals had been horribly deformed by the persons into whose hands they fell after the Reformation. They were sometimes split into two or three separate chapels. In most cases they were blocked up with hideous galleries—or "lofts," as our forefathers appropriately called them—and the area was filled with pews, whose torturing narrowness kept the congregation awake during intolerably long sermons, and whose doors could be banged with a triumphant sigh of relief when the sated worshippers, along with their "dowgs," rushed out of the House of God. In so

far as restoration means the abolition of ugliness and discomfort, it deserves the highest praise.

But it cannot have escaped observation that the work of cathedral restoration in Scotland has gone far beyond this. In every case there has been an attempt (with certain obvious omissions, such as the reproduction of shrines and altars) to make the interior of each cathedral exactly what it was in pre-Reformation days. I do not offer an opinion on the intrinsic desirability of such a transformation. I only ask in what respect it is compatible with the spirit, the doctrinal tenets and the modes of worship which are characteristic of Presbyterianism. I can understand the propriety of a Scottish cathedral being restored and then made over to the State as a national monument. I can also see how a cathedral so restored, if it passed into the possession of the Roman Catholic Church, to which it originally belonged, would be fully utilised by the celebration of imposing rites and by forms of worship which have never changed.

But a Presbyterian cathedral is a curious and illogical conception. Without a bishop, without the mass, without the devotions and ceremonies of the Catholic Church, and without the benediction and authorisation of the Pope (for mere Anglican Episcopacy is no more concerned here than Presbyterianism), the cathedral, when architecturally restored, is only a correctly articulated skeleton.

Is it wonderful that, in view of these facts, many people both within and without the Church of Scotland are asking why, in cathedral restoration, there is such a desperate effort to reproduce church interiors entirely incompatible with plain Presbyterian worship? In these restored buildings everything is sacrificed to effect. The acoustics are deplorable. The pulpit, which with Presbyterians is the main article of church furniture, is so placed that the preacher is frequently invisible and generally inaudible. The effect of the worship, which consists of long prayers without responses, is depressing and incongruous. Now, this need not be the case, even in a cathedral. There is a simplicity and directness in Presbyterian forms of worship very dear to the majority of Scotsmen. These are points that ought never to be lost sight of in the restoration of our ancient churches. They are no longer cathedrals in the real sense of the term, and their interiors, while freed from whatever is unsightly, should never be modified in such a way as to destroy the sense of congregational unity, or to suggest that Protestantism, and especially Presbyterianism, must perforce strive after a distant and pitiable resemblance to an ancient discipline and ritual with which they have nothing in common.

SUSSEX ARCHÆOLOGICAL SOCIETY.

THE autumn meeting of the Sussex Archæological Society was held on Tuesday at Cuckfield, embracing an excursion around the picturesque district of Slaughtam and Bolney. The members taking part in the meeting numbered about 120. The following report of the proceedings is taken from the *Sussex Daily News*:—

Cuckfield Parish Church.

The party drove to Cuckfield, the first visit being made to the Cuckfield parish church, the most interesting features of which were described by the Rev. Canon Cooper, vice-president of the Society and Vicar of Cuckfield. The church was founded by William de Warrene, on what was then a clearing in the forest. It was before the eleventh century served by the monks of Lewes Priory, and in 1250 St. Richard of Chichester appointed his chaplain as the first vicar of Cuckfield. The tower and south wall were indicated as ancient portions of the building, the architectural features of which ranged from Early English to the Perpendicular periods. The roof was of the time of Henry VII, and was interesting as bearing the badges of the Nevills. The roof was restored and decorated by Mr. C. E. Kempe, in 1865. The double stoup was an interesting feature, and the font was of the thirteenth century. The Rev. Canon Cooper described the remarkable series of Burrell monuments on the south wall—including a specimen of Flaxman's work—extending over a period of 350 years. A brief account of the Burrell family, their association with Holmstead, in Cuckfield parish, as ironmasters, was an interesting chapter of local history. The monuments in other parts of the church introduced the Sergison family, associated with the parish for several centuries. The large figure in the chancel was a Sergison monument over which, it appears, there was some parish revolt at the time of its erection. Two of the oldest registers of the church—bearing the Burrell arms on them—were displayed in the tower as interesting curiosities, also a 1636 pewter and other church plate. The charter for a market at Cuckfield granted by Charles II. was also shown.

Cuckfield Park.

The party then walked to Cuckfield Park, the Sergison mansion, now in the occupation of Mr. L. Breitmeyer. The

stately avenue and the ivy-covered clock tower were much admired, and the photographers of the party were busy, the light being the best of the day for photographic work. The oldest portion of Cuckfield House was built by Henry Bowyer in 1574, in the form of the letter "E," the initial of Elizabeth, the reigning sovereign. It was added to and brought to its present shape about fifty years ago. The Rev. Canon Cooper briefly explained the features of the mansion, and the courtesy of Mr. Breitmeyer allowed an inspection of the interior of this famous mansion. Its beautiful carved oak work, dated about 1581, was particularly admired, and the old iron firebacks, one of 1579, were interesting examples of an old Sussex industry. The hall, library, dining-room and other rooms, full of old-time treasures, pictures, &c., allied with the luxury of modern times, made an inspection of the mansion most interesting, the upper rooms allowing views over the grand park to the hills, some miles distant. The gardens and views of the well-known lakes added to the charm of the visit, but the romantic Doom Tree seemed to be overlooked, and its traditions were unsung.

A Visit to Slaugham.

After luncheon a long procession of vehicles then conveyed the party to Slaugham, a pleasant drive of some four or five miles, along a beautiful route, passing Holmstead, the old seat of the Burrell ironmasters, and Staplefield Common. At Slaugham Church the visitors were full of admiration for a new lych gate now being erected as a memorial to the late Mr. W. H. Loder, J.P. The gate promises to be one of the most handsome lych-gates in Sussex. The Rev. A. H. Boyd welcomed the party at Slaugham Church. Mr. P. M. Johnston here described the architectural features and the periods represented. The square font of late Norman work was particularly interesting. On one panel there is the representation of a fish. The special features of Slaugham Church were the Covert brasses and monuments, dating from 1503 to 1586. Mention was made of Mediæval wall-paintings which had disappeared, but as there was some doubt as to their genuineness the loss was not so great as might otherwise have been the case. A piece of oak panelling on the north wall was described as of exceptional interest, and the carved pulpit was evidently an importation from the Continent. Mr. Johnston, in Slaugham Church, raised a protest against pointing old stonework with Portland cement.

Mr. E. F. Bigg, of the Hyde, Slaugham, added to Mr. Johnston's description several interesting notes. The church was restored in 1861, when many of the windows existed with only plain glass. The oak pulpit was only placed in the church five or six years ago. The Covert chapel used to be a separate building and the Covert tomb was in the chapel. The font was considered a very wonderful piece of work. The fish had something in its mouth, which was considered to represent the piece of money. The visitors then closely inspected the features described. The Covert monuments attracted much attention, and it might be mentioned that the church owes the restoration of the carved work to the late Prebendary Haws, formerly rector of the parish. The Rev. A. H. Boyd exhibited a small silver chalice of the Elizabethan period not now in use. In the churchyard, Mr. E. F. Bigg drew attention to the yew-tree, with a girth of 24 feet 7 inches, which he held to be the largest yew-tree in Sussex. Tradition was that the tree was older than the church, the date of which was 1150.

The Slaugham Ruins.

The next move was to the famous Slaugham ruins, now forming part of the gardens of Slaugham Place, Captain Sergison's house at Slaugham. These wrecks of former grandeur were, of course, of exceeding interest to the archaeologists. The Rev. Canon Cooper here again came forward to enlighten the visitors on the history of the ruins, which are those of a famous old house, that of Sir Walter Covert, who came to Slaugham in the fifteenth century. He held a great deal of property in West Sussex. The house was erected about 1605, the architect being Thorpe, who flourished from 1580 to 1610. Sir Walter Covert did not have very long enjoyment of his house. He died in 1631, and in his will directed his body to be buried in the newly-erected chapel at Slaugham Church. It has become a great question as to what had become of all the Coverts? They suddenly seemed to have disappeared. The Rev. Canon Cooper rather thought he had discovered some clue, having found a letter among the State papers, from King James to Sir Walter Covert, asking him to pay the debts of a relative who lived at Leeds Castle, near Maidstone, and who could not appear at Court owing to his indebtedness. Sir Walter gave his cousin 1,000*l.* to enable him to present a good appearance at Court. Leaving no children he placed his property in the hands of trustees, and Canon Cooper was of opinion that the property of Sir Walter Covert came to an end through the carelessness of his heirs. There were many Chancery proceedings, and the mansion seemed to have been allowed to go to ruin, anybody taking away what he liked.

The only relic seemed to be the grand staircase in the municipal buildings at Lewes, which was taken from the Covert mansion to the Star inn at Lewes.

Some Interesting Relics.

The property was acquired by the Sergison family in 1737, and it now belonged to Captain Sergison. Canon Cooper exhibited a portrait of Sir Walter Covert that had been found in the house of Lord Bath, also a photograph of a picture in the Bodleian Library at Oxford of the ruins in 1780, when there were five of the arches remaining, with interesting details of coats of arms, &c.

Mr. Bigg explained that in the woods above the mansion was a Roman-like conduit which supplied the mansion with water. The pipe only now supplied some cottages.

Mr. P. M. Johnston then claimed attention to the remains of the fireplaces in the ruins, one small oven having particular interest, as it was thought to be an oven specially designed for spice cakes or similar confectionery. The work of the old oven-builders was greatly admired.

The party walked back to Slaugham village, and the vehicles were again requisitioned for a continuation of the pleasant journey to Bolney Church. The stay here was brief.

Bolney Church.

Mr. P. M. Johnston briefly described the more interesting architectural features, the pre-Conquest windows in the chancel and the Saxon doorway being the chief attractions to those interested in archaeology. He pointed out the similarity of the Saxon doorway with that in Wivelsfield Church, they being practically identical and the work of the same school of builders. Some of the stones were calcined by fire, showing that at some time the nave had been at the mercy of the flames. He drew attention to the fine piece of oak of which the south door was made, and the parish clerk (Mr. Walder, jun.), showed with pride the huge iron key that opened the Mediæval lock, which was still in working order. In presenting some information as to the church's history, Mr. Johnston amusingly differed from a former rector of Bolney, who took the word "ayell" in certain church documents to refer to the aisle of the church. Mr. Johnston thought it was broad Sussex for "ale," and referred to church-ale, used at certain feasts by which funds were raised for building. The feasts of "cakes and ale" were the forerunners of the modern church bazaar. Mr. Johnston exhibited for inspection a silver chalice date 1567-68, also a linen Communion cloth with figures of saints and a representation of the Lord's Supper woven thereon, the cloth being of German work.

The last stage of the tour was now entered upon in a drive to Cuckfield. The weather became more threatening, and the afternoon was far spent. On reaching Cuckfield, Ockende was visited, the old home of the Burrells, and especially Timothy Burrell, the diarist. The Rev. Canon Cooper gave short history of its ownership.

TESSERÆ.

Frames for Pictures and Engravings.

IF a frame is necessary to a picture, engraving or drawing to isolate it from the objects around it, it is always more or less injurious to the illusion the painter or designer desired to produce, when it occupies its destined place. Gilt frames accord well with large pictures painted in oil, when the latter do not represent gildings, at least so near the frame as to render it easy for the eye to compare the painted gold with the metal itself. There is one instance of a bad effect from such proximity. A Gobelin's tapestry, after Laurent, represents a genius armed with a torch, near which is a gilt altar, executed in yellow silk and wool, all of which are entirely eclipsed by the metallic brilliancy of the gilt bronzes profusely spread over the mahogany frame of the tapestry. This may convince that the richness of a frame may not only be a fault against art but also against common sense. Bronze frames which have but little yellow brilliancy do not injure the effect of an oil picture which represents a scene lighted by artificial light, such as that of candles, torches, a conflagration, &c. When black frames such as ebony detach themselves sufficiently from an oil-painting, they are favourable to large subjects, whenever they are used it is necessary to see whether the browns of the painting or drawing which are contiguous do not lose too much of their vigour. A grey frame is favourable to many landscape scenes painted in oil, particularly when the picture having a dominant colour, we take a grey lightly tinted with the complementary of that colour. Gilt frames accord perfectly with black engravings and lithographs, when we take the precaution of leaving a certain extent of white paper round the subject. To conclude. The rule to be followed in assisting a frame to a picture is, that its colour, brightness, and ornaments also injure neither the colours nor the shadows.

the lights of the picture, nor the ornaments which it represents. When we propose to put a border between the frame and an engraving, plain or coloured, we must take into consideration:—
 (1) The effect of the height of tone of this border upon the different tones of the design. (2) The effect of the complementary of the colour of the border upon the colour of the design. (3) The intensity of the diffused light which is considered most suitable to light the design. Because for a given border the mutual relations between the browns, the half-tints, the lights and the whites change with the intensity of the daylight, and change more for a given composition with certain borders than with others. A composition of small or medium size may be painted so that the artist himself will do well to choose the frame best adapted to it, and to paint up those parts of his picture which are contiguous to it.

The Artist and Nature.

The position of the artist in relation to nature should be continually made clear by the declaration that art, really to be art, should at first withdraw itself from nature, and only in the last accomplishment return to her. The true meaning of this seems to be no other than the following:—In all things in nature the living principle appears only blindly effective; if it were so with the artist he would not be distinguishable from nature itself. If it were his wish consciously to subordinate himself to nature and to repeat things present with a slavish truth, he would produce masks (*larvæ*) indeed, but no works of art. Thus he must remove himself from the result, from the creature, that he may elevate himself to the creative energy and spiritually seize on that. By this means he elevates himself into the region of pure ideas, he forsakes the creature that he may regain it with thousandfold interest, and in this sense certainly to return to nature. The artist should, indeed, above all things imitate that spirit of nature which, working in the core of things, speaks by form and shape as if by symbols, and only in so far as he seizes this spirit and vitally imitates it has he himself created anything of truth. For works which are the result of the mere connection of even beautiful forms would themselves be without all beauty, as that which gives beauty to the whole cannot be form. It is beyond form—it is the essential, the universal, the aspect and expression of the indwelling spirit of nature.

Egg and Tongue.

The egg has been from time immemorial among the ancients the symbol of the being who createth all things and hath all things within himself. It is to be found placed on all the statues of Mithras, upon his altars, and in many ancient votive hands of bronze. Montfaucon has given the representation of a statue of Isis, between the horns of which is placed an egg. The Egyptians also regarded it in profound veneration, and, in conjunction with the serpent, held it as representing the mystery of creation, or the mundane globe, or time and the serpent of eternity. On several of the engraved gems published by Stosch are sculptured two crested serpents, raised upon their tails, with the mystical egg between them. From the Egyptians the egg and serpent's tongue crept into the architectural sculpture of Greece, and forms one of their most elegant ornaments. It is still much used, and called the egg and tongue ornament. It is introduced between the volutes of the Ionic order, and may be traced back, as is done by Quatremere de Quincy, to the head of Isis, to represent a mystical collar or necklace of the mundane egg and the tongue of the serpent of immortality. It is also used in the entablature of the same order with great effect, as in the Erechtheum.

Metaphysical Relations of Painting and Sculpture.

Had no mythology preceded it, art would of itself have arrived at and invented gods. It can also be said that the spirit in its lower developments has a similar relation to matter that the soul has with the body, in that it is the principle of action and movement as matter is of rest and action. The Greek law of moderation in the expression of the passions therefore becomes one flowing from the grounds of its nature is art, but this law applies not only to the lower passions, but also to those more elevated and divine of which the soul is capable in rapture, devotion or in reverence. The gods alone are free from these passions. Art would be attracted from his side also to the production of god-like natures. Painting, however, seems to be quite differently constituted from sculpture, for the former represents not merely by bodily forms, but by light and shade, by an immaterial and in a certain sense intellectual means. It offers its works too by no means as things themselves, and wishes them to be looked upon expressly as pictures. It therefore should not lay stress upon the material in and for itself that sculpture does. It appears from this cause that when elevating the material above the spirit, painting sinks deeper below itself than in a like case does sculpture. On the other hand, it appears with the greater

propriety to give an evident preponderance to the spirit. In instances where painting strives after the highest it will certainly ennoble the passions by character, moderate them by grace, or manifest the power of the soul in them, but those higher passions which depend upon the relation of the soul to a superior being are fully suited to its nature. If sculpture fully weighs that power by which a being exists externally and by which it operates in nature against that by which it operates inwardly and lives as a soul, and thus shuts out mere passivity even from matter, so on the other hand may painting here moderate to the advantage of the soul the character of power and action and change it into that of resignation and patience, through which it appears that man is more fitted to receive the impressions of the soul and general higher influences. From this opposition alone the predominance of sculpture in the ancient and of painting in the modern world explains itself, since the mode of thought in the former was thoroughly plastic, while that of the latter makes the soul the passive organ of higher revelations. If the deviation of plastic into the sphere of painting is an injury to art, so also is the subjugation of painting to the conditions and requirements of sculpture an imposed limitation equally arbitrary.

St. Paul's Cathedral.

The boast and admiration of England is the cathedral church of St. Paul. Its claims to an equality with St. Peter's at Rome, excepting for magnitude, have been advanced. That such a competition will be easily maintained, candour cannot allow, if in examining the objections made by foreigners of taste we find that they are founded in fact as well as supported by opinion. Let us attend to their statement of deficiencies in architectural science discoverable in this grand edifice, not to insist on those which are more dependent on taste. They assert that the essential and visible want of proportion in some of the principal dimensions is extremely derogatory to the praise which has been given to Sir Christopher Wren for his understanding the elegant precision of the antique or even the excellent modern style which existed in his time, and which he was fully enabled to consult and follow. They inquire why the architrave and frieze are omitted above the arcades of the nave and choir, whilst the entablature is complete in every other part of the fabric? Why the summit of the arcade is elevated, as in the Temple of Peace at Rome, above the capitals of the pilasters, for the whole height of the architrave and half that of the frieze? Why has the enormous cupola, which appears to overwhelm the church, a height and exterior circumference so disproportioned to the other dimensions of the edifice? And, lastly, why is the inside surface of the cupola made into an imperfect cone, which throws the pilasters out of their upright and forces them to lean towards the centre? They contend that no similar errors can be detected in the rival temple, nor will they allow the great English architect to emulate the fame of Michel Angelo and his successors in that stupendous structure. As to decoration, which must be suggested and regulated by taste alone, it may be wished that Sir Christopher Wren had not divided the body of the church into two equal orders, instead of adding an attic only, as at St. Peter's, and that he had been more sparing of festoons, which crowd the surface, already broken into minute rustic, to the very summit. Of the façade, and particularly of the two hemispherical porticoes at either termination of the transept, too much cannot be said in praise. The vast cupola, no less than the other parts of the structure in connection with it, when inspected from one of the angular points of the building, acquires a greater harmony of parts, as the extreme length is foreshortened and blends more accordantly with the whole. It is well known that the first design which he gave for this cathedral was more approved by its great author; and it has apparently some advantages over that which was finally adopted, after many interferences and deviations made at the instance of those who directed this sumptuous work. Among other points of superiority may be noticed that the whole fabric consisted of one order only, instead of an equal division into two, and the grand portico projected with a space and elevation not unequal to that of Agrippa added to the Pantheon at Rome.

Manx Churches.

Aisles were not used by Manx church architects, the single exception being the proposed south aisle to the cathedral. This may have arisen from the rudeness of the artists, which rendered a pier and an arch formidable. But may it not also have originated in the quarterland chapels being taken as the models of ecclesiastical architecture? They no doubt had no aisles. The proportion of the churches seems to have been nearly the same—from 60 to 70 feet in length, from 16 to 20 feet in breadth—very much the proportion of the Welsh and Northumberland churches, and, as Petrie proves, of the ancient Irish ones. Apses were unknown—another testimony to the flat end being a principle of the great Irish school of church art. Towers, with the one exception of the cathedral, were not in use.

NOTES AND COMMENTS.

PREHISTORIC structures will not, it is to be hoped, come into fashion and supersede later styles which can claim to have a fair amount of antiquity in their favour. We referred a few weeks ago to a modern lake-dwelling erected in Switzerland. A more curious effort to resuscitate a remote age has been attempted in Budapest. It was decided to commemorate the archæological discoveries in Egypt, Assyria and the Crimea of M. AUGUSTUS SOELER, the president of the Archæological Society of Hungary. For that purpose a temporary banquet hall was raised which represented the subterranean habitations of troglodytes. It should have been excavated, but we suppose the sanitary authorities would have interfered. The walls were adorned with trophies formed of prehistoric lances, javelins, hatchets and other weapons. Some of the courses were served on iron plates or on baked clay which appeared to be ancient, and the toasts were drank out of cows' horns. How far the stewards catered for anthropophagous appetites it would not be polite to reveal.

THE death is announced of Mr. J. M. GALE, who was long connected with the Glasgow Waterworks. The proposal to draw a supply from Loch Katrine in 1855 was considered revolutionary, but the late J. F. BATEMAN, the chief engineer, had acquired a reputation before Parliamentary committees, and the Bill for the purpose became an Act. One of his principal assistants was the late J. M. GALE. According to the *Glasgow Herald* he was a native of Ayr, where he was born in the year 1830. He received his education at the local academy, and coming to Glasgow in 1844 he entered the office of his elder brother, Mr. WILLIAM GALE, who was engineer to the Gorbals Water Company. With the view of extending his knowledge of engineering, he attended Glasgow University, and studied under Professor RANKINE and Professor LAING. While in the office of his brother he was engaged in the designing and construction of the Gorbals Waterworks, which were opened in 1847. For eight years he continued in the position of assistant to his brother, gaining experience which proved valuable to him in his future career. When the Corporation obtained their Act in 1855 for the introduction of the new supply from Loch Katrine, Mr. GALE acted as engineer on the city section of the scheme under Mr. BATEMAN, by whom it was designed and carried out. In 1859, when the works were completed, he was appointed engineer-in-chief, and from that time onwards until the close of last year he had entire charge of the works. The latter years of his life were largely devoted to the construction of a second aqueduct from Loch Katrine, doubling the water supply of the city.

MR. PULLMAN's name is widely known in connection with his luxurious railway carriages which have an effect in improving the ordinary carriage on many English lines. He also endeavoured to bridge over the chasm between capital and labour, but with loss to himself. According to an American paper, it was nearly five years ago that the Supreme Court of Illinois decided that the Pullman Palace Car Company was holding land for other than purely corporate purposes contrary to law, and ordered the company to dispose of its holdings before the end of October of this year. This order compelled the sale of about 4,000 acres underlying the model town of Pullman, together with the many buildings owned by the company and rented to employes or devoted to other uses than the manufacturing of cars. Very little of the land has so far been sold, but there is no intention of evading the order of the Court, and much of the town of Pullman will be forced through the Chicago real-estate market within a short time, where it is certain to bring high prices. This will doubtless mean an extra division of profits on the company's stock. Such is the end of Mr. PULLMAN's fond plan of settling the labour problem. He acted sincerely, but mistakenly, for instead of improving the relations of labour and capital the town of Pullman scheme was instrumental in bringing on one of the sharpest conflicts between the two factors in production ever known. Out of that strike of 1894 grew the legal proceedings which ended in securing against the company an order of sale of the model town.

ILLUSTRATIONS.

ABBOTSFORD, ST. HELEN'S WOOD, HASTINGS.

THIS house is built in a very exposed situation on the south side of a wood overlooking the castle and old town. Every precaution has been taken to meet it by building hollow brick walls with double casements in all rooms on the south and west elevations. The ground floor is faced with random-coursed local limestone of a warm grey colour with Portland stone dressings. The upper portion is hung partly with light brindle, Fontley tiles and half timberwork, the framing throughout being of English oak. The roof is covered with similar but darker brindle tiles. The principal rooms are approached from a large hall which is panelled with oak framing to the frieze. The chief room on the first floor are approached in a similar manner, i.e. entered from an upper hall or large lounge, as a protection from draughts. The work has been entrusted to and well executed by Messrs. SIMMONDS & Co., of Hastings, under the supervision of Mr. FREDK. G. KNIGHT, architect, 13 Victoria Street, S.W.

HOUSE, CLIVE AVENUE, CHURCH STRETTON.

THIS house overlooks the town and the range of hills to the west thereof, including Longmynd, which rises to a height of 1,700 feet, and is almost equally beautifully situated. The estimate for this is 700£.

COMPETITION DESIGN FOR CHURCH, CLERGY HOUSE AND PARISH ROOM, SOUTHEEND-ON-SEA.

THIS design was placed second in the late competition for the proposed new church, clergy house and parish room at Southend-on-Sea, Mr. G. F. BODLEY, R.A. being the assessor. In placing the buildings on the site, flat piece of ground at the top of a slight hill to the south it was thought desirable to join them up into one large block, rather than arranging three separate buildings, not only for the sake of architectural unity and dignity, but also for convenience in use and economy in building. Attention was paid to the position of the clergy house so as to obtain good light and aspect, and convenience of access to the church and parish room without going out of door. On the first floor were provided six bedrooms, dressing-room and offices, and a small oratory at the head of the stairs looking into the chancel. The church itself is a departure from the usual plan, a spacious nave 40 feet wide leading by three arches into a slightly wider chancel, which is divided into choir and chapel by lateral screenwork. The roof principals were intended to be of steel, exerting no thrust and making the roof as light as possible. The materials externally would have been local red bricks, stone dressings and hand-made tiles for roofs. Internally the church was intended to be plastered and whitened with colour decoration on the walls, wooden ceiling, and a high coloured wood dado. All the screenwork would have been richly coloured and decorated together with the fittings, and the walls adorned with pictures. The estimated cost for the structural work was supplied by Messrs. WILLIAM KING & SON, contractors, 3 Vauxhall Bridge Road, S.W., through Messrs. GANDY & BENISON, quantity surveyors, of 22 Essex Street, Strand, W.C. was 12,700£, and the joint authors of the design are Mr. GEOFFREY LUCAS, A.R.I.B.A., and Mr. ARTHUR STRATTON, A.R.I.B.A., both of 2 Vernon Place, Bloomsbury Square, W.C. The drawing of the interior was hung in this year at the Royal Academy Exhibition.

CATHEDRAL SERIES.—EXETER: SYLKE'S CHANTRY, AND CHANCEL OF ST. PAUL.

ST. PAUL'S Chapel and SYLKE'S Chantry open out into the north transept of the cathedral. The former is believed to have been built during the episcopate of Bishop QUIVIL (1280-91). One of the bosses shows St. Paul leaning upon a sword. The chapel is lighted by windows on three sides. Close to it is WILLIAM SYLKE's chantry. It is said to have been sub-chanter of the cathedral, and was buried in 1508. The little chapel originally contained many statuettes, which from time to time were mutilated as well as a figure of the founder, who is represented almost a skeleton in a winding-sheet. Over the arch which shelters it is the inscription:—"Sum q' cris, fuer' q' d. es, p' me precor ora, Will. Sylke."

INDUSTRIAL REQUIREMENTS.*

SOME years ago, in discussing the relations of scientific instruction to our industries, Huxley pointed out that we are in presence of a new "struggle for existence," a struggle which, once commenced, must go on until only the fittest survives.

It is a struggle between organised species—nations—not between individuals or any class of individuals. It is, moreover, a struggle in which science and brains take the place of swords and sinews, on which depended the result of those contests which, up to the present, have determined the history and life of nations. The school, the university, the laboratory and the workshop are the battlefields of this new warfare.

But it is evident that if this, or anything like it, be true our industries cannot be involved alone; the scientific spirit, brain-power, must not be limited to the workshop if other nations utilise it in all branches of their administration and executive.

It is a question of an important change of front. It is a question of finding a new basis of stability for the Empire in the new conditions. I am certain that those familiar with the present state of things will acknowledge that the Prince of Wales's call, "Wake up!" applies quite as much to the members of the Government, as it does to the leaders of industry.

What is wanted is a complete organisation of the resources of the nation, so as to enable it best to face all the new problems which the progress of science, combined with the ebb and flow of population and other factors in international competition, are ever bringing before us. Every Minister, every public department, is involved, and this being so, it is the duty of the whole nation—King, Lords and Commons—to do what is necessary to place our scientific institutions on a proper footing in order to enable us to "face the music," whatever the future may bring. The idea that science is useful only to our industries comes from want of thought. If anyone is under the impression that Britain is only suffering at present from the want of the scientific spirit among our industrial classes, and that those employed in the State service possess adequate brain-power and grip of the conditions of the modern world to which science so largely enters, let him read the report of the Royal Commission on the War in South Africa. There he will see how the whole "system" employed was, in Sir Henry Jackson's words applied to a part of it, "unsuited to the requirements of an army which is maintained to enable us to make war." Let him read also in the address of the President of the Society of Chemical Industry what drastic steps had to be taken by chambers of commerce and "a quarter of a million working men" to get the Patent Law Amendment Act into proper shape in spite of all the advisers and officials of the Board of Trade. Very few people realise the immense number of scientific problems the solution of which is required for the State service. The nation itself is a gigantic workshop, and to make more our rulers and legislators, administrators and executive officers possess the scientific spirit, the more the rule of thumb is replaced in the State service by scientific methods, the more able shall we be, thus armed at all points, to compete successfully with other countries along all lines of national as well as of commercial activity.

It is obvious that the power of a nation for war, in men and arms and ships, is one thing; its power in the peace struggles in which I have referred is another. In the latter the source of standard of national efficiency are entirely changed. To meet war conditions, there must be equality or superiority in navies and army corps. To meet the new peace conditions, there must be equality or superiority in universities, scientific organisation and everything which conduces to increase brain-power.

Our Industries are suffering in the present International Competition.

The present condition of the nation, so far as its industries are concerned, is as well known not only to the Prime Minister, but to other political leaders and out of the Cabinet, as it is to you and to me. We are suffering because trade no longer follows the flag as in the old days, but because trade follows the brains, and manufacturers are too apt to be careless in securing them. The chemical establishment in Germany 400 doctors of science, the best the universities there can turn out, have been employed at different times in late years. In the United States the most successful students in the higher teaching are snapped up the moment they have finished their course of training and put into charge of large concerns, so the idea has got abroad that youth is the password of success in American industry. It has been forgotten that the product of the highest scientific education must necessarily be young, and that it is the training and not the age which determines his employment. In Britain, on the other

From the address delivered by Sir Norman Lockyer as president of the British Association on Wednesday.

hand, apprentices who can pay high premiums are too often preferred to those who are well educated, and the old rule-of-thumb processes are preferred to new developments, a conservatism too often depending upon the master's own want of knowledge.

I should not be doing my duty if I did not point out that the defeat of our industries one after another, concerning which both Lord Rosebery and Mr. Chamberlain express their anxiety, is by no means the only thing we have to consider. The matter is not one which concerns our industrial classes only, for knowledge must be pursued for its own sake; and since the full life of a nation with a constantly increasing complexity not only of industrial but of high national aims, depends upon the universal presence of the scientific spirit—in other words, brain-power—our whole national life is involved.

The Necessity for a Body dealing with the Organisation of Science.

The present awakening in relation to the nation's real needs is largely due to the warnings of men of science. But Mr. Balfour's terrible Manchester picture of our present educational condition shows that the warning, which has been going on now for more than fifty years, has not been forcible enough; but if my contention that other reorganisations besides that of our education are needed is well founded, and if men of science are to act the part of good citizens in taking their share in endeavouring to bring about a better state of things, the question arises, Has the neglect of their warnings so far been due to the way in which these have been given?

Lord Rosebery, in the address to a chamber of commerce from which I have already quoted, expressed his opinion that such bodies do not exercise so much influence as might be expected of them. But if commercial men do not use all the power their organisation provides, do they not by having built up such an organisation put us students of science to shame, who are still the most disorganised members of the community?

Here, in my opinion, we have the real reason why the scientific needs of the nation fail to command the attention either of the public or of successive Governments. At present appeals on this or on that behalf are the appeals of individuals; science has no collective voice on the larger national questions; there is no organised body which formulates her demands.

During many years it has been part of my duty to consider such matters, and I have been driven to the conclusion that our great crying need is to bring about an organisation of men of science and all interested in science similar to those which prove so effective in other branches of human activity. For the last few years I have dreamt of a chamber, guild, league, call it what you will, with a wide and large membership, which should give us what, in my opinion, is so urgently needed. Quite recently I sketched out such an organisation, but what was my astonishment to find that I had been forestalled, and by the founders of the British Association.

The First Work of such an Organisation.

I suppose it is my duty, after I have suggested the need of an organisation, to tell you my personal opinion as to the matters where we suffer most in consequence of our lack of organisation at the present time.

Our position as a nation, our success as merchants, are in peril chiefly—dealing with preventable causes—because of our lack of completely efficient universities and our neglect of research. This research has a double end. A professor who is not learning cannot teach properly or arouse enthusiasm in his students; while a student of anything who is unfamiliar with research methods, and without that training which research brings, will not be in the best position to apply his knowledge in after-life. From neglect of research comes imperfect education and a small output of new applications and new knowledge to reinvigorate our industries. From imperfect education comes the unconcern touching scientific matters and the too frequent absence of the scientific spirit in the nation generally, from the court to the parish council.

I propose to deal as briefly as I can with each of these points.

Universities.

I have shown that, so far as our industries are concerned, the cause of our failure has been run to earth; it is fully recognised that it arises from the insufficiency of our universities both in numbers and efficiency, so that not only our captains of industry, but those employed in the nation's work generally, do not secure a training similar to that afforded by other nations. No additional endowment of primary, secondary or technical instruction will mend matters. This is not merely the opinion of men of science; our great towns know it, our Ministers know it.

Our conception of a university has changed. University education is no longer regarded as the luxury of the rich, which

concerns only those who can afford to pay heavily for it. The Prime Minister in a recent speech, while properly pointing out that the collective effect of our public and secondary schools upon British character cannot be overrated, frankly acknowledged that the boys of seventeen or eighteen who have to be educated in them "do not care a farthing about the world they live in except in so far as it concerns the cricket-field or the football-field or the river." On this ground they are not to be taught science; and hence, when they proceed to the university, their curriculum is limited to subjects which were better taught before the modern world existed or even Galileo was born. But the science which these young gentlemen neglect, with the full approval of their teachers, on their way through the school and the university to politics, the Civil Service, or the management of commercial concerns, is now one of the great necessities of a nation; and our universities must become as much the insurers of the future progress as battleships are the insurers of the present power of States. In other words, university competition between States is now as potent as competition in building battleships, and it is on this ground that our university conditions become of the highest national concern, and therefore have to be referred to here, and all the more because our industries are not alone in question.

Why we have not more Universities.

Chief among the causes which have brought us to the terrible condition of inferiority as compared with other nations in which we find ourselves are our carelessness in the matter of education and our false notions of the limitations of State functions in relation to the conditions of modern civilisation.

Time was when the Navy was largely a matter of private and local effort. William the Conqueror gave privileges to the Cinque Ports on the condition that they furnished fifty-two ships when wanted. In the time of Edward III., of 730 sail engaged in the siege of Calais 705 were "people's ships." All this has passed away; for our first line of defence we no longer depend on private and local effort.

Time was when not a penny was spent by the State on elementary education. Again, we no longer depend upon private and local effort. The Navy and primary education are now recognised as properly calling upon the public for the necessary financial support. But when we pass from primary to university education, instead of State endowment we find State neglect; we are in a region where it is nobody's business to see that anything is done.

We in Great Britain have thirteen universities competing with 134 State and privately endowed in the United States and twenty-two State endowed in Germany. I leave other countries out of consideration for lack of time, and I omit all reference to higher institutions for technical training, of which Germany alone possesses nine of university rank, because they are less important; they instruct rather than educate, and our want is education. The German State gives to one university more than the British Government allows to all the universities and university colleges in England, Ireland, Scotland and Wales put together. These are the conditions which regulate the production of brain-power in the United States, Germany and Britain respectively, and the excuse of the Government is that this is a matter for private effort. Do not our Ministers of State know that other civilised countries grant efficient State aid, and, further, that private effort has provided in Great Britain less than 10 per cent. of the sum thus furnished in the United States in addition to State aid? Are they content that we should go under in the great struggle of the modern world because the Ministries of other States are wiser, and because the individual citizens of another country are more generous than our own?

If we grant that there was some excuse for the State's neglect so long as the higher teaching dealt only with words, and books alone had to be provided (for the streets of London and Paris have been used as classrooms at a pinch), it must not be forgotten that during the last 100 years not only has knowledge been enormously increased, but things have replaced words, and fully equipped laboratories must take the place of books and classrooms if university training worthy of the name is to be provided. There is much more difference in size and kind between an old and a new university than there is between the old caravel and a modern battleship, and the endowments must follow suit.

What are the facts relating to private endowment in this country? In spite of the munificence displayed by a small number of individuals in some localities, the truth must be spoken. In depending in our country upon this form of endowment we are trusting to a broken reed. If we take the twelve English university colleges, the forerunners of universities unless we are to perish from lack of knowledge, we find that private effort during sixty years has found less than 4,000,000*l.*; that is, 2,000,000*l.* for buildings, and 40,000*l.* a year income. This gives us an average of 166,000*l.* for buildings, and 3,300*l.* for yearly income.

What is the scale of private effort we have to compete in regard to the American universities?

In the United States during the last few years universities and colleges have received more than 40,000,000*l.* from private source alone; private effort supplied nearly 7,000,000*l.* in the years 1898-1900.

Next consider the amount of State aid to universities afforded in Germany. The buildings of the new University of Strasburg have already cost nearly a million; that is, about as much as has yet been found by private effort for building in Manchester, Liverpool, Birmingham, Bristol, Newcastle and Sheffield. The Government annual endowment of the German university is more than 49,000*l.*

This is what private endowment does for us in England against State endowment in Germany.

But the State does really concede the principle; its present contribution to our universities and colleges amounts to 155,600*l.* a year. No capital sum, however, is taken from buildings. The State endowment of the University of Berlin in 1891-92 amounted to 168,777*l.*

When, then, we consider the large endowments for university education both in the United States and Germany, it is obvious that State aid only can make any valid competition possible with either. The more we study the facts, the more statistics are gone into, the more do we find that we, to a large extent, lack both of the sources of endowment upon which either, or both, of which other nations depend. We are between two stools, and the prospect is hopeless without drastic changes. And first among these, if we intend to get out of the present Slough of Despond, must be the giving up of the idea of relying upon private effort.

To compete on equal grounds with other nations we must have more universities. But this is not all—we want a better endowment of all the existing ones, not forgetting better opportunities for research on the part of both professors and students. Another crying need is that of more professors at a better pay. Another is the reduction of fees; they should be reduced to the level existing in those countries which are competing with us—to, say, one-fifth of their present rates, in order to enable more students in the secondary and technical schools to complete their education.

In all these ways facilities would be afforded for providing the highest instruction to a much greater number of students. At present there are almost as many professors and instructors in the universities and colleges of the United States as there are day students in the universities and colleges of the United Kingdom.

Men of science, our leaders of industry and the chiefs of our political parties all agree that our present want of higher education—in other words, properly equipped universities—heavily handicapping us in the present race for commercial supremacy, because it provides a relatively inferior type of power, which is leading to a relatively reduced national income.

The facts show that in this country we cannot depend upon private effort to put matters right. How about local effort?

Anyone who studies the statistics of modern municipal finance will see that it is impossible for them to raise rates for building and upkeep of universities.

The buildings of the most modern university in Germany have cost a million. For upkeep the yearly sums furnished chiefly by the State, for German universities of different grades, taking the incomes of seven out of the twenty universities as examples, are:—

First class	Berlin	130,000
Second class	Bonn	56,000
	Göttingen	
Third class	Königsberg	48,000
	Strasburg	
Fourth class	Heidelberg	37,000
	Marburg	

Thus, if Leeds, which is to have a university, is compared with the fourth class German standard, a rate must be levied of 7*d.* in the pound for yearly expenses, independent of buildings. But the facts are that our towns are already breaking strain. During the last fifty years, in spite of enormous increases in rateable values, the rates have gone from about 2*s.* to about 7*s.* in the pound for real local purposes. But no university can be a merely local institution.

How to get more Universities.

What, then, is to be done? Fortunately, we have precedent admirably in point, the consideration of which may lead us to answer this question.

I have pointed out that in old days our Navy was provided by local and private effort. Fortunately for us, those days have passed away; but some twenty years ago, in the midst of a large expenditure, it began to be felt by those who were in power that in consequence of the increase of foreign navies our power was threatened, as now, in consequence of the increase of foreign universities, our brain-power is threatened.

The nation slowly woke up to find that its enormous commerce was no longer insured at sea, that in relation to foreign rivals our own had been suffered to dwindle to such an extent that it was no longer capable of doing the duty which the nation expected of it even in times of peace. At first this relation was received with a shrug of incredulity, and the peace-at-any-price party denied that anything was needed; but a great teacher arose; as the facts were inquired into, the suspicion changed into an alarm; men of all parties saw that something must be done. Later the nation was thoroughly aroused, and with an universal agreement the principle was laid down that, cost what it might to enforce our sea-power, our Navy must be made and maintained of a strength greater than those of any two possibly contending Powers. After establishing this principle, the next thing to do was to give effect to it. What did the nation do after full discussion and inquiry? A Bill was brought in in 1888, and a sum of £500,000 was voted in order, during the next five years, to inaugurate a large shipbuilding programme, so that Britain's commerce might be guarded on the high seas in any event.

Since then we have spent £120,000,000 on new ships, and this year we spend still more millions on still more new ships. These prove insufficient to safeguard our sea-power, there is no doubt that the nation will increase them, and I have not heard that anybody has suggested an appeal to private effort.

How, then, do we stand with regard to universities, recognising them as the chief producers of brain-power, and therefore the equivalents of battleships in relation to sea-power? Do their numbers come up to the standard established by the Admiralty principle to which I have referred? Let us attempt to get a rough-and-ready estimate of our educational position by counting universities as the Admiralty counts battleships. A rough-and-ready, because we have other helps to greater brain-power to consider besides universities, as the Admiralty has other ships to consider besides ironclads.

In the first place, let us inquire if they are equal in number to those of any two nations commercially competing with us. In the United Kingdom we had until quite recently thirteen. These, one is only three years old as a teaching university, another is still merely an examining board.

In Germany there are twenty-two universities; in France, after recent legislation, fifteen; in Italy, twenty-one. It is difficult to give the number in the United States, because it is larger, from the tables given in the report of the Commissioner of Education, that some colleges are more important than some universities, and both give the degree of Ph.D. But of universities in title we have 134. Among these, there are sixty-six with more than fifty professors and instructors, and sixteen with more than 150. I will take that figure.

Suppose we consider the United States and Germany, our two commercial competitors, and apply the Admiralty principle. We should require, allowing for population, eight additional universities at the very lowest estimate. We see, then, that instead of having universities equalling in number those of two of our chief competitors together, they are by no means equal to those of either of them singly.

After this statement of the facts, anyone who has belief in the importance of higher education will have no difficulty in understanding the origin of the present condition of British industry and its constant decline, first in one direction and then another, since the tremendous efforts made in the United States and Germany began to take effect.

If, indeed, there be anything wrong about the comparison, error can only arise from one of two sources—either the Admiralty is thoughtlessly and wastefully spending money, or there is no connection whatever between the higher intelligence and the prosperity of a nation. I have already referred to the words of Mr. Chamberlain and Lord Rosebery on this point; we know what Mr. Chamberlain has done at Birmingham; we know the strenuous efforts made by the commercial leaders of Manchester and Liverpool; we know also the opinion of men of science.

If while we spend so freely to maintain our sea-power our export of manufactured articles is relatively reduced because our competitors beat us in the markets of the world, what is the end of the vista thus opened up to us? A Navy growing larger every year and requiring larger votes to guard our commerce and communications, and a vanishing quantity of revenue to guard—a reduced national income to meet an increasing taxation.

The pity is that our Government has considered sea-power only; that while so completely guarding our commerce it has had no thought to one of the main conditions on which its action and increase depend. A glance could have shown that other countries were building universities even faster than we were building battleships—were, in fact, considering brain-power first and sea-power afterwards.

Clearly it is my duty as your President to point out the danger ahead, if such ignoring of the true situation should be allowed to continue. May I express a hope that at last, in

Mr. Chamberlain's words, "The time is coming when governments will give more attention to this matter"?

What will they cost?

The comparison shows that we want eight new universities, some of which, of course, will be colleges promoted to university rank and fitted to carry on university work. Three of them are already named—Manchester, Liverpool, Leeds.

Let us take this number and deal with it on the battleship condition, although a modern university on American or German models will cost more to build than a battleship.

If our present university shortage be dealt with on battleship conditions, to correct it we should expend at least 8,000,000 for new construction, and for the pay-sheet we should have to provide (8 × 50,000) 400,000 yearly for personnel and upkeep; for it is of no use to build either ships or universities without manning them. Let us say roughly, capitalising the yearly payment at 2½ per cent., 24,000,000.

At this stage it is important to inquire whether this sum, arrived at by analogy merely, has any relation to our real university needs.

I have spent a year in making inquiries, as full as I could make them, of friends conversant with the real present needs of each of the universities, old and new. I have obtained statistics which would fill a volume, and personally I believe that this sum at least is required to bring our university system up to anything like the level which is insisted upon both in the United States and in Germany. Even Oxford, our oldest university, will still continue to be a mere bundle of colleges unless three millions are provided to enable the university, properly so-called, to take her place among her sisters of the modern world, and Sir Oliver Lodge, the principal of our very youngest university, Birmingham, has shown in detail how five millions can be usefully and properly applied in that one locality to utilise for the good of the nation the enthusiasm and scientific capacity which are only waiting for adequate opportunity of development.

How is this money to be raised? I reply, without hesitation, duplicate the Navy Bill of 1888-89; do at once for brain-power what we so successfully did then for sea-power.

Let 24,000,000 be set apart from one asset, our national wealth, to increase the other, brain-power. Let it be assigned and borrowed as it is wanted; there will be a capital sum for new buildings to be erected in the next five or ten years, the interest of the remainder to go towards increased annual endowments.

There need be no difficulty about allocating money to the various institutions. Let each university make up its mind as to which rank of the German universities it wishes to emulate. When this claim has been agreed to the sums necessary to provide the buildings and teaching staff of that class of university should be granted without demur.

It is the case of battleships over again, and money need not be spent more freely in one case than in the other.

Let me at once say that this sum is not to be regarded as practically gone when spent, as in the case of a short-lived ironclad. It is a loan which will bear a high rate of interest. This is not my opinion merely; it is the opinion of those concerned in great industrial enterprises and fully alive to the origin and effects of the present condition of things.

I have been careful to point out that the statement that our industries are suffering from our relative neglect of science does not rest on my authority. But if this be true, then if our annual production is less by only two millions than it might have been, having two millions less to divide would be equivalent to our having forty or fifty millions less capital than we should have had if we had been more scientific.

Sir John Brunner, in a speech connected with the Liverpool School of Tropical Medicine, stated recently that if we as a nation were now to borrow ten millions of money in order to help science by putting up buildings and endowing professors, we should get the money back in the course of a generation a hundredfold. He added that there was no better investment for a business man than the encouragement of science, and that every penny he possessed had come from the application of science to commerce.

According to Sir Robert Giffen, the United Kingdom as a going concern was in 1901 worth 16,000,000,000.

Were we to put aside 24,000,000 for gradually organising, building and endowing new universities, and making the existing ones more efficient, we should still be worth 15,976,000,000—a property well worth defending by all the means, and chief among these brain-power, we can command.

If it be held that this, or anything like it, is too great a price to pay for correcting past carelessness or stupidity, the reply is that the 120,000,000 recently spent on the Navy, a sum five times greater, has been spent to correct a sleepy blunder, not one whit more inimical to the future welfare of our country than that which has brought about our present educational position. We had not sufficiently recognised what other nations had done in the way of shipbuilding, just as until

now we have not recognised what they have been doing in university building.

Further, I am told that the sum of 24,000,000*l.* is less than half the amount by which Germany is yearly enriched by having improved upon our chemical industries, owing to our lack of scientific training. Many other industries have been attacked in the same way since, but taking this one instance alone, if we had spent this money fifty years ago, when the Prince Consort first called attention to our backwardness, the nation would now be much richer than it is, and would have much less to fear from competition.

Suppose we were to set about putting our educational house in order, so as to secure a higher quality and greater quantity of brain-power, it would not be the first time in history that this has been done. Both Prussia after Jena and France after Sedan acted on the view:—

When land is gone and money spent,
Then learning is most excellent.

After Jena, which left Prussia a "bleeding and lacerated mass," the king and his wise counsellors, among them men who had gained knowledge from Kant, determined, as they put it, "to supply the loss of territory by intellectual effort."

What did they do? In spite of universal poverty three universities, to say nothing of observatories and other institutions, were at once founded, secondary education was developed, and in a few years the mental resources were so well looked after that Lord Palmerston defined the kingdom in question as "a country of damned professors."

After Sedan—a battle, as Moltke told us, "won by the schoolmaster"—France made even more strenuous efforts. The old University of France, with its "academies" in various places, was replaced by fifteen independent universities, in all of which are faculties of letters, sciences, law and medicine.

The development of the University of Paris has been truly marvellous. In 1897-98 there were 12,000 students, and the cost was 200,000*l.* a year.

But even more wonderful than these examples is the "intellectual effort" made by Japan, not after a war, but to prepare for one.

The question is, Shall we wait for a disaster and then imitate Prussia and France, or shall we follow Japan and thoroughly prepare by "intellectual effort" for the industrial struggle which lies before us?

Such an effort seems to me to be the first thing any national or imperial scientific organisation should endeavour to bring about.

The Need of a Scientific National Council.

In referring to the new struggle for existence among civilised communities I pointed out that the solution of a large number of scientific problems is now daily required for the State service, and that in this and other ways the source and standard of national efficiency have been greatly changed.

Much evidence bearing upon the amount of scientific knowledge required for the proper administration of the public departments, and the amount of scientific work done by and for the nation, was brought before the Royal Commission on Science presided over by the late Duke of Devonshire now more than a quarter of a century ago.

The Commission unanimously recommended that the State should be aided by a scientific council in facing the new problems constantly arising.

But while the Home Government has apparently made up its mind to neglect the advice so seriously given, it should be a source of gratification to us all to know that the application of the resources of modern science to the economic, industrial and agricultural development of India has for many years engaged the earnest attention of the Government of that country. The Famine Commissioners of 1878 laid much stress on the institution of scientific inquiry and experiment designed to lead to the gradual increase of the food supply and to the greater stability of agricultural outturn, while the experience of recent years has indicated the increasing importance of the study of the economic products and mineral-bearing tracts.

Lord Curzon has recently ordered the heads of the various scientific departments to form a board, which shall meet twice annually, to begin with, to formulate a programme and to review past work. The board is also to act as an advisory committee to the Government, providing among other matters for the proper co-ordination of all matters of scientific inquiry affecting India's welfare.

Lord Curzon is to be warmly congratulated upon the step he has taken, which is certain to bring benefit to our great dependency.

The importance of such a board is many times greater at home, with so many external as well as internal interests to look after—problems common to peace and war, problems requiring the help of the economic as well as of the physical sciences.

It may be asked, What is done in Germany, where science is fostered and utilised far more than here?

The answer is, there is such a council. I fancy very much like what our Privy Council once was. It consists of representatives of the Ministry, the universities, the industries and agriculture. It is small, consisting of about a dozen members, consultative, and it reports direct to the Emperor. It does not deal with industrial war what military and so-called defence council for national armaments; it considers everything relating to the use of brain-power in peace—from alterations in school regulations and the organisation of the universities to railway rates and fiscal schemes, including the adjustment of duties. It is informed that what this council advises generally becomes law.

It should be pretty obvious that a nation so provided with enormous chances in its favour. It is a question of drilled battalions against an undisciplined army, of the use of the scientific spirit as opposed to the hope of "mud and iron."

Mr. Haldane has recently reminded us that "the weapon of science places in the hands of those who engage in the great rivalries of commerce leave those who are without them however brave, as badly off as were the dervishes of Omar against the Maxims of Lord Kitchener."

Without such a machinery as this, how can our Ministers and our rulers be kept completely informed on a thousand things of vital importance? Why should our position as requirements as an industrial and thinking nation receive less attention from the authorities than the head-dress of the Guards? How, in the words of Lord Curzon, can "the vigour and vigour of a nation be summed up before the world in the person of its sovereign" if the national organisation is defective that it has no means of keeping the head of the State informed on things touching the most vital and lasting interests of the country? We seem to be still in the Palæolithic Age in such matters, the chief difference being that the sword has replaced the flint implement.

Some may say that it is contrary to our habit to expect the Government to interest itself too much or to spend money on matters relating to peace; that war dangers are the only ones to be met or to be studied.

But this view leaves science and the progress of science out of the question. Every scientific advance is now, and will be in the future be more and more applied to war. It is no longer a question of an armed force with scientific corps; it is a question of an armed force scientific from top to bottom. The God the Navy has already found this out. Science will ultimately rule all the operations both of peace and war, and therefore the industrial and the fighting population must have a large common ground of education. Already it is looking too far ahead to see that in a perfect State there would be a double use of each citizen—a peace use and a war use—and the more science advances, the more the old difference between the peaceful citizen and the man at arms will disappear. The barrack, if it still exists, and the workshop will be assimilated; the land unit, like the battleship, will become a school of applied science, self-contained, in which the officer will be the efficient teachers.

I do not think it is yet recognised how much the problem of national defence has thus become associated with that which we are now chiefly concerned.

These, then, are some of the reasons which compel me to point out that a scientific council, which might be a sub-committee of the Privy Council, in dealing primarily with national needs in times of peace, would be a source of strength to the nation.

To sum up, then, my earnest appeal to you is to give your loins and see to it that the science of the British Empire shall no longer remain unorganised. I have endeavoured to point out to you how the nation at present suffers from the absence of a powerful, continuous, reasoned expression of scientific opinion, urging in season and out of season that we shall be armed as other nations are, with efficient universities and facilities for research to uphold the flag of Britain in the domain of learning and discovery, and what they alone can bring.

I have also endeavoured to show how, when this is done, the nation will still be less strong than it need be if there be added to our many existing councils another, to secure the even during peace the benefits which a proper co-ordination of scientific effort in the nation's interest can bring shall not be neglected as they are at present.

Let some of you may think that the scientific organisation which I trust you will determine to found would risk success working on such large lines, let me remind you that in 1878 when the late Prince Consort occupied this chair, he referred to "impediments" to scientific progress, and said, "they are such as can only be successfully dealt with by the powerful action of the State or the long purse of the nation."

If the Prince Consort had lived to continue his advocacy of science, our position to-day would have been very different. His early death was as bad for Britain as the loss of a great campaign. If we cannot make up what we have lost we cannot mend.

I have done what I feel to be my duty in bringing the present condition of things before you. It is now your duty, if you agree with me, to see that it be put right. You can if you will.

THE WORK OF THE ART SCHOOLS.

THE following extracts from the reports of the examiners on the results of the art examinations, 1902, have appeared:—

GEOMETRICAL DRAWING.

Examiner: H. W. O. Hagreen.

The average quality of the papers worked at the evening examination was higher than in the corresponding examination last year. There is still evidence that in many classes lectures have not been sufficiently supplemented by supervision and correction of the student's own work.

At the day examination the average of geometrical draughtsmanship was creditable, but hardly so good as in past years. There was the usual evidence that the text-books had been studied, and that a great many students have very little idea of turning their knowledge to any practical account.

PERSPECTIVE.

Examiner: H. Walter Lonsdale.

An improvement is evident in the general quality of the work submitted for the evening examination, as compared with the corresponding one of last year.

This improvement is maintained in the day examination, an ability in readily applying their knowledge of the theory of perspective to the practical solution of problems presented in an unaccustomed form being shown by an increased number of candidates.

FREEHAND DRAWING IN OUTLINE.

Examiners: W. J. Donne and W. Norris, A.R.C.A. (London).

The new conditions imposed this year, viz. "to be finished with a brush or pen," have produced some very satisfactory results.

There is a great variety of brush line and penwork; in some instances a very intelligent rendering is given, and in others in inexpressive, thin and monotonous line.

MODEL DRAWING.

Examiners: Martin A. Buckmaster, A.R.C.A. (London) and John Parker.

The examiners are of the opinion that there is a steady improvement in the standard of merit of the exercises submitted for examination, but the level of the work in the day examination is not so high as that of the evening.

It is gratifying to note that fewer students are now presented without sufficient preparation for the present advanced character of the examination.

DRAWING IN LIGHT AND SHADE.

Examiners: Henry Bayfield and John Somerscales, A.R.C.A. (London).

A fair number of drawings done at the evening and day examinations show careful and good work, but in a considerable number of exercises a falling-off in method is apparent, accuracy of drawing giving place to a looseness and vagueness of execution, which may be suggestive and picturesque, but not calculated to develop a sound knowledge of this subject.

DRAWING ON THE BLACKBOARD.

Examiner: S. J. Cartledge, A.R.C.A. (London), H.M.C.I.

At training colleges a higher average standard of work is naturally to be looked for this year, as no "first year" students were admitted to the examinations; and it is gratifying to report that the exercises generally reached a high level, being quite up to anticipation. In many cases it was quite evident that an excellent course of study had been followed, though here and there unmistakable signs of a wholesome cram in memory drawing were to be seen.

The level of last year is maintained in the work done at schools of art and art classes.

ARCHITECTURE.

Examiner: Professor T. Roger Smith.

The number of candidates was less than last year; the average quality of the work was, however, much higher.

Generally speaking the work, and especially the drawings, made by those candidates who have gained high marks is unquestionably good, and there are few discreditable failures.

DRAWING FROM THE ANTIQUE.

Examiners: Seymour Lucas, R.A., and W. F. Yeames, R.A.

The examiners consider the work done at this examination very satisfactory, and that the steady improvement in past years has been well maintained.

The number of good drawings is considerable, and amongst these some are entitled to be called excellent. Almost throughout

the manner adopted in drawing the statue is good, and the work done with intelligence and with apparent purpose, all of which throws credit on the various schools to which the candidates belong.

The examiners are convinced that the marked intelligence imported into the work must be of great service to the students, whatever branch of art they may have to follow in after years.

DRAWING THE ANTIQUE FROM MEMORY.

Examiners: Seymour Lucas, R.A., and W. F. Yeames, R.A.

The examiners are pleased to find an advance on the work sent up last year, and that a considerable number of drawings have obtained high awards.

DRAWING FROM LIFE.

Examiners: Byam Shaw and H. S. Tuke, A.R.A.

Comparing the result of this examination with that of last year there is a considerable falling off in the quality of the work, which may be attributed in part to requirements under the new regulations in respect of memory drawing and the shorter time allowed at the examination for drawing from the life model.

There are a fair number of drawings which show intelligence and true feeling. Others, however, indicate merely a specious facility in execution.

ANATOMY.

Examiners: Professor A. Thomson, M.A., M.B., and Professor R. Howden, M.A., M.B.

There has been an increase in the number of papers received this year, and on the whole the standard of excellence is better than usual, though there are no papers of outstanding merit.

MEMORY DRAWING OF PLANT FORM.

Examiner: W. G. Paulson Townsend.

Generally speaking, this examination in its first year has been well understood. A certain small number of the papers show real excellence, and there is a large proportion of very good work. On the other hand, a number of the candidates have not been properly prepared for the examination, or have not shown that they fully comprehended the requirements or were able to cope with them.

PAINTING ORNAMENT.

Examiner: Lewis F. Day.

Considering the difficulty of the new subject—that is to say, of making a design as well as painting it within the time allotted—the results of this examination are most satisfactory.

Students appear to have taken to it with a zest which, though it may be due partly to the novelty of it, is no doubt to some extent accounted for by the greater freedom allowed than by the old monochrome-painting exercise; and quite a number of them have done better than might have been expected.

PAINTING FROM STILL LIFE.

Examiners: G. D. Leslie, R.A., and W. F. Yeames, R.A.

The paintings, though fewer in number than last year, show a standard of excellence of a very satisfactory character.

There are not, it is true, more paintings of the highest merit than there were last year, but the number of exercises of good sound work is distinctly higher. Throughout the students show more intelligence and perception of what is required in the way of tone, light and shade and refinement of colour.

PRINCIPLES OF ORNAMENT.

Examiners: G. C. Haité and F. Hamilton Jackson.

The average level of intelligence shown by candidates in answering the questions set is higher than that reached in last year's examination, though the examiners find that the larger part of those students who attempted the most advanced question were quite unfitted to cope with the subject.

The results of this examination go far towards showing that if students in the mass are not capable of producing work of the highest order—which is scarcely to be expected—they are, at least, in a fair way of being enabled to form a critical and logical judgment upon any objects submitted for their consideration.

HISTORIC ORNAMENT.

Examiners: J. H. Pollen and R. Phené Spiers.

The answers were in some instances intelligent, but taken as a whole, hardly up to the average of former examinations.

It is not possible to report favourably of the sketching. Quite apart from special preparation for an examination, the habit of sketching is necessary in order to store the memory with vivid impressions of the beauty of objects among the national treasures.

MODELLING FROM THE ANTIQUE.

Examiners: T. Brock, R.A., and W. Goscombe John, A.R.A.

The work done at this examination is fully up to the average, but as usual, many of the students have been allowed to sit without being sufficiently prepared.

MODELLING THE HEAD FROM THE LIFE.

Examiners: T. Brock, R.A., and W. Goscombe John, A.R.A.

The examiners are pleased to see that full advantage has been taken of this exercise, with the result that many excellent studies have been done.

The intention of this examination being to test advanced students in their knowledge of construction, it is to be regretted that so many have been allowed to sit without having had sufficient preliminary study.

MODELLING FROM LIFE.

Examiners: T. Brock, R.A., and W. Goscombe John, A.R.A.

The examiners are pleased with the work done at this examination, many of the exercises submitted being of considerable merit; attention, however, must still be drawn to the fact that a large proportion of the candidates presented for this examination had not been sufficiently prepared.

ARCHITECTURAL DESIGN.

Examiner: Professor T. Roger Smith.

The number of candidates was rather less than last year. The average quality of the work is, I believe, a little higher.

In considering the architectural designs of students it must not be forgotten that there is a strong desire for novelty in the art at the present day, and that something like a system of design based on forms not hitherto in use has been worked out for furniture and goldsmiths' work. Of those students who have failed in this examination many have keenly pursued novelty and novelty only, without the necessary knowledge of architectural forms or the skill requisite for employing them.

Many of the designs of those who have passed—and those among the freshest and most vigorous—have at least a strong flavouring of the "modern English" manner.

It is worth remark that, though there is one powerful design that is Tudor in character, there is no other to which the term Gothic can be applied; and it is also satisfactory that extremely few either of the weak, formal, hackneyed Renaissance designs, or of the designs based on the ordinary suburban villa, which in some years have been numerous, have been submitted this year. On the other hand, at least ten or twelve designs have been made, every one of which shows original power and a fair command of the features and details out of which a design is built up on paper.

DESIGN (ELEMENTARY STAGE).

Examiners: T. Erat Harrison and W. G. Paulson Townsend.

There is an increase in the number of exercises sent up this year, and on the whole, a marked improvement in the quality of the work, both in design and execution. This improvement, like that of last year, is due to an increase of fairly good exercises and a diminution of very bad ones. There has not been any appreciable increase among the very good.

DESIGN (ADVANCED STAGE).

Examiners: Walter Crane and Lewis F. Day.

On the whole, it is satisfactory to state that the general character of the designs submitted, the type of ornament and its treatment, are in advance of what they were. There is, on the one hand, less harping upon stereotyped forms of design, and on the other less indulgence in reckless extravagance of line or form without reference to constructive necessities. The tone of the work seems generally healthier.

DESIGN (HONOURS).

Examiners: John D. Batten and Walter Crane.

The examiners are glad to be able to note a very marked improvement in the character of the designs for a medal—the more so as last year they had occasion to deplore the inadequacy of the papers received in response to a similar exercise. On the whole, indeed, it may be said that the candidates showed considerable sense of the requirements of a medal, and a capacity for representing figures in relief.

MODELLING DESIGN (ADVANCED STAGE).

Examiners: D. McGill and Bertram MacKenna.

The average of merit is higher, particularly in the sense that there is a smaller proportion of very bad designs.

There are a good many designs which reach a high standard of merit, and a few which are really excellent. The number of exercises which exhibit a thoroughly good treatment of mouldings is very small, and another prevailing fault is a tendency of over-enrichment.

MODELLING DESIGN (HONOURS).

Examiners: T. G. Jackson, R.A., and W. Goscombe John, A.R.A.

The examiners consider that the quality of the work shown is inferior to that of last year.

Scarcely any of the designs show the slightest acquaintance with the principles of architectural design, and the examiners would repeat what they said last year, that students should not be allowed to enter for this examination till they

have had a sufficient training in architecture as well as modelling.

WORKS SUBMITTED FOR NATIONAL COMPETITION.

MODELLING FROM THE ANTIQUE, MODELLING ORNAMENT FROM CASTS, MODELLING FOLIAGE FROM NATURE.

Examiners: H. H. Armstead, R.A.; T. Brock, R.A.; G. Simonds.

Modelling the Figure in the Round from the Antique.—The examiners notice with regret a decided falling off, both the number and the quality of the works submitted this year for competition.

Modelling in Relief from Figures in the Round.—The examiners show little appreciation on that of last year. The examiners accordingly regret that they are again unable to make an award.

Modelling Heads and Busts from the Antique.—The examiners are glad to see that the improvement which was apparent last year has been maintained.

Modelling Ornament from Casts.—The works in general show little appreciation by the students of the refinement of the curves of the originals, and of the play of light and shadow on the ornament.

Modelling Foliage from Nature.—The quality of the works, though good, hardly reaches the standard of last year. With regard to the value of this study it is to be regretted that a small number of works is submitted.

MODELLING THE HUMAN FIGURE FROM NATURE.

Examiners: T. Brock, R.A.; W. R. Colton; W. Goscombe John, A.R.A.

Modelling Heads in the Round from Life.—The works on this subject show an improvement on that of last year, though there is a decrease in the number of examples.

Modelling the Human Figure in the Round from Life.—The quality of the work as a whole is similar to that of last year.

Modelling the Human Figure in Relief from Life.—The works submitted show some slight improvement, but it is to be regretted that there is not a better competition, as the study is a very important one, and its careful pursuit must prove the greatest benefit to the student.

MODELLING DESIGN.

Examiners: H. H. Armstead, R.A.; T. Brock, R.A.; T. G. Jackson, R.A.

Though the quality of the work submitted is not high, it reaches the standard of last year's competition.

In decorative work, sculpture and architecture are necessarily combined, and ought to be equally well executed. The examiners regret that in no case has the architectural part been successfully treated this year.

DRAWING FROM THE ANTIQUE, DRAPERY, &c.

Examiners: H. Draper; Seymour Lucas, R.A.; W. F. Yeames, R.A.

Drawings of Heads.—With one or two exceptions the quality of the work is much below the average.

Drawings of Hands and Feet.—The examiners regret that with one exception, the drawings submitted show no improvement upon last year's work.

Drawing the Full-length Figure.—Though not reaching the level of former years, the work includes some excellent drawings. A pleasing feature that the examiners notice this year is the method and delicacy of execution in a majority of the works.

Drapery upon the Antique Figure.—The examiners notice with regret that the quality of the work has fallen off. None of the studies reach the standard required for the award of a silver medal.

Anatomical Studies of the Human Figure.—The work is not quite equal in delicacy and excellence of drawing to that of last year.

DRAWING AND PAINTING FROM THE LIVING MODEL.

Examiners: E. J. Gregory, R.A.; H. S. Tuke, A.R.A.; W. F. Yeames, R.A.

Drawing Heads from Life.—The examiners are pleased with the work in this subject, and although there is room for improvement, which reaches the standard for a silver-medal award, the work generally is of a high average.

Details: Hands and Feet.—The examiners are pleased with the show of work in this subject.

Drawing Full-length Figures.—Although there is nothing worthy of a gold medal, the general level of the work is high, and the method of execution generally adopted is satisfactory to the exercise.

Time Studies.—The examiners are pleased with the display of works in this particularly useful study.

Drapery Studies.—The examiners are pleased with the efforts made by the students in this subject, but a

appointed with the results, considering the work that has been submitted in previous years.

Painting Heads from Life.—The examiners are disappointed with the work in this subject.

Painting the Figure from Life.—The work in this class is below what the examiners expected to see.

PAINTING FROM FLOWERS AND STILL LIFE.

Examiners: H. H. La Thangue, A.R.A.; G. D. Leslie, R.A.; W. F. Yeames, R.A.

The examiners would like to point out that although a still-life painting may be a beautiful work of art, the principal motive for the student in painting from still life should be to obtain experience of a technique which he has not hitherto mastered. Instead of this, in the majority of examples submitted to them the examiners regret to find the study of still life regarded too much as an end in itself, much time and labour being wasted in elaborating representations of groups of objects arranged with a view to pictorial effect. Works of this description are in the opinion of the examiners of little educational value.

Painting in Oil-Colours: Flowers and Still Life.—The examiners feel that the work does not reach the standard of former years. With but few exceptions a want of interest on the part of the students is still apparent, and the examiners repeat their remark of last year, that painting from still life, which should be a delightful study, seems to be regarded as a tiresome task. The result is that the work in general is more remarkable for patient labour than artistic spirit.

Painting in Water-Colours: Flowers and Still Life.—The average of the work in this class is below that of last year, and the examiners regret that a want of mental activity is shown in the majority of the works which leads to little but supplied industry.

Studies of Buildings.—The examiners are glad to see more studies of old buildings of interest in the vicinity of the schools from which they come, and that the quality of the work is better than usual. Two very creditable tone studies were sent from Wellington, New Zealand.

PAINTING FLOWERS WITHOUT BACKGROUNDS, STUDIES OF PLANTS IN PREPARATION FOR DESIGN.

Examiners: E. F. Brewtnall; Walter Crane; G. D. Leslie, R.A.

Painting Flowers without Backgrounds.—The standard in quality of the work in this class is well maintained.

Studies of Plants, &c., in Preparation for Design.—The examiners are pleased to see that some pains have been taken to meet the suggestions made in last year's report. As a whole the work shows careful observation and conscientious craftsmanship.

BOOK ILLUSTRATIONS, LETTERING, DESIGNS FOR COLOUR PRINTS, POSTERS AND BOOK COVERS.

Examiners: W. Crane; T. Erat Harrison; H. Holiday.

Book Illustrations.—The quality of the work as a whole hardly reaches the level of former years. The examiners are, however, pleased to observe that this year there is less extravagance and affectation.

Lettering.—The examiners are pleased to see that the subject of lettering has been seriously studied, both from the point of view of spacing as well as form of type. On the whole the work is very creditable.

Colour Prints.—More attention appears to have been paid this year to the adaptation of the drawings to the various processes of reproduction. The work in this class continues to maintain its standard, and the subject seems to attract a good deal of attention in the different schools.

Posters.—The show of works in this class is not remarkable either for quality or quantity, but this may be a sign that students have spent their time more profitably upon less general kinds of design.

Book Covers.—The designs in this class are not inferior to those of last year, but the designs for tooled covers again show a lack of taste. Their suitability for reproduction is in most cases proved by the executed covers accompanying them.

LACES, EMBROIDERY AND DAMASKS.

Examiners: A. F. Brophy; A. S. Cole, C.B.; W. Crane.

Designs for Wearing Laces and Lacelike Articles.—In this class the standard of work is well maintained. The designs show more variety than is usually the case, and are in general better adapted to the various processes employed. Devices based on natural forms are freely introduced into many of the designs and are treated as a rule successfully and consistently.

Designs for Embroidery.—The quality of the work this year is a higher level than before, taste and restraint being as noticeable. The designs showed that thought had been given both to the purpose for which they were intended and to the materials in which they were to be executed.

Designs for Damasks.—The examiners regret that the work does not reach the level of last year. A number of capable

designs are submitted in which the conditions of the material are fairly met.

STENCILS AND CARPETS.

Examiners: W. Crane; Lewis F. Day; J. H. Dearle.

Designs for Stencil Hangings.—The general standard of work is good, many competent designs being submitted in which less extravagance and more taste is noticeable than in former years.

Designs for Carpets.—The examiners are disappointed to find so few good specimens in this useful and interesting class of design. Some of the drawings are workmanlike but very commonplace.

PRINTED TEXTILES, WOVEN TEXTILES, LACE FOR HANGINGS, EMBROIDERY, MOSAICS.

Examiners: A. F. Brophy and Lewis F. Day.

Designs for Printed Mustins.—These designs maintain a high level. In general there is a precision about the drawings which the examiners are glad to see. The majority of the works submitted are distinguished by a prettiness and delicacy which is essential in designs for this material.

Designs for Printed Hangings.—The examiners regret that this very important branch of design has not had sufficient attention paid to it, and that the students have not taken advantage of the scope which cotton printing offers.

Designs for Woven Textiles.—The examiners regret that more attention is not given by the students to this important class of design. They note, however, with satisfaction that the designs by students who appear to be under technical instruction in weaving show a very fair level of taste, especially in the case of small patterns of two colours, in which due consideration seems to have been given to the effect of the reduction which ensues when the patterns are carried out in the material and there repeated, generally on a smaller scale than that of the drawings. On the other hand, the larger and more ambitious designs are not executed in an entirely workmanlike manner.

Designs for Lace Curtains.—The quality of the work in this class is exceedingly poor, and the examiners regret to see so little effort in this direction.

Designs for Embroidery for Curtains, &c.—The quality of the work in past years has been much superior to that now submitted.

Designs for Mosaics.—Though the number of designs submitted is small a high standard of excellence is reached.

INTERNAL DECORATIONS, FURNITURE, STAINED GLASS AND IRONWORK.

Examiners: T. G. Jackson, R.A.; Seymour Lucas, R.A.; Sir W. B. Richmond, K.C.B., R.A.

Designs for Internal Decorations and for Furniture.—The work in this class of study is very inferior to that of last year. It is to be regretted that the tendency towards eccentricity for eccentricity's sake is on the increase. The apparent aim of the majority of the students cannot be expressed better than in the words of one of the competitors—"The main aim in this design is individuality and quaintness."

Designs for Stained Glass.—There are not so many exhibits of a high class this year. The examiners regret that there should be a falling off in this important and educational branch of study, which ought to be encouraged.

Designs for Ironwork.—The examiners regret that the designs submitted in this important branch of fine-art industry do not reach a higher level. They observe that in the majority of cases the construction of the ironwork is not sufficiently understood.

METALWORK, ENAMELS, JEWELLERY.

Examiners: A. F. Brophy; W. Crane; Nelson Dawson.

Designs for Metalwork.—The level of the work is high and the examiners are of opinion that a greater knowledge of the practical requirements is shown this year; they still, however, observe here and there a tendency to repeat hackneyed forms.

Designs for Enamels.—The examiners are pleased to see that the designs as a whole show great progress in the appreciation of the technical difficulties in the art of enamelling.

Designs for Jewellery.—The designs for jewellery show rather more variety this year, though there is a tendency to follow the current fashionable forms instead of originating those forms which are more suitable for the purpose and the material employed.

POTTERY, TILES, PANELS AND FRIEZES.

Examiners: S. J. Cartledge; W. de Morgan; R. H. A. Willis.

Pottery.—The average quality of the work submitted in this class is very good, perhaps even equal to that of last year. Though the difficulties of the material have not yet in all cases been surmounted, there is a distinct advance in this respect.

Tiles.—Though the designs in this class hardly reach last year's standard, the examiners notice that, in general, attention has been paid to the necessities of the material.

Panels and Friezes.—Much excellent work is presented this year in which a good understanding of the processes of stencilling is shown.

HISTORIC ORNAMENT.

Examiners: T. Erat Harrison; Edward S. Prior;
Sir W. B. Richmond, K.C.B., R.A.

Historic Ornament—The examiners notice with regret that the requirements of studies of historic ornament are not yet completely understood, too many pictorial or still-life studies instead of working drawings being submitted.

MEASURED ARCHITECTURAL DRAWINGS, ARCHITECTURAL DESIGNS.

Examiners: J. Belcher, A.R.A.; Reginald Blomfield;
T. G. Jackson, R.A.

Architectural Drawings from Actual Measurements.—This year there are fewer exhibits in this class of study than usual, and the average quality of the work is poor.

Architectural Designs.—Few meritorious designs are submitted this year.

MR. WHISTLER'S WILL.

THE will of Mr. James Abbott McNeill Whistler, of 74 Cheyne Walk, Chelsea, and formerly of Fitzroy Street, Fitzroy Square, who died on July 17 last, aged sixty-eight or sixty-nine years, dated November 27, 1896, is as follows:—"I bequeath my wife's entire collection of garnets rare and beautiful, together with sprays, pendants, &c., of the same style of work or setting in white stones, brilliants or old paste, our entire collection of beautiful old silver and plate, and the complete collection of old china to the Louvre. This bequest is on condition that the three collections be gathered together in one and displayed as the 'Beatrix Whistler Collection.' Also that in it, or appropriately in the same room, shall be hung proofs of my wife's exquisite etchings, of which I leave a list attached to my will signed by me. And as to the rest and residue of my estate, of whatsoever kind, I devise and bequeath the same to my wife's sister and my ward Rosalind Birnie Philip; and I direct that she shall thereout aid my wife's son, Edward Godwin, in his training as sculptor by allowing him an income to the extent of one-fifth of the income of such residue when invested, such one-fifth to be paid to him until he attains the age of twenty-three years; and I appoint Rosalind Birnie Philip as sole executrix of my will. Signed." By a codicil made May 7, 1903, Mr. Whistler revoked the bequest to the Louvre, but he expressed a desire, without any wish to control or bind Miss Philip, that, in the event of her retaining the collection of garnets during her life, she would bequeath them to the Louvre upon like conditions with those contained in his will. The late Mr. Whistler's estate has been valued at 10,602*l.* 16*s.* gross, including 9,948*l.* 3*s.* 5*d.* in net personality.



Trades Unionism.

SIR,—This morning I had a call from a gentleman connected with one of the largest firms on the Continent, but who are eager to give a turn to British industry. He was explaining to me that in consequence of the difficulties of getting skilled labour in this country his firm had positively been compelled to send the raw material (British) to the Continent, have it worked there and return it to England. He has recently taken a contract for a job which made it requisite for him to employ twenty-two British workmen; his foreman came to him last week and told him sixteen must go, as they were spoiling the materials and also the other men on the job. These were all trades unionists and were paid 1*s.* per hour. The difference between the union man in this country and his fellow-unionist abroad was that supposing the latter was engaged on a piece of wood-carving, joinery or marblework, and fifteen or twenty minutes would finish the work, you could rely on his showing sufficient interest to forget the time. On the other hand, the British working man on the stroke of time would put down his tools and depart. My caller stated that he was most anxious to employ nothing but British labour. Am I to blame, Mr. Editor and my fellow architects, if I employ this foreign firm? Their productions are most beautiful, and their charges are in every way most reasonable. Apologising for taking up so much of your space, I am, &c.,

London: September 8, 1903.

PROFESSION.

GENERAL.

The King sent last Saturday 50*l.* to the Rev. H. Macdonald, vicar of Grayne, near Rochester, towards the restoration of Grayne Church. The German Emperor has also given aid and contributions have been received from the Prince of Wales and the Duke of Connaught. The vicar has raised 1,100*l.* but 700*l.* more is needed, exclusive of the porch.

The Prize offered by the Blackpool Corporation for the best pictorial poster design advertising the attractions of the watering place has been won by Messrs. Hubner & Wainwright of London. Drawings were sent in from America, Germany, France and other countries.

The Temporary Footbridges employed at London Bridge are to be sold. They are 1,000 feet long, were erected at a cost of 30,000*l.*, and consist of 800 tons of steel girders, 30,000 feet of galvanised corrugated iron, 30,000 cubic ft. of timber, 4,000 feet of steel rails, 4,000 feet of gutter-pipe and 225 squares of 3-inch flooring.

The Emperor of Germany has resolved to exercise his authority in sanitary affairs. Typhoid having broken out at Metz owing to the impurity of the water, His Majesty has issued a communication to Prince Hohenlohe, in which he says:—"There must be an end to this. In war time this state of things would inevitably result in a catastrophe. I must appeal to your Grace to proceed without the slightest delay, with the most effective means at your disposal, to put a stop to this and compel the town to do its duty."

The Following Clauses are proposed to be added to municipal contracts in Johannesburg:—"(1) To pay wages at rates not less than the current local standard rates and to observe the hours and other conditions of labour which are recognised as proper in the district; (2) to employ only skilled tradesmen in the performance of skilled tradesmen's work; and (3) not to sublet or assign the contract or any part thereof or any interest therein, except with the written consent of the town engineer and on such conditions as he may approve."

Mr. Herbert Ford, architect, died at his residence, Blackheath on September 1 after five days' illness at the age of seventy. He erected several large buildings in the district, including Messrs. Pawsons' in St. Paul's Churchyard.

Various Johannesburg Architects have been engaged in preparing designs for the new central railway station, including the headquarter offices of the Central South African Railways. One by Mr. T. A. Moodie, late of Glasgow, is accepted.

The Belfast City Council, in committee, have appointed Mr. Henry A. Cutler city engineer and surveyor of Belfast by a majority of twenty-seven votes to nineteen cast for Mr. J. J. Man. Mr. Cutler, who is a Scotchman, was formerly in the office of a Westminster engineer, and was entrusted with the designs and calculations of the structural ironwork of the Imperial Institute. There were between sixty and seventy candidates for the post.

Mr. George Spiers Kenneth, architect, died in Glasgow Infirmary on Sunday, from injuries received in the fall accident at St. Enoch Station in July last. This increases the number of deaths due to the accident to 16.

An Autumn Salon will be opened at the end of the month in the Petit Palais of Paris. Painting, sculpture, architecture, engraving will be represented, as well as objets d'art, &c.

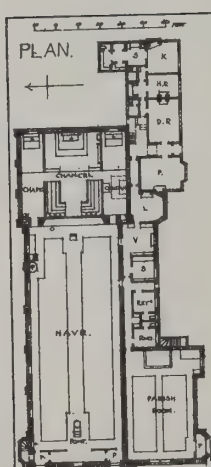
The Late Henri-Charles Bunel was remarkable among the architects of Paris for the number of his official appointments. Especially was he connected as architect with the prefecture of police. He has been succeeded in that latter office by M. Jules Pray.

The Foundation-stone of the second lunatic asylum in the county of Worcestershire, which is to be erected on the Barnsley Hall estate, near Bromsgrove, was laid last week. The present asylum has accommodation for over 1,000 patients and has for a considerable time past been full. The new estate comprises 324 acres. The plans show accommodation for 570 patients, with administrative buildings, and provide for possible extension. The contract for the building amounts to over 150,000*l.*, and the total cost is estimated at nearly 200,000*l.*

Mr. James Higson, J.P., of Salford, has been nominated by the Council of the National Association of Master Painters and Decorators of England and Wales, Incorporated, for the position of President for 1903-4, and it is probable that the Convention next year will be held at Manchester.

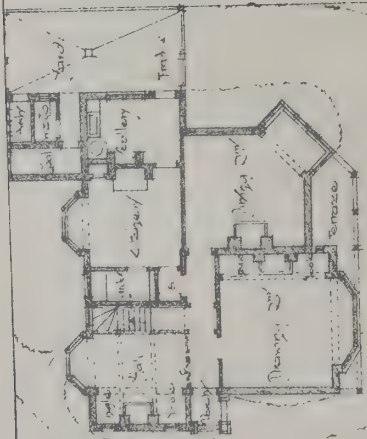
The Thirteenth Centenary of the restoration of the ancient bishopric of London by the consecration of Merton Priory in 604 by St. Augustine will be celebrated early in January next.

Extensive Sanitary Improvements have been commenced at Naples. Parts of the slum property in the district known as the "Anticaglia," beneath which are the ruins of the ancient Greek city, are to be demolished.



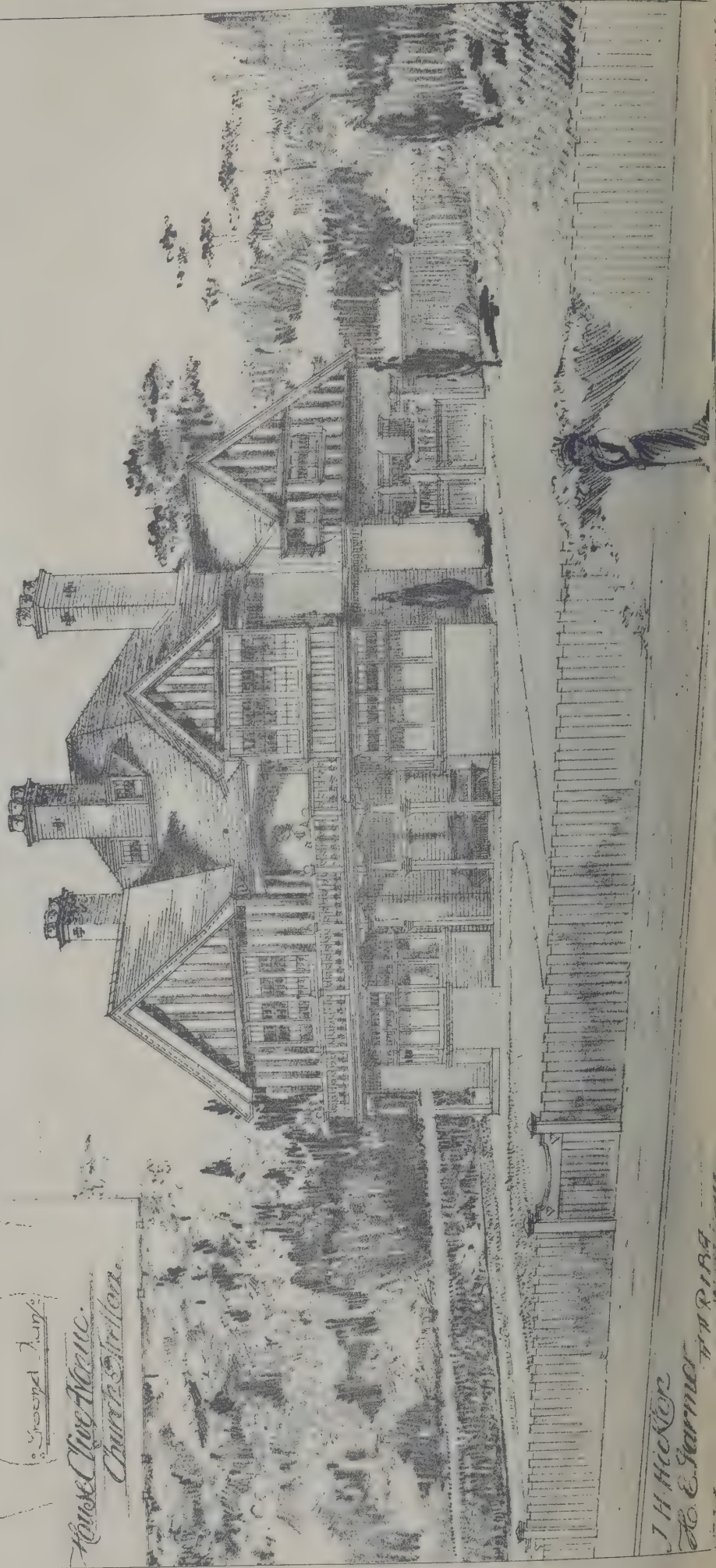
COMPETITION
DESIGN FOR
NEW CHURCH
AT
SOUTHERN
- ON - SEA
GEOFFREY L. ...
ARTHUR STITT
JOINT ARCHT.
LONDON, C.
MCMII





Ground Floor.

*House Five Acres.
Church & Hall.*



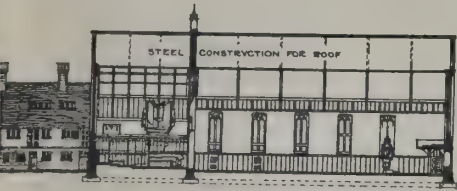
*J. H. Hickson
H. E. Garmot
777 R. B. B.*



Boose Olive Avenue Chrych Stretton.

• Jackson & Fanner H. J. B. A. Habsalt.

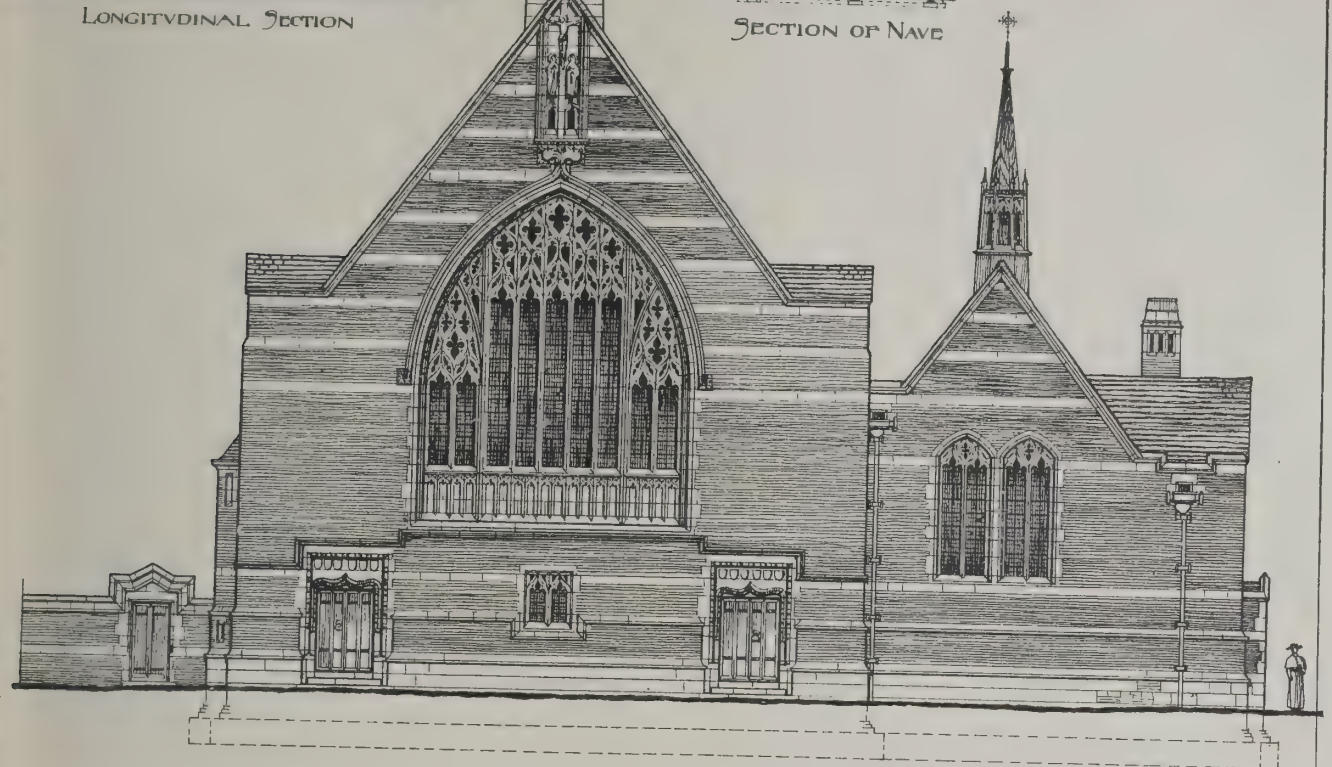
COMPETITION DESIGN FOR CHURCH CLERGY HOUSE AND PARISH ROOM.
SOUTHEND-ON-SEA.



LONGITUDINAL SECTION



SECTION OF NAVE



WEST ELEVATION.



SECTION OF CHANCEL



SOUTH ELEVATION

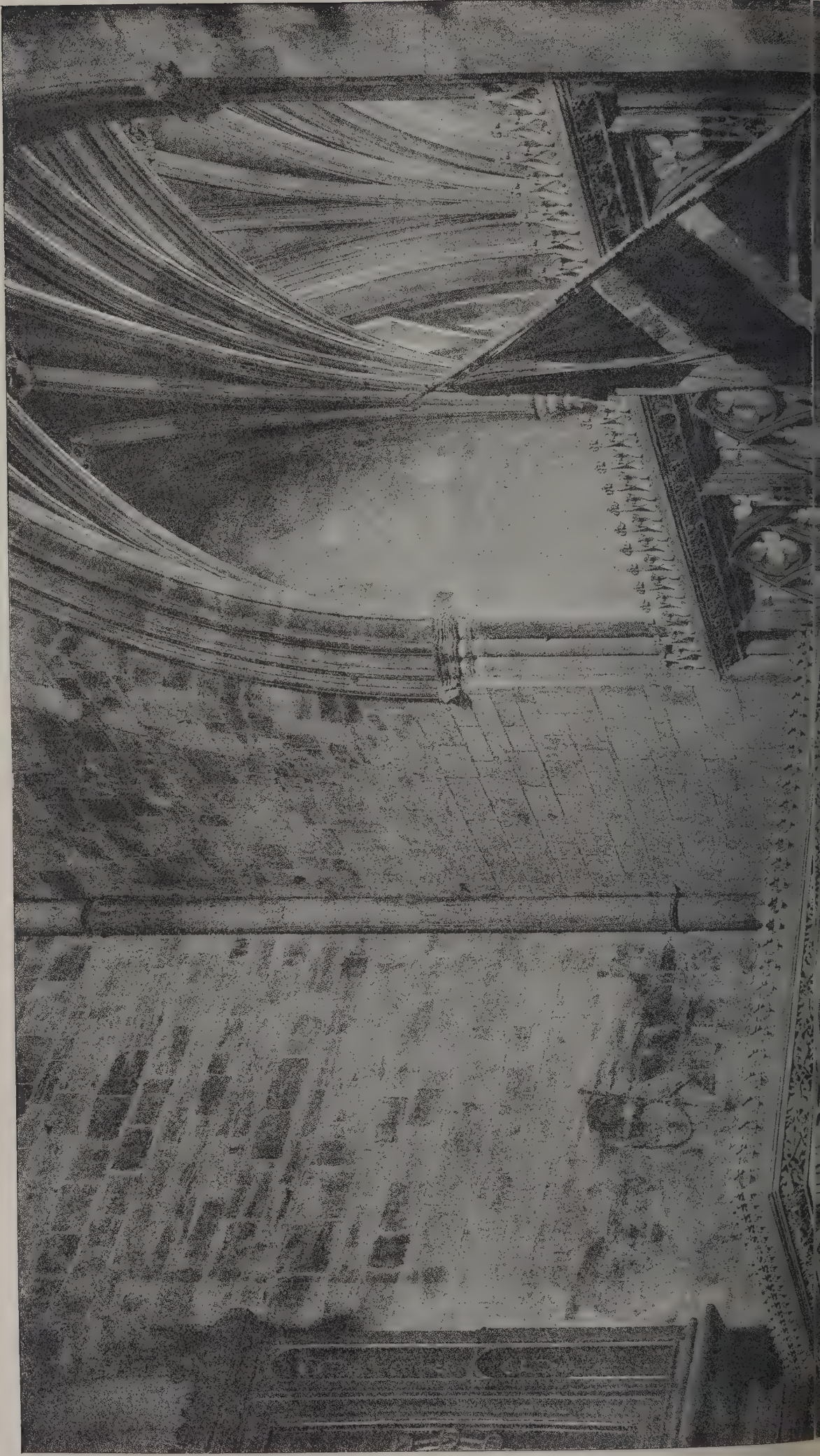


EAST ELEVATION..

JOINT ARCHITECTS.
LONDON. W.C. MCMLII.

FRY LYCAS. ARIBA.
STRATTON. ARIBA.

The Architect, Sept. 11th 1903.





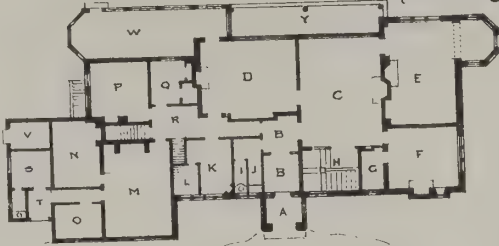
PHOTOGRAPHED BY S. B. BELL & CO. 68 OXFORD STREET, W.

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CATHEDRAL SERIES, No. 464.—EXETER: SYLKE CHANTRY, AND CHAPEL OF S. PAUL.

"Abbotsford" St. Helen's Wood. Basingstoke

- A. PORCH
- B. ENTRANCE HALL
- C. HALL
- D. DINING RM
- E. DRAWING RM
- F. LIBRARY
- G. DARK RM
- H. PRINCIPAL STAIRS
- I. W.C.
- J. LAVY
- K. HOUSEKEEPER'S RM
- L. STORES
- M. KITCHEN
- N. SCULLERY
- O. LARDER 2ND
- P. 5TH HALL
- Q. PANTRY
- R. SERVING
- S. KITCHEN
- T. "WOODS" ENTR
- V. WOOD
- W. CONSERVATORY
- Y. VERANDAH



Sketch Plan.

For J. S. Henderson Esq.

Fred. G. Knight. FRIBA. Archt.





PHOTO-LITHO SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

RIGHTON.—Nov. 9.—Designs are invited for a new school. Premiums of 50l, 30l. and 20l. will be paid to the second and third premiated designs respectively. Papers up to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. Secy, Brighton and Hove Hospital for Women, 76 West Street, Brighton.

DUBLIN.—Sept. 30.—Designs and specifications wanted for men's cottages, semi-detached or terraces, each cottage to exceed £100. The successful plan to become the property of the company on payment of £20. Mr. Francis B. O'Connell, Great Southern and Western Railway, Kingsbridge Road, Dublin.

WIMBORNE.—Oct. 7.—For sewage disposal of the village of Wimborne. Report, plan and estimate of probable cost. £100. 30 guineas. Further particulars, Mr. R. Loneragan, Wimborne Place, Folkestone.

WIMBORNE.—Sept. 14.—Competitive designs are invited for a new building to be erected in Church Street at a cost of £100. Premiums of 30l., 20l. and 10l. will be awarded for

designs adjudged of sufficient merit and placed first, second and third in order respectively. Mr. J. Ainsworth Settle, Municipal Buildings, Heywood, Lancs.

LEYLAND.—Sept. 26.—Plans are invited for the laying-out and development for municipal and other purposes of about 11,902 square yards of land in Church Road and Sandy Lane, Leyland, Lancs. A premium of 15l. 15s. is offered to the author of the plan considered to be the best design. Mr. M. H. Wilkinson, surveyor, 21 Towngate, Leyland.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75l. for design placed first, and one of 25l. for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100l., 50l. and 30l. respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 22.—Competitive plans are invited for the erection of a hospital and offices. Conditions of the competition and full particulars may be obtained from Mr. J. E. Shaw, clerk to the Lunacy Board, County Buildings, Ayr.

SCOTLAND.—Competitive plans invited for halls proposed to be erected at Overnewton by the St. Vincent (Sandyford) Masonic Lodge, Glasgow. Full particulars from Messrs. Walker, Fraser & Steele, 74 Bath Street, Glasgow.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100l., 50l. and 25l. will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20l., 10l. and 5l. will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

CONTRACTS OPEN.

ABBEY WOOD.—Sept. 25.—For the erection of a temporary public elementary school at Crossness, Abbey Wood, Kent, to accommodate 150 children. Mr. W. Egerton, architect, 12 Queen's Road, Erith.

ASCOT.—Sept. 15.—For altering the Queen's Hall at Ascot, and building a new police-station upon same site. Mr. Joseph Morris, county surveyor, Broadway Buildings, Reading.

ASPATRIA.—Sept. 15.—For the erection of two dwelling-houses at Aspatria. Specifications may be seen at 45 Lawson Street.

BARNSELY.—Sept. 16.—For the erection of school and classroom at Smithies. Messrs. Wade & Turner, architects, 10 Pitt Street, Barnsley.

BIRMINGHAM.—Sept. 16.—For the erection of engine and boiler-houses, including seatings for five Lancashire boilers and the construction of a new flue, adjoining the present pumping station at Monument Lane, Edgbaston, Birmingham. Mr. Edward Orford Smith, town clerk, Council House, Birmingham.

BIRMINGHAM.—Sept. 23.—For the erection of the Council school in Oldknow Road, near Victoria Park, Small Heath. Mr. A. Rowse, surveyor, 3 Newhall Street, Birmingham.

BLACKBURN.—For the erection of cottage homes for disabled soldiers of the East Lancashire Regiment at Blackburn. Messrs. McCall & Robinson, architects, 7 Tacketts Street, Blackburn.

BOROUGH.—Sept. 17.—For repairs, &c., of the St. George's workhouse, Mint Street, S.E. Mr. A. J. Wade, architect, 36 Fifth Avenue, Harrow Road, W.



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BRADFORD.—Sept. 15.—For the following work, for the Bradford School Board:—Alterations to Barkerend Board school; erection of two iron and wood sheds in the yards adjoining the School Board offices, Manor Row; and alterations to boundary walls at the Westgate Hill school. Mr. Tho Garbutt, clerk, School Board Offices, Manor Row, Bradford.

BRADFORD.—Oct. 1.—For the erection of office, store, shed, &c., at Gouthwaite Lodge, near Pateley Bridge. Mr. James Watson, Town Hall, Bradford.

BRIDLINGTON.—Sept. 17.—For the erection of a greenhouse near Quay Road. Mr. E. R. Matthews, borough surveyor, Town Hall, Bridlington.

BRIDLINGTON.—Sept. 19.—For lengthening the Clough bridge and the construction of a retaining wall to hold up the proposed widened roadway of Clough Bridge Road. Mr. E. R. Matthews, C.E., borough surveyor, Town Hall, Bridlington.

BRIDLINGTON.—Sept. 19.—For the erection of a public urinal on the Crane Wharf. Mr. E. R. Matthews, borough surveyor, Town Hall, Bridlington.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CLACTON-ON-SEA.—For the erection of detached residence. Mr. George Gardiner, architect, 11 Marine Parade, Clacton-on-Sea.

COLCHESTER.—Sept. 16.—For the erection of a pair of cottages, Mersea Road, Colchester. Mr. J. W. Start, architect, Cups Chambers, Colchester.

COVENTRY.—Sept. 14.—For the erection of thirty-four cottages at Wolston, near Coventry. Mr. Herbert W. Chataway, architect, Trinity Churchyard, Coventry.

CROYDON.—Sept. 14.—For the extension of the electricity works, Factory Lane, Croydon. Mr. F. C. Lloyd, town clerk, Town Hall, Croydon.

DOVER.—Sept. 22.—For disinfecting laundry, &c, block at the small-pox hospital at Poulton, near Dover. Mr. Henry E. Stilgoe, engineer, Maison Dieu House, Biggin Street, Dover.

EPSOM.—Sept. 17.—For the erection of destructor buildings, with shaft and other works, at the sewage farm, Hook Road. Mr. Edward R. Capon, surveyor, Council Offices, Bromley Hurst, Church Street, Epsom.

EVENWOOD.—For the erection of dwelling-house at Evenwood, Durham. Messrs. Pegg & Farrow, architects, 7 Mark Place, Barnard Castle.

FAREHAM.—Sept. 21.—For the erection of an engine-house, &c, at the county asylum, Knowle, Fareham, Han. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

FINCHLEY.—Sept. 14.—For the erection of sixty dwellings in four blocks in Squires Lane, Church End, Finchley. Mr. E. H. Lister, clerk, Council Offices, Church End, Finchley.

HALIFAX.—Sept. 15.—For the erection of a shed covering 1,200 square yards, and other alterations at the Albert Foundry in Albert Road. Messrs. Jackson & Fox, architects, 7 Rawlinson Street, Halifax.

HALIFAX.—Sept. 29.—For the erection of silversmiths' works at Mile Cross, Halifax. Messrs. Joseph F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

HAMPSTEAD.—Sept. 30.—For the erection of tenement stabling, sheds, workshops, &c., at the new depot and stone yard at Lymington Road, Finchley Road, Hampstead. Mr. O. Winter, borough engineer, Town Hall, Hampstead.

HARROGATE.—For the erection of a small farmhouse at Pannal Ash. Messrs. Bolshaw & Stevens, architects, 1 Priory Street, Harrogate.

HASTINGS.—Sept. 18.—For the erection of a coastguard station, consisting of houses for an officer and seven men, Fairlight, near Hastings. Particulars will be supplied on application to the Director of Works Department, Admiralty.

HIGH WYCOMBE.—Sept. 17.—For the erection of a contractor's lodge to be erected near to isolation hospital, a Lane, High Wycombe, with hollow walls, rain-water pipe (12 feet by 6 feet), drains and suitable outbuildings. Mr. J. Reynolds, clerk, 12 Easton Street, High Wycombe.

HORTON.—Sept. 19.—For the fitting-up of nine half-pauper rooms at the asylum. Mr. R. W. Partridge, clerk of the asylums committee, London Asylums Committee Office, 6 Westloo Place, S.W.

HULL AND SELBY.—Sept. 16.—For the erection and completion of station buildings, warehouses, weigh offices, stationmaster's houses at Hessle, Ferriby and Brough, for the North-Eastern Railway Company. Mr. William Bell, architect, York.

HULL.—Sept. 16.—For the erection of a shop in Aintree Road, Hull, for the North-Eastern Railway Company. Mr. William Bell, architect, York.

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IRELAND.—Sept. 14.—For the erection of four cottages and the conversion of single rooms into a dormitory at the Armagh District lunatic asylum. Mr. R. H. Dorman, Court House, Armagh.

IRELAND.—Sept. 14.—For an extension to the fitting shops, Dundalk, for the Great Northern Railway Company (Ireland). The Secretary, Amiens Street Terminus, Dublin.

IRELAND.—Sept. 14.—For the erection of cottages, Limavady, viz. two in the townland of Ballyleighry, two in the townland of Carrowclare, four in the townland of Crindile. Mr. William Crawford, clerk, Council Offices, Limavady.

IRELAND.—Sept. 16.—For enlarging and repairing the Church Street schools. Mr. W. W. Larmor, Banbridge.

IRELAND.—Sept. 16.—For erection of five cottages, with out offices, piers and gates, and for the fencing of three plots at Kinsale. Mr. R. Evans, 53 South Mall, Cork.

IRELAND.—Sept. 16.—For the erection of a greenhouse in Woodvale Park and a pavilion in Falls Park, Belfast. Sir Samuel Black, town clerk, Belfast.

IVYBRIDGE.—Sept. 17.—For the erection of a cowhouse on the Glebe Farm, The Glebe, Ermington, Ivybridge, Devon. Mr. Toms, Luson, Ermington, Devon.

JOHANNESBURG.—Oct. 19.—For the supply alternatively of gas generating plant or steam generating plant, and of gas motors or steam motors, with electric generators and all accessories, to the following specifications:—Specification No. 2.—Section A: Gas producer plant, capable of gasifying $7\frac{1}{2}$ tons of Transvaal coal per hour, with coal conveyer, cleaning and cooling plant and all accessories; sections B, C, D and E: Four gas-engines, each for driving a 1,350 kw. dynamo 2,000 B. h. p.; one gas-engine for driving a 675 kw. dynamo 1,000 B. h. p.; three gas-engines, each for driving a 675 kw. two-phase alternator (1,000 B. h. p.); two motor generators, each consisting of a 250 kw. two-phase alternator and two 50 kw. dynamos; two balancers, each consisting of two 50 kw. dynamos. Specifications, forms of tender, and a plan of the site may be seen on and after September 7, at the offices of the Town Clerk, Johannesburg, or at the offices of the Council's consulting engineers, Messrs. Mordey & Dawbarn, 2 Victoria Street, Westminster, S.W.

KEIGHLEY.—Sept. 16.—For the erection of conveniences 1 West Lane and Leeds Street, Keighley. Mr. W. H. Hopkinson, borough engineer, Keighley.

KIRKBY-IN-FURNESS.—Sept. 16.—For alterations and additions to co-operative stores, Kirkby-in-Furness. Mr. Newby, architect, Cartmel.

LANCASTER.—Sept. 19.—For the erection of a new produce market. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEEDS.—Sept. 15.—For concrete engine and dynamo foundations in Whitehall Road. Messrs. Milnes & France, architects, 99 Swan Arcade, Bradford.

LEEDS.—Sept. 15.—For the erection of a boundary wall and entrance gates at the new workshops, Street-Lighting Department, Springwell Street, Leeds. Particulars may be obtained at the City Engineer's Office, Municipal Buildings, Leeds.

LEVENSHULME.—Sept. 16.—For the erection of the proposed Carnegie free library in Cromwell Grove and Barlow Road. Mr. James Jepson, architect, Guardian Chambers, Tiviot Dale, Stockport.

LONDON.—Oct. 6.—For the repairing and repainting of Abbey Mills pumping station, Abbey Lane, Stratford. Particulars at the Engineer's Department, L.C.C., County Hall, Spring Gardens, S.W.

LONDON.—Sept. 30.—For the erection of tenements, stabling, sheds, workshops, &c., at the new depot and stone-yard at Lymington Road, Finchley Road, Hampstead. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

LONDON.—Oct. 6.—For the construction of an underground convenience at the southern end of St. Martin's-le-Grand. The Town Clerk, Public Health Department, Guildhall.

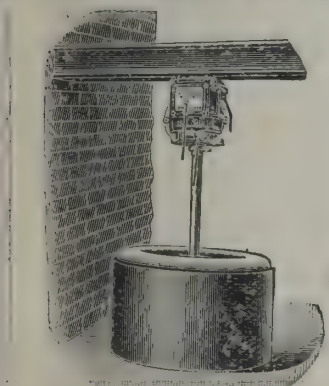
LONDON.—Oct. 6.—For the construction of an underground convenience in Falcon Square. Town Clerk, Public Health Department, Guildhall, E.C.

MANCHESTER.—Sept. 15.—For erection of a public wash-house and wash-baths at Pryme Street, Hulme. Particulars may be obtained at the office of the City Architect, Town Hall, Manchester.

MIDDLESBROUGH.—Sept. 21.—For the erection of an infants' school, providing accommodation for 500, in connection with the Marton Road schools. Messrs. J. M. Bottomley, Son & Wellburn, architects, 28 Albert Road, Middlesbrough.

MUSWELL HILL.—Sept. 22.—For the erection of a sorting office. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

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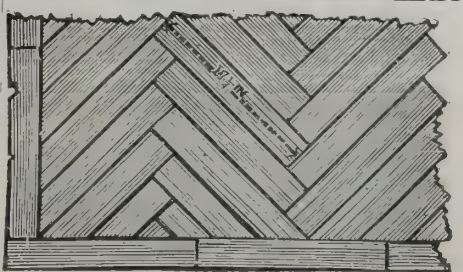
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FULL LIST, and dates when they appeared, of THE CATHEDRALS which have been published on Application to The Publisher.

NEWFIELD.—Sept. 19.—For the conversion of two cottages into a workmen's club, Newfield, Durham. Mr. J. Foster, Challies Street, Newfield, Willington.

PORTSMOUTH.—Sept. 18.—For the erection of two additional manual instruction centres. Mr. Alfred H. Bone, architect, Cambridge Junction, Portsmouth.

PORTSMOUTH.—Sept. 21.—For additions and alterations to the post-mortem room at the rear of the public baths, Park Road. Mr. Alexander Hellard, town clerk, Town Hall, Portsmouth.

PURFLEET.—For the erection of a row of twenty workmen's cottages. Mr. V. Millet, 72 Bishopsgate Street Within, E.C.

RUGBY.—Sept. 21.—For the erection of three cottages at Brownsover Mill, Rugby, and the construction of Park Road from the end of the present roadway to North Street. Mr. D. G. Macdonald, surveyor, Rugby.

SALTASH.—Sept. 24.—For renovating the Wesleyan Sunday schools, Saltash, including erection of new platform, dadoes, alteration to roof, painting, &c. Mr. J. H. Pooley, 104 Fore Street, Saltash.

SALTBURN.—Sept. 26.—For erection of Wesleyan church and schools at Saltburn. Messrs. Garside & Pennington, architects, Pontefract.

SCARBOROUGH.—Sept. 19.—For alterations and additions to the stables, sanitary department, Trafalgar Street West, Scarborough. Particulars on application at the Borough Engineer's Office, New Town Hall, St. Nicholas Street.

SCOTLAND.—Sept. 14.—For the extension of Macdonald Road electric-power station, Edinburgh. Mr. R. Morham, city architect, City Chambers, Edinburgh.

SCOTLAND.—Sept. 16.—For rebuilding a farm steading at Ardmedden, near Oldmeldrum. Mr. William Clark, architect, Methlick.

SCOTLAND.—Sept. 22.—For the erection of a manse in King Edward Street, Fraserburgh. Mr. W. S. F. Wilson, architect, Frithside Street, Fraserburgh.

SCOTLAND.—Sept. 21.—For the erection of the Carnegie public library, Motherwell. Mr. James Burns, town clerk, Motherwell.

STEPNEY.—Sept. 21.—For alterations to cider stores and rebuilding dwelling-house in Butcher Row, Ratcliff. Mr. Charles Dunch, architect, St. Clement's House, Clement's Lane, Lombard Street, London, E.C.

ST. MARYLEBONE.—Sept. 14.—For the extension and fitting of the underground public convenience at Oxford Circle. Mr. J. Paget Waddington, borough surveyor, Town Hall, Marylebone Lane, Oxford Street, W.

SWINDON.—Sept. 23.—For the erection of car depot stores, repair shops, &c. Messrs. Lacey & Sillar, engineers, 78 King Street, Manchester.

WALES.—Sept. 14.—For the erection of twenty houses at Cwmfelinfach, near Ynysddu. Mr. J. Boothman, School House, Ynysddu.

WALES.—Sept. 14.—For the erection of two new departments for boys and girls at Penygraig, Ystradfydw. Jacob Rees, Hillside Cottage, Pentre.

WALES.—Sept. 14.—For the erection of public offices at Morgan Street, Pontypridd. Mr. Henry T. Hare, architect, 13 Hart Street, W.C.

WALES.—Sept. 14.—For the erection of a Wesleyan chapel at Llanfyllin. Mr. T. Ridge, architect, Llanfechain.

WALES.—Sept. 14.—For the erection of a farmhouse at Nantgoy, near Blackwood. Mr. Edwd. Edwards, Maesruded Estate Office, Blackwood, Mon.

WALES.—Sept. 14.—For the erection of a Church mission room and Sunday school at Pontymister, parish of Risca. E. N. Johnson, architect, Risca.

WALES.—Sept. 15.—For the erection of eight houses on the Gwaun Duff yn estate, near the Blaenllynvi school, Caerau, and twenty houses on Caerau Road. Mr. J. P. Gibbon, Mining Offices, Maesteg.

WALES.—Sept. 16.—For alterations and additions to the Board schools at Coedybrain, Llanbradach. Mr. J. L. Phillips, architect, Windsor Place, Cardiff.

WALES.—Sept. 17.—For the erection of a Calvinistic Methodist chapel at Nantfyllen, Maesteg. The Rev. I. Solva Thomas, Garnwern Terrace, Nantfyllen.

WALES.—Sept. 19.—For rebuilding the Aberaman co-operative shops. Mr. Evan Jones, secretary, Cwmbran Industrial Co-operative Society, Ltd., Pitt Street, Aberaman.

WALES.—Sept. 23.—For the erection of twenty-nine houses at Rowles Square, Rhymney. Mr. W. H. Trump, solicitor, Rhymney.

WALES.—Oct. 2.—For the erection of a central public library, Holton Road, Barry. Messrs. Hutchinson & Page, architects, 11 John Street, Bedford Row, W.C.

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WELLINGBOROUGH.—Sept. 15.—For the erection of two cottages on the sewage farm, Irthlingborough Grange. Mr. J. E. H. de Key, surveyor, Park Road, Wellingborough.

WEM.—Sept. 14.—For the erection of a market house, assembly-hall, &c., at Wem, Salop. Mr. James Brown, architect, 12 Castle Street, Shrewsbury.

WIGAN.—Sept. 22.—For the enlargement of the post office at Wigan, for the Commissioners of H.M. Works and Public Buildings. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WOOLWICH.—Sept. 24.—For the erection of public baths and washhouses on site adjoining 240 High Street, Plumstead. Mr. Frank Sumner, borough engineer, Maxey Road, Plumstead.

QUEEN VICTORIA MEMORIAL.

A BUSY scene is presented on the southern side of the Mall and the ornamental lake in St. James's Park. The contractors have been preparing the ground plan from the drawings of the surveyors of the Office of Works. The work is of an extensive character, including the construction of new roadways, the diversion of present thoroughfares, the damming of three-quarters of an acre of the lake, tree-cutting, and elevating the level of the lake bed to that of the Mall about 40 feet. About 300 workmen are engaged. The monument of Queen Victoria will be erected in the centre of the segment of a circle, now indicated by a wooden post distant about 60 yards from the central gateway of Buckingham Palace, and around it will be grouped imposing allegorical figures representing the extent and power of the Empire. Three new avenues will sweep from the Mall, at a point near Stafford House, by the memorial, one leading to Constitution Hill, a second into the grand thoroughfare in front of the Palace, and the third curving to the left and striking Birdcage Walk at right angles near the guard-room of Wellington Barracks. In place of the old pathway round the lake there will be a colonnade of Portland stone, with suitable sculptures, the first block having been already erected.

THE new school at King's Park, Dalkeith, which has been built by the Dalkeith Burgh School Board at a cost of 12,000*l.*, has been formally opened.

TENDERS.

BIRMINGHAM.

For the construction of five sewage silt tanks, four bacteria beds, each one acre in area, intake chamber, inlet and outlet channels, gauge basins, &c., with the laying and jointing of cast-iron supply pipes, varying in diameter from 54 inches to 6 inches, and other works in connection therewith. Mr. JOHN D. WATSON, engineer.

B. Whitehouse & Sons	£37,969	0	0
J. Byrnm.	37,600	0	0
H. Lovatt	36,665	18	3
Bentley & Lock	35,950	7	8
Lock, Andrews & Price	34,000	0	0
B. Cooke & Co.	33,963	0	0
C. H. Walker & Co., Ltd.	33,130	0	0
G. Holloway	33,000	0	0
A. Braithwaite & Co.	31,916	17	9
J. D. Nowell & Sons	29,500	0	0
Currall, Lewis & Martin, Ltd.	29,238	15	0
T. Lowe & Sons	28,943	0	0
T. Smart	28,507	0	0
J. S. Dawson	27,517	7	9
A. Kellett	26,660	0	0
J. Hodson & Son	26,550	0	0
W. CUNLIFFE, Kingston-on-Thames (accepted).	25,633	6	0

BRISTOL.

For the erection of the Bell inn, Two Mile Hill, for Messrs. W. J. Rogers, Ltd. Messrs. C. & C. THOMPSON, architects, Athenæum Chambers, Bristol. Quantities by Mr. H. G. PEARSON, 24 Nicholas Street, Bristol.

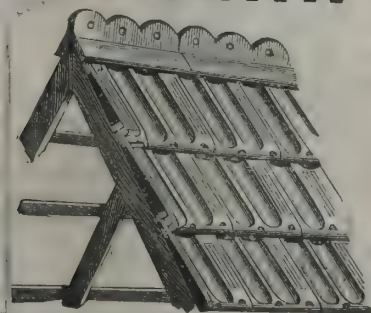
J. James	£3,100	0	0
H. A. Forse	3,060	0	0
Jones & Hill	2,885	0	0
M. Durnford	2,820	0	0
F. Chown	2,749	0	0
Eastbrook & Sons	2,718	0	0
E. Love	2,700	0	0
S. Williams	2,550	0	0
A. E. DENBY & CO. (accepted)	2,528	0	0

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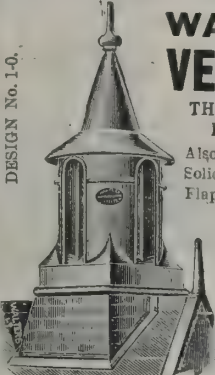
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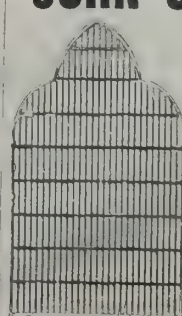
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BRADFORD.

For the erection of two fire-escapes at the union workhouse. Mr. FRED. HOLLAND, architect, 11 Parkinson's Chambers, Hustler Gate, Bradford.
S. PARSONS & CO., LTD., Harris Street (accepted) . . . £170 0 0

CHISWICK.

For the supply and fixing of gas-driven sewage pumping plant, compressors and electric-lighting sets. Messrs. SWINBURNE, COOPER & BAILLIE, engineers, 82 Victoria Street, S.W.

Bilbie, Hobson & Co.	£6,500 0 0
J. & H. Gwynne, Ltd.	5,305 0 0
Tangyes, Ltd.	4,470 0 0
J. Wolstenholme & Son	3,562 10 0
Gwynne & Co.	3,527 0 0
Campbell Gas-Engine Co., Ltd.	3,513 7 6
Crossley Bros., Ltd.	3,304 0 0
Pollock, Whyte & Waddell	3,202 0 0
HIRAM MAXIM ELECTRICAL ENGINEERING CO. (accepted)	3,197 2 0
D. Stewart & Co. (1902), Ltd.	2,772 0 0
Drysdale & Co.	1,930 0 0

COLWYN BAY.

For the erection of an isolation hospital, including pavilion and ward blocks, administrative building, laundry and out-buildings. Mr. WM. JONES, surveyor. Quantities by Messrs. CHADWICK & BOOTH, Colwyn Bay and Manchester.

J. W. Weeks	£5,570 0 0
Richard Williams	5,486 0 0
Z. Pike & Son	4,966 0 0
J. M. & R. Roberts	4,959 0 0
John Tucker & Sons	4,627 0 0
E. Thorp & Sons	4,552 0 0
Robert Evans, jun.	4,550 0 0
Parker Bros.	4,479 0 0
Robert Evans & Sons	4,367 0 0
Hughes & Stirling	4,355 0 0
Dryland & Preston	4,015 0 0
Edwin Marshall & Sons, Ltd.	3,998 0 0
Grundy, Sons & Co.	3,980 0 0
R. Partington & Son	3,947 0 0
John Bagnall	3,722 0 0

EPSOM.

For the erection of a new dépôt, comprising cart-shed, stables, horsekeeper's quarters, lofts and storehouses, and for a post-mortem room at the property in Church Street, and stables and barn at the sewage farm in Hook Road. Mr. EDWARD R. CAPON, surveyor.

New dépôt.

W. Roberts	£4,579 0 0
Higgs & Outhwaite	4,250 0 0
Cropley Bros.	4,294 0 0
M. G. King	3,923 0 0
Rowland Bros.	3,904 0 0
R. Wood	3,900 0 0
Foster Bros.	3,887 0 0
W. Akers & Co.	3,837 0 0
C. Jackson	3,745 0 0
J. Ferguson & Co.	3,700 0 0
R. Atkinson	3,700 0 0
Roll & Taylor	3,650 0 0
J. Willmott & Son	3,636 0 0
R. Jones & Son	3,620 0 0
D. Stewart & Son	3,608 0 0
F. J. Shopland	3,589 0 0
W. SMITH & SONS, Croydon (accepted)	3,550 0 0

Farm buildings.

W. Roberts	879 0 0
Higgs & Outhwaite	668 0 0
J. Ferguson & Co.	613 0 0
Cropley Bros.	612 0 0
R. Wood	592 0 0
J. Willmott & Son	580 0 0
W. Akers & Co.	579 0 0
Rowland Bros.	578 0 0
G. Jackson	572 0 0
Foster Bros.	564 0 0
D. Stewart & Son	562 0 0
R. Jones & Son	550 0 0
F. J. Shopland	547 0 0
Roll & Taylor	545 0 0
W. Smith & Sons	543 0 0
R. Atkinson	540 0 0
M. G. KING (accepted)	531 10 11

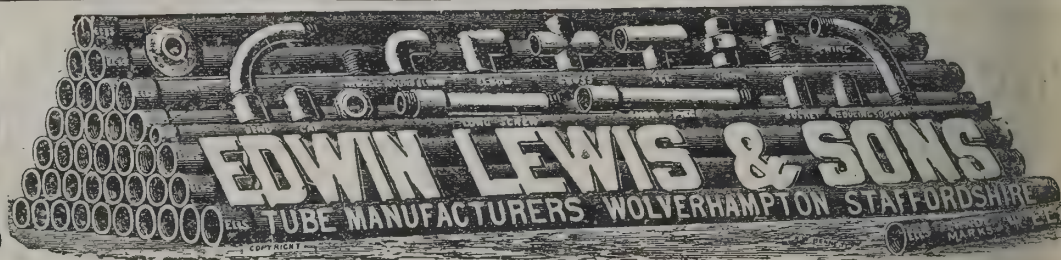
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Post-mortem room.

W. Roberts	£559	0	0
R. Atkinson	533	0	0
Cropley Bros.	533	0	0
M. G. King	525	0	0
Foster Bros.	524	0	0
J. Ferguson & Co.	506	0	0
J. Willmott & Son	505	0	0
R. Wood	500	0	0
C. Jackson.	499	0	0
Higgs & Outhwaite	498	0	0
W. Akers & Co.	494	0	0
Rowland Bros.	490	0	0
W. Smith & Son	475	0	0
D. Stewart & Sons	470	0	0
R. Jones & Son	470	0	0
F. J. Shopland	467	0	0
ROLL & TAYLOR (accepted)	465	0	0

GILDERSOME.

or the erection of Wesleyan Sunday schools, Gildersome, Yorks. Messrs. GARSIDE & PENNINGTON, architects, Pontefract.

Accepted tenders.

G. Holdsworth & Son, Rock House, Gildersome, near Leeds, brick and stonework	£585	0	0
G. Shutt, Stanningley, near Leeds, joiner	257	19	0
J. Wilby, Gildersome, near Leeds, plumber	83	5	9
Sharp & Harper, Holbeck, near Leeds, slater	74	15	0
G. Crossley & Son, Birstall, near Leeds, plasterer	32	16	0

GLASTONBURY.

or laying a 1-inch galvanised service from Ashwell Lane to Edgarley Lodge, Glastonbury. Mr. GEORGE ALVES, borough surveyor.

Woodward & Co.	£45	0	0
E. Millard	45	0	0
Wright & Son	37	10	6
R. J. Stead	31	10	0
J. ISGROVE, Northload Street, Glastonbury (accepted)	27	18	6

GOLDTHORPE.

For the erection of a boys' school and caretaker's house at Goldthorpe, Yorks. Messrs. R. HIGGINBOTTOM, THURNS-COE, ROTHERHAM & W. H. WAGSTAFF, architects, Saltergate, Chesterfield.

W. R. Unwin	£5,330	6	6
Jones Bros.	4,880	0	0
D. Gill & Son	4,747	0	0
A. Owram	4,051	0	0
W. THORNTON & SONS, Rotherham (accepted)	4,274	0	0

HECKMONDWIKE.

For the erection of four scullery houses off Cawley Lane, Heckmondwike, Yorks. Mr. HENRY STEAD, architect, Heckmondwike, Yorks.

Accepted tenders.

H. Crosland, Batley, mason.			
J. Richardson & Sons, Dewsbury, joiner.			
J. H. Jennison, Liversedge, plumber and glazier.			
J. B. Greenwood, Heckmondwike, plasterer and concreter.			
Hodgson, Rhodes & Co., Brighouse, slater.			
R. Cordingley, Heckmondwike, painter.			

IPSWICH.

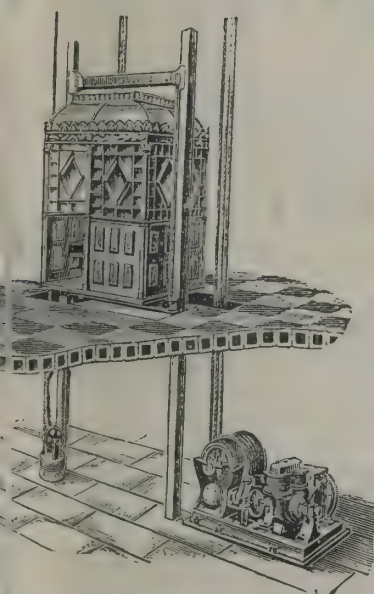
For outside painting at the workhouse.

Scales & Robins	£299	0	0
C. Stearn & Co.	210	0	0
F. H. Orvis	191	10	0
Crisp & Smith	147	10	0
A. C. Harding	126	17	6
E. W. PAGE, 17 Burlington Road (accepted)	120	0	0

For painting the exterior of the borough asylum and out-buildings.

E. W. Page.	£200	0	0
A. C. Harding	195	0	0
J. Bryce	169	13	2
Crisp & Smith	165	0	0
B. Bird	147	10	0
Fisk & Co.	129	10	0
F. H. ORVIS, Bishop's Hill (accepted)	128	0	0

LIFTS



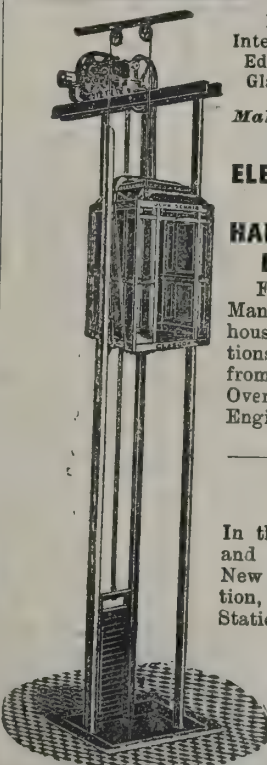
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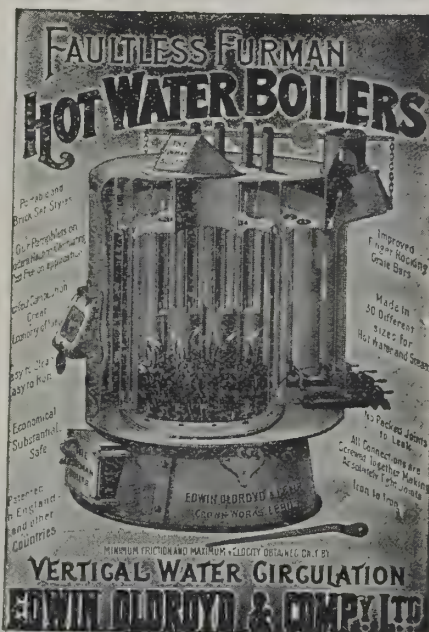
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IRELAND.

For additions and alterations at the Cork Clubhouse. Messrs. W. H. HILL & SON, architects, 28 South Mall, Cork.
J. LISK (accepted) £391 0 0

For the erection of a loom-room at Cork district lunatic asylum. Messrs. W. H. HILL & SON, architects, Cork.
S. SCULLY (accepted) £403 0 0

For additions to Peterborough Cottage, Cork. Messrs. W. H. HILL & SON, architects, Cork.
W. J. O. MAHONY (accepted) £361 0 0

For supply and fixing complete of eighty-six high-pressure incandescent lamps and fittings in the goods sheds, Donegall Quay, Belfast.
J. KEITH & BLACKMAN CO, LTD., London, E.C. (accepted)

KIRKBY LONSDALE.

For the erection of a new Wesleyan Sunday school and classroom at Burton-in-Lonsdale.

W. Kirkbride, joiner £131 0 0
N. Harrison 125 0 0
T. Jackman & Sons, slater and plasterer 69 0 0
W. Holmes, plumber 36 10 0

LEEDS.

For cleaning-down, painting, &c., the interiors of the central newsroom and the New Wortley library.

Accepted tenders.

Jenkins, Tolliston & Co., Merriion Street (central newsroom) £40 2 0

W. Grisdale, Dewsbury Road (New Wortley library) 13 7 6

For diverting and culverting the Margate Beck at Cross Stamford Street, Leeds.

H. ARNOLD & SON, Doncaster (accepted) £1,755 0 0

For supplying and fixing cast-iron girders and unclimbable fencing over new culvert to be constructed in Cross Stamford Street, Leeds.

F. DYSON, Leeds (accepted) £372 9 4

For supplying and fixing at the proposed bridge at Brown Lane, Holbeck, about 35 tons of mild-steel plate girders.
HEENAN & FROUDE, LTD. (accepted) £616 7 0

LONDON.

For the erection of a U. M. F. school church, Highgate Park, E.

F. Gough & Co. £2,364 0
C. North 2,313 0
S. J. Scott 2,220 0
Mattock Bros. 2,205 0
F. J. Coxhead 2,139 0
Battley, Sons & Holness 2,097 0
SANES, PALMER & CO, 9 Canning Road, Walthamstow (accepted) 1,990 0

For fire-resisting works, alterations, &c., at the Fount Hospital.

J. Ferguson & Co. £15,300 0
W. Lawrence & Son 14,392 0
H. Wall & Co. 14,049 0
F. & H. F. Higgs 13,800 0
W. Johnson & Co, Ltd. 13,450 0
E. Chamberlain 13,050 0
C. B. ROBERTS & Co., Redhill (accepted) 12,950 0

MACCLESFIELD.

For the erection of three shops at Bollington, Macclesfield. Messrs. WHITTAKER & BRADBURN, architects, 19 King Edward Street, Macclesfield.

G. Roylance & Co., Ltd. £1,820 0
J. Clayton 1,635 0
T. Weard 1,600 0
Gorton & Wilson 1,580 0
H. BERRY & SONS, Macclesfield (accepted) 1,578 17
J. Dakin 1,566 0
Clayton Bros. 1,450 0

For the erection of a provision shop. Mr. JABEZ WHITE architect, Macclesfield.

Gorton & Wilson £1,240 0
G. Roylance & Co, Ltd. 1,170 0
E. & A. Frith 1,070 0
J. Clayton 1,045 0
J. Dakin 1,031 0
B COOKE & SONS, Buxton Road (accepted) 999 1

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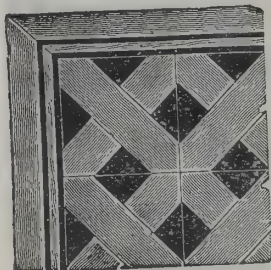
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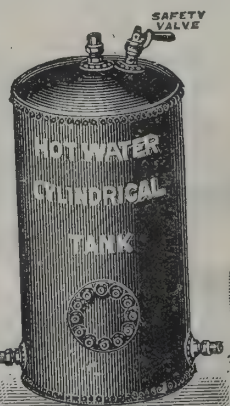
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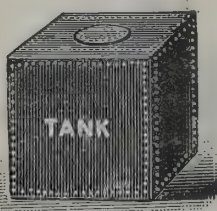
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MANSFIELD.

For painting the post-office in Market Street, Mansfield. Mr. R. FRANK VALLANCE, borough surveyor.

C. Scott.	£58	5	0
R. Frost.	55	6	9
W. Thompson	53	10	6
C. C. Greenwood	42	2	9
J. MILLOTT, Mansfield (accepted)	31	10	0

MILNSBRIDGE.

For alteration to three shops, Market Street, Milnsbridge, Yorks. Mr. JOHN E. LUNN, architect, Milnsbridge.

Accepted tenders.

M. S. & J. Crowther, Fixley, Huddersfield, mason.
J. W. Bolton, Milnsbridge, Huddersfield, joiner.
T. Armitage, Huddersfield, plumber.
T. Allison, Ltd, Milnsbridge, Huddersfield, slater.
W. Armitage, Golcar, Huddersfield, plasterer, painter and concreter.
Longwood Engineering Co., Huddersfield, cast-iron founder.
J. Stow, Ltd., Bradford, shop-front fitter.

PADIHAM.

For the erection of St. Leonard's National schools, Padiham. Mr. THOMAS BELL, architect, Burnley.

Accepted tenders.

B. Smith & Son, Burnley, mason.
J. Beckwith, joiner.
Foster & Son, slater.
W. Walton, Burnley, ironfounder.
Rawlinson & Son, Burnley, concreter and plasterer.
J. Pollard & Sons, plumber.
Smith, painter.
W. F. Spencer, Oldham, heating.
Williams & Co., Manchester, tiling.
Rest of Padiham.

PERSHORE.

For painting the Jubilee bridge over the Avon. Mr. W. BULLOCK, surveyor, Wick, Pershore.

N. J. Harris	£30	16	0
R. Mills	15	5	0
Cross & Son	14	10	0
BRETTELL, Worcester (accepted)	13	2	0

PRESTON.

For the construction of a tramway car shed. T. B. GARNETT, Preston (accepted) £11,000 0 0

SCOTLAND.

For the plasterers work and tilers' work respectively of nurses' home and pathological laboratory at Woodilee asylum, Lenzie, Glasgow.

Plasterwork.

J. McQuarrie	£2,720	11	3
R. A. McGilvray & Ferris	1,754	19	0
A. Somerville	1,628	17	6
G. Rome & Co	1,610	0	0
D. & J. McKenzie	1,538	8	4
J. & A. Williamson	1,504	19	4
J. Forbes	1,500	0	0
J. McKENZIE, Glasgow (accepted)	1,351	1	8

Tilework.

Galbraith & Winton	379	14	4
Kean & Wardrop	365	19	10
T. Wallace & Co.	361	9	10
J. Youden & Co, Ltd.	352	11	1
Porcelain Tile Co.	332	16	8
Haddaw, Forbes & Co.	331	0	2
Field & Allan	321	16	7
A. WILSON & Co, Glasgow (accepted)	287	10	8
Cherry & Co., Ltd.	283	18	11

For alterations and additions to North public school, Peterhead. Mr. ARTHUR CLYNE, architect, 123½ Union Street, Aberdeen.

Accepted tenders.

A. & J. Webster, carpenter	£778	0	0
W. West, mason	761	12	0
J. Ferguson, plumber	263	2	5
Stuart & Co., plasterer	202	18	6
W. G. Calder, painter	140	0	0
A. Fordyce, slater	127	19	0

SOUTH SHIELDS.

For the erection of a nurses' home in connection with the workhouse infirmary. J. MOORE (accepted) £4,080 0 0

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UPTON-ON-SEVERN.

For the erection of an isolation hospital near Upton-on-Severn, in the county of Worcester. Messrs. LEWIS SHEPPARD & SON, architects, 51 Foregate Street, Worcester.

W. P. Lewis & Co.	£7,650	0	0
Bromage & Evans	7,550	0	0
Panter & Sons	7,248	0	0
T. Broad, Ltd.	6,697	0	0
Collins & Godfrey	6,688	0	0
W. Sapcote & Sons	6,348	0	0
J. Wood & Sons	6,172	0	0
E. Giles & Son.	6,155	0	0
W. Hopkins	6,100	0	0
H. A. BRAZIER, Bromsgrove (accepted)	6,000	0	0

WALES.

For the erection of an infant school in Carnetown, Abercynon, to accommodate 250 children. Mr. A. O. EVANS, architect, Post Office Chambers, Pontypridd.

J. Monday	£4,035	8	5
D. G. Price	3,846	0	0
Keene & Wells	3,787	0	0

For the rearrangement of the inside of the Hermon chapel, Dowlais, new galleries, seating, &c. Mr. ARTHUR O. EVANS, architect, Pontypridd.

W. M. Williams	£2,627	0	0
E. & A. Frith	2,160	0	0
E. Jones	1,992	0	0
Knox & Wells	1,985	0	0
E. Turner & Sons	1,875	0	0

For street works in Goitre Fawr Road, Swansea. Mr. G. POWELL THOMAS, highway surveyor, Forest Fach, Swansea.

T. G. Thorne	£690	0	0
Bennett Bros.	596	6	3
C. HANNEY & SONS, Morriston (accepted)	515	13	10

For sewerage works in Trebanog Road, Trebanog, Porth. Mr. W. J. JONES, surveyor, Council Offices, Pentre.

Enoch Bros.	£338	0	0
Barnes, Chaplin & Co.	140	0	0
A. G. COLLINS & Co., Barry (accepted)	130	0	0

WALES—continued.

For the erection of twenty houses at Aberbeeg. Mr. P. VIVIAN JONES, architect, Hengoed.
D. LEWIS, Aberbeeg (Mon) (accepted) £4,280 0

WEST HAM.

For traction switchboard, &c., with electrical equipment. BRITISH THOMSON-HOUSTON CO., LTD., Rugby (accepted) £2,183 0

WEST HARTLEPOOL.

For the erection of a block of school buildings (new upper grade school) to accommodate 1,200 scholars, with 6 buildings, caretaker's house, &c., in Elswick Road, Easington and Belmont Gardens, West Hartlepool.

Accepted tenders.

T. Beetham & Son, Villiers Street, West Hartlepool £16,489 18
Dargue, Griffiths & Co., 51 North John Street, Liverpool, heating and ventilating (Plenum system) 881 16 5

WHICKHAM.

For the erection of council offices, &c., at Whickham, Durham. Mr. J. B. RENTON, surveyor, Whickham.
W. B. Collin £4,500 00
I. Bewley 4,466 00
J. A. M. Henderson 4,077 00
D. D. Hall 3,599 00
J. W. TURNER & Co., Bensham Road, Gateshead (accepted) 3,883 16 5

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For the erection of public offices, workshops, stables and appurtenances.
Hilton & Ince £3,010 00
A. Bywater 2,900 00
P. Pennington 2,895 00
D. Ablett 2,875 00
J. Johnson & Son 2,839 00
H. & F. Lomax 2,795 00
J. G. & F. Wood 2,614 00
J. WILSON & Co., Wigan (accepted) 2,697 00

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or furnishing Harcher Clough Council schools, Burnley. Messrs. SHAW & VOWLES, architects, Mercantile Chambers, Burnley.
UNITY WOOD AND IRON COMPANY, Padiham (accepted). £390 0 0

EASTBY.

or the erection of a windmill pump at Eastby, near Skipton. Mr. FRED HOLLAND, architect, 11 Parkinson's Chambers, Hustler Gate, Bradford.
J. W. TITT, Woodcock Ironworks, Warminster (accepted). £145 0 0

HORNCASTLE.

or taking-down and rebuilding the bridge over the stream on the road leading from Scambly to Donnington, Horn-castle. Mr. W. H. HOLMES, surveyor, 4 Church Lane, Horn-castle.
Burman £201 17 0
Hensman & Son 153 0 0
MILLER, Minting (accepted) 128 0 0

TEDDINGTON.

For erecting a detached villa at Broom Road, Teddington, for Mr. T. Bailey. Messrs. MAXWELL-DRAPE & BARKEN, architects.
E. Ferris £749 0 0
Tolton 700 0 0
C. A. Drake 700 0 0
E. Cooper 650 0 0
E. Seaber 650 0 0
F. CHILDS (accepted) 562 10 0

TRADE NOTES.

APROPOS of the recent race for the America cup, we note that the whole of the painting of the *Reliance* was done with Ripolin, supplied by Ripolin, Limited, Fenchurch Street, E.C. 1

THE isolation hospital, Ticehurst, Sussex, is being warmed and ventilated by means of Shorland's patent Manchester grates and exhaust roof ventilators, by Messrs. E. H. Shorland & Brother, of Manchester.

THE business of Jones's Foundry and Engineering Company, Limited, for so many years established at 156 to 158 Goswell Road, E.C., is still carried on at the same address under the proprietorship of Messrs. T. A. Richardson and W. W. Buckley in the name of Jones & Co., the original title of the firm.

BUILDING AND BUILDERS.

WYMONDHAM ABBEY is to be restored at a cost of 25,000Z.
A NEW pump-room is to be erected at Harrogate close to the old sulphur wells at the entrance to the Valley Gardens.
AN engineers' workshop, smithy, &c., are about to be built for Mr. W. Hurst in the New North Road, London. Mr. A. W. Hudson, of 87 Finsbury Pavement, is the architect.
THE parish church of St. Thomas, Portsmouth, which, owing to its condition, had some time since to be closed, has been minutely inspected by Mr. Jackson, the diocesan architect, upon whose recommendation an extensive scheme of renovation is to be carried out. The approximate cost is estimated at upwards of 4,000Z.

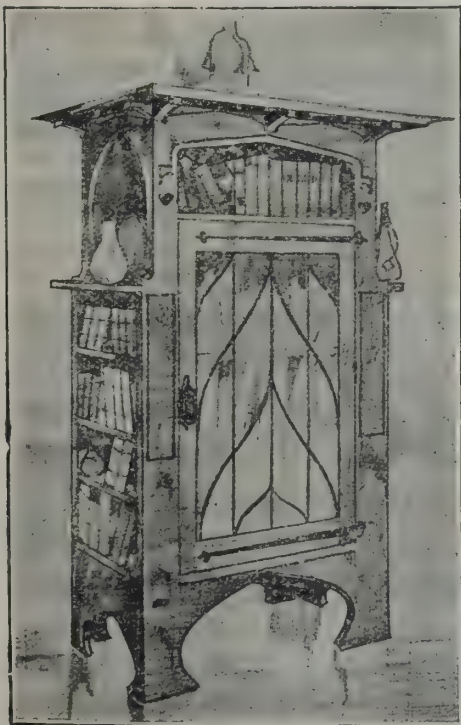
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MESSRS. CHAS. B. ROBERTS & CO., of Redhill, have secured the contract for fire-resisting works, alterations and additions at the Fountain Hospital, which are to be carried out at a cost of 12,950*l.* for the Metropolitan Asylums Board, under the supervision of the architects, Messrs. T. W. Aldwinckle & Sons.

At the last meeting of the School Board of the parish of Cathcart, Glasgow, it was reported that sites had been secured in Albert Road, Langside, and Cathkin Road, Langside, for the erection of two schools, each to accommodate 1,200 children, to meet the rapid growth of the population in that district. The price of the ground is 12*s.* per square yard.

RESTORATION has been commenced of the Norman towers of Lambeth Palace on the south-west and south-east. On careful examination it was found that the embattlements were very much fretted away and the large hexagon chimneys appeared to be in some danger of falling. The cause is attributed to chemical atmospheric action, there being numerous works in South Lambeth, the fumes from which are often wafted in a direct line to the old palace.

THE large extensions and alterations which have been proceeding at Gallatown public school (under the Dysart Burgh School Board) for the last twelve months have just been completed. Two large classrooms, a spacious corridor, with cloak-rooms, &c., have been added, and the older portion of the school buildings entirely remodelled. In lighting, ventilation and arrangement great improvements have also been effected and the whole premises brought up to modern requirements. The total cost will not be less than 2,500*l.* The school was formally opened on Monday last.

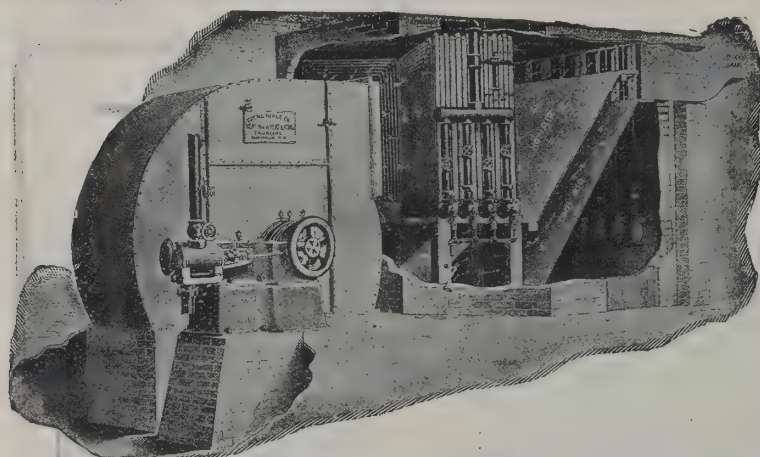
ANOTHER addition to the many social institutions which have been established in Port Sunlight, the model village on the banks of the Mersey, which has grown up in connection with the soap-making concern of Lever Brothers, Ltd., has been formally inaugurated. This latest acquisition takes the form of a free library and museum, which is the personal gift of Mr. W. H. Lever to the residents and employees who form the unique community of Port Sunlight. The library contains over 3,000 volumes, but this is regarded only as a nucleus, as Mr. Lever has placed an annual sum at the disposal of the managers of the library for extension purposes. The museum contains many interesting features, the whole collection being provided by Mr. Lever.

MR. WELLER, aged 63 years, foreman to a local builder near the Pantiles, went home from his work on Monday, complaining of feeling ill, lay down on the sofa and expired in a few minutes. Before he died Mr. Weller told his wife he had been stung the neck by a wasp, but whether that was the cause of death is not yet clear, although a medical man was promptly called in. It is thought that only a post-mortem examination will disclose the actual cause of the death, and determine whether an inquest will be held. The deceased was widely respected in building circles.

CONSIDERABLE progress is being made with the huge waterworks undertaking in the Peak of Derbyshire, in which the towns of Sheffield, Leicester, Nottingham and Derby are chiefly interested. The dams are to be of solid masonry from the foundations up, and the aggregate cost of the works, including filter beds, aqueducts and pipe lines, will be 7,000,000*l.* sterling. Of this total sum the Derwent Water Board will be responsible for 5,800,000*l.*, which covers the cost of building the five reservoirs in the Derwent and Ashop Valleys, making 14 acres of filter beds at Bamford, carrying an aqueduct 30 miles long to Ambergate, making a small service reservoir at this point, and laying a pipe line to Sawley, on the Trent. The cost will be shared by the authorities interested in the undertaking in proportion to the amount of water they take. Leicester is to have 35.72 per cent., Sheffield and Derby 25 per cent. each, and Nottingham 14.28, subject to certain claims from the counties of Derbyshire and Nottinghamshire. Sheffield will carry off its allowance by the aqueduct through the hills to the Rivelin reservoir, Leicester and Nottingham will carry their respective quota from Sawley, and Derby will help it by a pipe line from Ambergate. The cost of the subsidiary works is roughly estimated at about 1,100,000*l.*, thus bringing the total very near to 7,000,000*l.* sterling.

ELECTRIC NOTES.

JOHANNESBURG is going in for a very extensive electric-light and power plant, and it is to be hoped that the orders will come to this country. The total electrical output is to be close upon 7,000 kilowatts; but it has not been definitely decided by the consulting engineers in London, Messrs. Morley & D. whether steam or producer gas will be the motive power. Tenders are thus to be received for both systems. The plant will include water-tube boilers with mechanical stokers, &c.



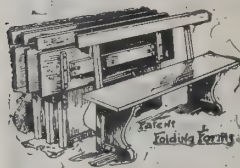
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For Index of Advertisers, see page x.

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eyers, &c, four 2,000 brake-horse-power steam engines or steam turbines, each driving 1,350 kilowatt generators, with four others of half this horse-power, one for operating a continuous dynamo, and the three others for two-phase alternators. There will also be two electrically-driven transformers and other similar gear. The units will be of the same size should gas motors be used, the internal combustion engines being simply substituted for the steam turbines or engines, and the gas-producing plant is to be equal to the gasifying of 7½ tons of Transvaal coal per hour, with all accessories of coal conveyers, &c. The contracts will be let before the end of the year.

THE electrifying of the tramways in South London is still diligently proceeding. In Southwark Bridge Road a number of men commenced on Monday to tear up the eastern side of the roadway, a temporary line having been previously laid down on the western side. The new portion of the line which is being laid down in the Marshalsea Road, to connect the lines between the Borough High Street and Southwark Bridge Road, is also being proceeded with rapidly, while in that portion of Southwark Bridge Road which runs right up to the bridge itself the metals have been laid down and the necessary connection lines made for the trams to resume the return journeys. When the lines running round the Marshalsea Road and down Southwark Bridge Road nearly to the Elephant and Castle have been completed, one of the most important developments of the new electric system of trams in South London will be ready for use, and new services will be commenced which will run from Streatham and Brixton, New Cross and Camberwell, and probably Balham and Clapham, direct to the foot of Southwark Bridge. The new line along St. George's Road, between the Elephant and Castle and the Westminster Bridge Road, is also being rapidly laid down, and when completed will enable the trams from New Cross and Camberwell to proceed in this wide thoroughfare, and so ease the congestion along the London Road and at the Obelisk.

AN important decision has been made by the Underground Electric Railways Company, of London, in awarding the contract for the entire control equipment for their new electric trains on the Metropolitan District Railway to the British Thomson-Houston Company, of Rugby. The system to be employed is the Sprague Thomson-Houston multiple unit system, with which an experimental train has been equipped in their newly-opened line from Ealing to Harrow, and on which, for over four months past, continuous experiments and

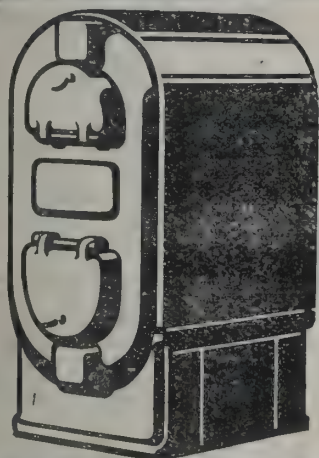
competitive tests under special and normal conditions of traffic have been going on, to ascertain which of the two systems of control competing will best meet the various requirements of this railway, having a due regard to the safety of passengers, reliability of control, economy of power, low cost of maintenance, comfort to passengers and simplicity. After thoroughly weighing all of these matters the contract was, as above-mentioned, awarded to the British Thomson-Houston Company. It may be remembered that a somewhat similar series of tests were made before the decision was arrived at as to what system of control should be adopted on the New York underground railways, and the same system of multiple unit train control was decided upon. This system may be considered as the universal system in use for operating electric railways, it being in use or contracted for by over thirty-two railways throughout the entire world. Over 2,000 equipments are at present in use. The Metropolitan District Railway, in taking this step have placed themselves in line with other English electric railways, which have also adopted the system. This method of control is used by the Central London Railway (Twopenny Tube), the Great Northern and City Railway (Underground Tube from Finsbury Park to Moorgate Street), and is to be employed on the lines of the North-Eastern Railway, near Newcastle, for which contracts for electrification have recently been let. The firm's systems are also most successfully used in the United States of America, notably on the overhead railways in the cities of New York, Boston, and Chicago, and on many high speed inter-urban roads, where they are giving unqualified satisfaction.

VARIETIES.

THE Hackney Guardians are about to erect children's homes at Chipping Ongar. Mr. Finch, architect, of 76 Finsbury Pavement, has been instructed to prepare the plans.

CONSIDERABLE alterations and additions to the premises of Messrs. W. Cooper Brothers in the High Street, Harrow, are contemplated. Messrs. Cowell & Shaw, of Finsbury Pavement, are the architects.

THE Corporation of the City of London require a junior measuring clerk starting at 150/-, and rising 10/- yearly to 200/-. Applications must be made to Public Health Department before the 22nd inst.



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DUKE STREET Congregational Union church, Leith, which for the past two months has been undergoing alterations, has been reopened. The interior has been completely modernised. Electric lighting has been installed throughout the building, and the arrangements for ventilation and heating have been brought thoroughly up to date. The interior has also been painted, the roof being ivory white and the walls light terra-cotta. The alterations have been carried out at a cost of 500l.

ON Tuesday, the 1st inst., a large company gathered at Godre Aman, a rapidly-growing suburb of Aberdare, to celebrate the opening of the new school, which provides accommodation for 250 scholars, having five commodious classrooms and a central hall. It was built from plans prepared by Mr. T. Roderick, Aberdare, and the contract was carried out by Mr. J. Jones, Gwawr Cottage, Aberdare, at a cost of 2,600l.

AFTER being closed for several months, St. Paul's Wesleyan church, Runcorn, was reopened on Sunday afternoon. The building has undergone extensive alterations. The old roof and ceiling, which were slowly giving way and becoming dangerous, have been completely renewed, and new ones with modern improvements substituted. The whole building has been painted and decorated, and the organ overhauled and repaired. The total cost of the work is about 2,000l.

THE parish church at Cleator was reopened on Sunday, the 6th inst., after having undergone extensive alterations which have quite transformed the appearance of the interior of the edifice. In the nave the roof has been renewed with oak, and fresh seats and new windows provided, but the chancel has been allowed to remain in its ancient form as a reminder that from 700 to 800 years have passed since the church was built. The families of the Ainsworths and the Lindows have done much to make the church attractive by the insertion of two stained-glass windows; and a beautiful lectern in oak, designed by the architect of the work, has been provided by Mrs. David Ainsworth. Among other matters the heating of the church has received careful attention, and two bells have been hung for use in announcing the services. The whole of the work has been carried out under the superintendence of the architect, Mr. Martindale, of Carlisle.

COUNCILLOR JAMES HIGSON, J.P., of Salford, has been nominated by the council of the National Association of Master House Painters and Decorators of England and Wales, Incorporated, for the position of president for 1903-04, and it is probable that the Convention next year will be held at Manchester. It will be then exactly ten years since the Association

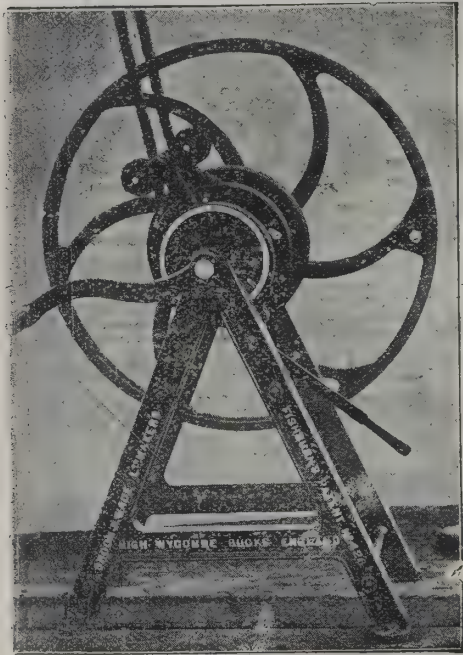
visited the city, the last occasion being at the time of its inauguration in 1894. It will come to Manchester next year a strong and representative body, as its constituents cover the whole of England and Wales. Amongst its five life members are Mr. Walter Crane and Mr. George Haire, two are American citizens and one an eminent Scotch decorator. The tenth annual Convention meets at Nottingham on the 21st inst., and Lord Henry Bentinck, M.P., is to open the proceedings.

THE chancel of Bangor Cathedral has been reopened after complete renovation at the expense of Lord Penrhyn. For many years the chancel presented an appearance discreditable to the cathedral, damp having ruined the fresco-work, and was mainly through the efforts of the late Dean Pryce that the improvement and other much-needed structural repairs to the edifice were carried out. A pathetic interest attached to the opening ceremony in the fact that the arrangements governing were drawn up by Dean Pryce only a few hours before his death which came with remarkable suddenness. On the east wall the *Te Deum* is represented with the figure of Our Lord in Majesty occupying the central position above the large stained-glass window, and on each side are depicted angels swinging censers. On the decani side of the east window are large paintings of St. Edward, St. Stephen, St. Thomas of Canterbury, St. Edward the Confessor, St. Amphibalus, St. Lawrence and St. Alban, and along the south wall are the twelve apostles and the figures of four angels holding scrolls bearing the word "Alleluia."

AUCTIONEERS' INSTITUTE.

THE members and friends of the Auctioneers' Institute of the United Kingdom met at Exeter on Wednesday evening from various parts of the country for the autumn provincial meeting at the invitation of the Western Counties' branch. The visitors found that excellent arrangements had been made by the local committee for their comfort and for seeing the ancient city and some of the beauties of Devon. The objects of the Institute include the provision of a central organisation for auctioneers, estate agents and valuers, and such things as may be necessary to elevate the status and procure the advancement of the interests of the profession. A valuable reference and lending library has been established for the use of members at the headquarters in London, and a benevolent fund is also in existence. The Institute does not possess a charter, but one will doubtless be obtained at no very distant date. — Mea

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SANITARY PIPES.

GLAZED BRICKS.

the area identified with the Institute is rapidly increasing and there are ten branches, covering Birmingham district, Hants, Wilts and Dorset, Kent, Surrey and Essex, Liverpool and district and North Wales, Manchester district, the Midland counties, Northumberland and Durham, South Wales and Monmouthshire, the Western counties of Yorkshire. The membership already totals 1,500, and the financial condition of the Institute is very satisfactory. About 100 members and friends are taking part in the present meeting. Last night there was a reception by the Mayor and Mayoress of Exeter in the historic Guildhall. To-day there is an excursion to Totnes, Dartmouth (by the Dart), and to-day, where the Mayor and Mayoress of that borough will receive the party. To-morrow there will be a meeting of the Council, a luncheon and a banquet, and visits will be paid to various places of interest, including the cathedral. Among those taking part in the visit are the President, and Mrs. J. J. Green (London), Messrs. J. J. Greaves and J. Baker (Birmingham), W. Weatherhead (Keighley), E. Dobson (Bradford), J. Richards, K.C., M.P. (London), J. R. Garland, J. C. (London), J. R. Hedley and C. Horsley (Newcastle-on-Tyne), H. J. (Carlisle), J. J. Robinson (West Hartlepool) and W. H. (St. Helens).

NEW CATALOGUES.

General Iron Foundry Company, Ltd., Brook's Road, Upper Thames Street, have now ready their new illustrated catalogue of nearly 600 pages, and it will be found extremely handy and useful volume, containing as it does thousands of illustrations of ranges, stoves and fittings, radiators, baths, lavatories, closets, sanitary brackets, and connection gutters, ornamental columns, lamp-posts, grilles and grates, verandahs, balconies, bandstands, roofs, coverings, stables, cowhouses, piggeries, farm-fittings, carriages and other gates, and every other imaginable work in cast and wrought-iron.

We have received a copy of a new illustrated priced catalogue of the various lifts and hoists manufactured by Messrs. Hope Works, Kirkstall Road, Leeds. These include electric and belt-driven cage lifts, safety gates for cage and dinner lifts, electric and belt-driven friction hoists, and accessories for hoists, hand hoists (endless rope), hand cranes (handles), jibs or catheads, and swing cranes

for power and hand hoists, derrick cranes (hand), overhead travelling cranes, &c.

SANITATION AND FARMING.

A PAPER was read at the Sanitary Congress, Stranraer, by Mr. Richard Henderson on "The Sanitary Necessities of a Modern Farm." He spoke of the advantages to be derived from the professional sanitarian and the agriculturist pulling together. The sanitary necessities of a modern farm might be narrowed down to abundance of good water and fresh air without stint. Simple in attainment as these objects seemed, it was with regard to them that all trouble between the parties arose. The water-supply question was more acute on the small than the large farm. The public health officer had more trouble over the matter of providing fresh air for the animals at the farm than in seeing to the water supply. To one unacquainted with the principles of rural economy it must, indeed, sound strange to be told that fresh air was one of the sanitary necessities of a modern farm. So it was out in the field. But neither man nor the domestic animals could thrive under constant exposure to weather in all its phases, and each had to provide for or be provided with shade when the sun's influence was more powerful than the animal frame could withstand, and with shelter when it was too much on the wane to temper weather to a degree which was acceptable. Hitherto the sanitary officer had had to confine his fatherly interest in the affairs of the homestead proper to the housing of the cow and the arranging of the dairy. That interest might with advantage be extended to the houses of the other classes of live stock at the homestead. The farmer, in his endeavour to keep the cows warm, checked or prevented ventilation of their quarters if he thought them too roomy. He was not adverse to ventilation where the air space of the cow-house was not, in his opinion, unduly large. Had the time not now arrived for the public health officer to be allowed full discretion as regarded the sizes of byres, so that each building of the kind might be in accordance with the nature of its surroundings. The size of the house might be left pretty much in the hands of the proprietors, were the public health officer allowed the full say over the matter of ventilation. A cow-house might be simply yet sanitariously finished at very little more outlay than the common type.

Mr. Peter Fyfe opened the discussion, dealing mainly with the importance of a pure water supply. He had read the

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reports of the medical officers of health for different places, and had come to the conclusion that a great many of our farms and dwelling-places had not what Mr. Henderson called good water to drink. He did not know what Mr. Henderson meant by good water—water which was above suspicion. He deprecated proprietors putting difficulties in the way of securing satisfactory supplies; and said every medical officer, and if possible every sanitary inspector, should endeavour to obtain samples of every well which appertained to farms. He moved "That in the opinion of this Congress the importance of a water supply demands that legislation dealing with the conservation of the sources and with the conditions attached to the acquisition of water is urgently required, and that it be remitted to the Parliamentary Bills Committee to bring this matter before Parliament at an early date; and, further, that all local authorities should have power conferred on them to refuse to register a dairy keeper until they were satisfied that the premises were in a sanitary condition, and that the water supply was sufficient and free from contamination."

Mr. John McCaig said that perhaps too much had been made in regard to the cubic space necessary for the cow. No doubt a certain cubic space was required, but sanitary and local authorities, he thought, had erred in fixing a too rigid limit for counties or even divisions of counties. He emphasised the necessity for more light in byres, and remarked that he would have all the light from the roof, and such a sufficiency of it as would make the animals believe they were in the open.

Mr. Robert Lindsay, county sanitary inspector, Midlothian, agreed with Mr. McCaig as to the necessity of light, but could not agree with him as to his strictures on the cubic space restrictions. He was puzzled to know how comfortable accommodation was to be provided if they did not provide the air space necessary for ventilation. He thought the Local Government Board were moving on sensible and right lines in the recommendations they had framed as to air spaces. He seconded Mr. Fyfe's resolution and the discussion of the subject was adjourned.

The foundation-stones of a new church and schools in Station Road, Old Hill, Birmingham, in connection with the Strict Baptist denomination have been laid. The buildings which it was now proposed to erect would be capable of accommodating about 500 worshippers, the total cost being 1,400.

A PALATIAL HOTEL.

MANCHESTER has not hitherto been regarded as a well-to-do city in the matter of hotel accommodation, although it boasted one or two comfortable old hostels where the wants of man and beast were sufficiently looked after, there was nothing to compare with the luxurious caravanseraies which during the past few years have sprung up in all towns and cities of any pretensions to importance. Recognising no doubt the eligible opening thus afforded by the Midland Railway Company, with characteristic thoroughness stepped into the breach and erected a palace of which Manchester alone, but the kingdom at large may well be proud, and Cottonopolis is in possession of hotel accommodation which cannot be excelled, even if it be equalled, by any in the United Kingdom or the European Continent.

In their efforts to attain this result Mr. W. Towle, the company's hotels manager, and Mr. Charles Trubshaw, their architect, were indefatigable, travelling in all directions and inspecting every hotel of importance in Europe and America, with a view to obtaining and assimilating the latest ideas and improvements. The site of this important addition to the amenities of Manchester occupies 2 acres of land, bounded respectively by Peter Street, where is the main front, Mosley Street, Deansgate, Windmill Street and the Central Station yard, which it is connected by a light-bulb glass-roofed way.

Rising from the pavement for 26 feet the front elevations are built of red Aberdeen granite with strap granite dressings and thence to the roof of terra-cotta blocks. Steel, as in the American "sky-scrapers," forms the backbone of the building and in the winter garden the supports and girders have been artistically employed in acting as a basis for the decoration. The hotel contains about 600 rooms, and some 55,000 cubic feet of terra-cotta is represented on the building. Some idea of the rapidity with which the work was carried through may be gained when it is stated that 8,000 yards of this last-mentioned work were completed in a month, and the fireproof ceilings and roofs were fixed at the rate of 1,000 yards a day. With a view to rendering the immense building thoroughly fireproof it was decided to adopt for all internal walls a system supplied by the Fireproof Plate Wall Co., Ltd., whose head offices are in Manchester, and of these plate walls are both fireproof and soundproof, no less than 30,000 square feet were used. The baths number nearly 100, including a Turkish bath, and are most luxuriously and expensively fitted up.

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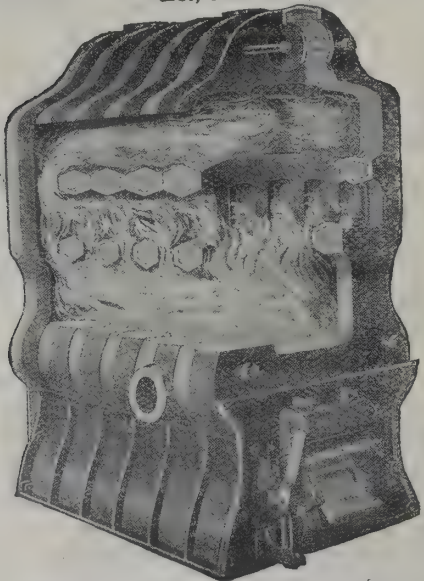
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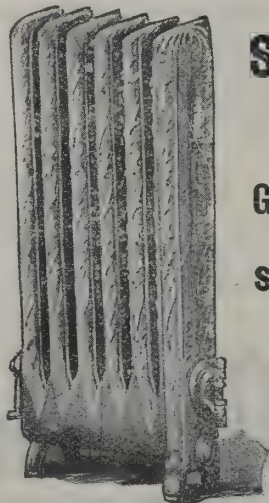
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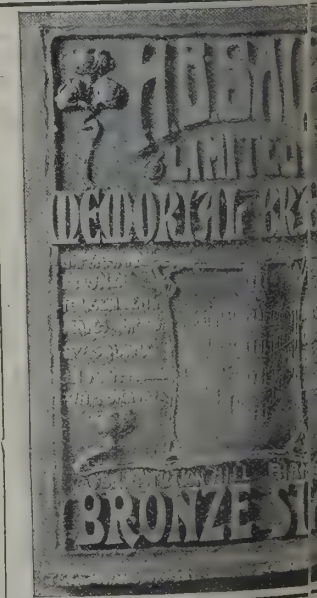


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A. Architect's will be forwarded on application to
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have been supplied by the Standard Sanitary Company of
Lombard Viaduct. There are over 800 windows. The style of
the building is Renaissance, freely adapted by the architect.
Burmantofts faience of a rich brown colour is extensively used
in the ornamentation of the exterior. The highly glazed sur-
face of this material possesses the very great advantage that
it practically affords no lodgment to dirt and soot, what-
ever dust may accumulate on it is readily washed away by
every passing shower, and the surface consequently retains its
bright and attractive appearance. The plain portions of the
walls are in Burmantofts glazed terra-cotta, which is also, of
course, impermeable to dirt and chemical deterioration. The
city walls of the inner building, rising on four sides high
above the glass roof of the garden, are consequently treated
with glazed white bricks, so as to afford ample light everywhere
in the interior of the hotel.

At the top of the building is another garden, which is
claimed to be the biggest roof-garden in the world. It
includes places it above the smoke-line of the city, and secures a
fine view of the surrounding country. Elevators communicate
this aerial resort for after-dinner coffee and cigarettes.
Musical entertainments are to be a feature of the roof-garden.
The air of Manchester leaves much to desire on the score
of purity, and to secure as pure air as possible in the hotel
Mr Towle has adopted an excellent system of purifying the
incoming air. A series of filter screens of linen and coke,
which receive 80,000 cubic feet of air per minute, effectively
removes all impurities, and the visitor in the hotel lives in an
absolutely pure atmosphere. Revolving doors at the various
entrances also completely prevent the entry of either dust or

It is interesting to note the way in which the architect
has contrived to obviate the disadvantage (if it be one) of having
a back door, so to speak, to his hotel. He had to exercise
skill and ingenuity to find one which would prevent all
unpleasant influences from being perceived or suffered by
the guests. He utilises, for example, the "newel" of the circular
stairways as a concealed dust-shoot to each floor. Dust,
ashes and dry refuse of every kind are every morning collected
by the servants, and shot down through a concealed trap to the
basement, where it is received by the incinerator and duly
disposed of. In all sorts of ways labour-saving appliances have
been brought into service, even to the extent of sweeping the
floors of the rooms; and in respect of the sanitary equipment
of the hotel, from ground floor to upper, it is as perfect as

thought, labour and money can make it. Indeed, in point of
lightness, space, ventilation and cleanliness, this most impor-
tant department of any hotel may be considered a model.

The grand entrance in Peter Street at once impresses the
visitor. Here are the necessary offices of the management
and reception hall. The arrangements are such as will
contribute largely to the convenience of visitors and hotel
officials alike. Nothing apparently that the wit of man can
devise to obviate all needless trouble in running about seems
to have been forgotten in the general arrangements of this
department, which comprise postal, telegraph and telephone
facilities, a banking bureau, and all sorts of other conveniences
of latest date, which the travelling public often nowadays looks
for, or at least hopes for and rarely gets. Not far away will be
found that indispensable adjunct to a cosmopolitan hotel—the
American bar.

The grand entrance gives admittance at once to the garden,
practically the central point of the hotel, of which it forms a
delightful feature, and thence to the grand staircase through
the octagon court, which abuts on the garden. A beautiful
display of light-toned variegated Grecian marbles of the
quarries of Skiros, richly gilded ornamentation of pillars and
supports and delicate intermingling veins of light brown and
grey please the eye and gratify the taste in colour.

One of the most important features is the concert hall, con-
structed to accommodate an audience of 1,000. This apartment
is decorated in white and gold, in Louis XIV. style, with panels
containing painted subjects. Concerts for ladies, organised by
the management, will also be given.

The grand dining-room is a noble apartment, Georgian in
style, with a slight infusion of Louis XIV. in the ornament.
In shape it is an elongated octagon, the middle part of which
is divided from the bays for constructive purposes by means of
two imposing square pillars beautifully cased in panelled
mahogany handsomely gilt. The ceilings are richly orna-
mented with modelled plaster in deep relief, the middle part
being decorated with a bold oval design with concealed electric
lights. The walls up to the cornice are covered with finely
panelled mahogany, exquisitely decorated with gilt ornaments,
but both the mahogany and the gilding are toned down to pro-
duce the effects of the decoration of the period. The mahogany,
instead of being polished and in its natural colour, is stained
slightly darker and finished with a rather dull surface to imitate
the work of the old French panellists, and in a similar way
the gilding has been toned to produce an exact reproduction

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of seventeenth-century ormolu. The room contains a very fine chimneypiece surmounted by a panelled picture of Prince Charlie in oils, there being on either side a large panel of tapestry. The chairs are of the shape of the period, and the four serving tables and the service screen are all beautifully decorated *en suite* with the general scheme of the room. An agreeable relief in colour is afforded by the employment of a pile carpet in two tones of green which entirely covers the large area of the room, and by the use of green leather for the upholstery of the hundred odd dining chairs for the use of the guests.

Another room which calls for attention is the restaurant, in the Louis XIV. style. It is oval in shape, the walls being panelled with oak and tapestry, with painted medallions over the tapestry panels. The novelty of treatment will be agreeable not only to the Manchester residents, but particularly to the many Continental visitors whom the commerce of the city attracts. Also on the ground floor is a smoking-room, charmingly decorated and panelled with oak in the Elizabethan style, freely modernised.

There is on the first floor what is termed the "Royal Suite," consisting of a Georgian dining-room, a Louis XVI. drawing-room, an Empire writing-room, a Georgian sitting-room and a ballroom. In the dining-room, decorated in a delicate scheme in white and gold, the introduction of small painted panels has a pretty effect. The fireplace, surmounted with a triple mirror; the windows with their upper panels leaded with heraldic devices; the Chippendale furniture in mahogany, upholstered in green; and the green Saxony carpet, produce in combination a decorative ensemble of the most effective kind. In the sitting-room the walls are covered with crimson silk divided into panels with silver braid, the furniture is Chippendale, with crimson coverings, and the carpet is of old-rose colour. This constitutes a colour scheme full of a quiet, refined warmth. In this and in most of the private sitting-rooms the furniture has a distinctly English character, and has been reproduced from the best eighteenth-century models. The French drawing-room is a white-and-yellow treatment, the white woodwork with ormolu ornaments being filled with panels of striped yellow silk. In the writing-room silk panels bordered with cut velvet are used for the walls, the cornice and the dado being in white, enriched with gold ornaments. The furniture is of mahogany, with ormolu mounts, and the chimneypiece is also decorated with ormolu mounts.

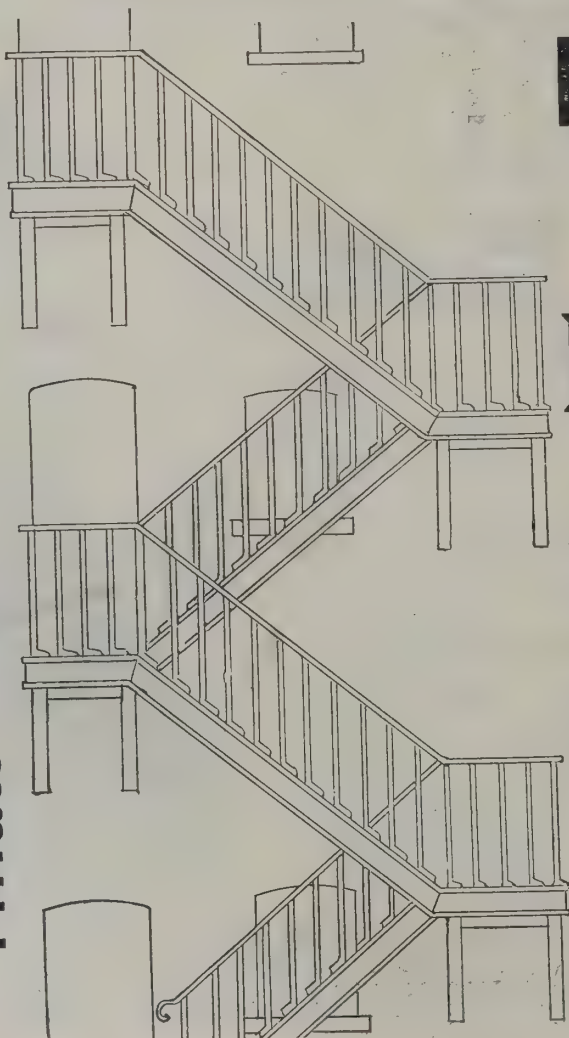
The bedrooms throughout are similarly tasteful and luxurious. Electric light is, of course, the only illumination employed, 6,000 incandescent and 26 arc lamps being used, and giving an aggregate of 85,000 candle-power. A telephone is installed in each room within easy reach of the bed. Every bedroom has its own synchronised clock-dial, which can be electrically lighted from the bed by its occupant, as also can the lights (three) in the room.

The decorations and furniture were provided by Messrs. Waring & Gillow, who have finished the various rooms completely in the different decorative styles, Jacobean, Georgian, and Adams, as well as the different French periods, and a noticeable sense of completeness prevails throughout. The mosaicwork has been very artistically executed by Messrs. Diespeker, Ltd., of Holborn Viaduct, who have put in upwards of 1,000 yards of Roman cube marble mosaic and a similar quantity of Venetian marble mosaic. The lifts throughout are Easton's express electric passenger lifts, supplied by Messrs. Easton & Co., Broadway Chambers, Westminster, S.W., who are installed in various parts of the building.

DISEASES OF STEEL.

At the concluding meeting of the Iron and Steel Institute, Mr. C. H. Ridsdale (Middlesbrough) presented a paper on "Diseases of Steel." Referring primarily to soft steel, he said that with all our progress in the study of steel there is still no definite and approved system of tests published for recognising its "diseases" and determining their origin, by the results of which those concerned might abide. Analysis failed to explain most of the troubles met with. He had attempted to combat various types of faults; he had pushed his investigation on both ends forward by synthetical reproduction of known irregularities of manufacture and backward from manifestations of the disease till its unknown cause was detected. He marked that the one great hindrance to progress in tracing faults to their origin was the strong hold various notions, which, though perfectly right in a general sense, when carried to an extreme were misleading. One such notion was the extent to which impurities, particularly sulphur and phosphorus, were hurtful. Nothing was further from his wish than to advocate indiscriminate laxity in the matter of impurities.

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wanted was not to advocate stretching the limits in order to admit inferior material, but only to face fairly whether or not by raising the limits in many instances material answering the requirements as well, or sometimes better, would be obtained more cheaply or readily. Another mistaken notion was that the maker ought to enter his material proof against being spoiled in successive working-up processes. The fact was that no make of steel had been met with that could not be spoiled quite simply. The iron then considered at length the various diseases to which it was subject. It would be far too bold a claim, he said, to pretend for one moment that as soon as the disease had been successfully traced and identified a commercially applicable remedy could be at once suggested. To avoid brittleness and hardness, and to obtain toughness and softness with a minimum of trouble, he advocated reheating rapidly after the steel became cold and deprecated continuing to heat steel which was already hot. Respecting the cure of faults already produced in material, this from the nature of the product was scarcely possible, as for instance, where through red-irritness or hardness cracks or fracture respectively had usually occurred. In other cases where possible cure was not practicable, the cost being prohibitive, still there were some cases where a very simple heat treatment or similar remedy would be quite effective and at a very slight cost.

Mr. J. E. Stead said that it would have been better if Mr. Ridsdale had termed his paper the "ailments of steel." He did think that steel had many diseases. They were chiefly ailments which might easily be cured. The diseases Mr. Ridsdale referred to could be mostly removed by a very simple reheating treatment. He would refer to only one point. When engineers made specifications it should in justice to them be said they did so with the object of getting material of the very best character. It was quite possible for steel containing high impurities properly treated to be better than the purest material improperly treated; but it must be remembered that for engineering work the lower the phosphorus the better, and if such steel were also properly reheated and forged it would be always better than a material which contained a higher amount of impurity.

Professor Turner (Birmingham) said the Institute was very much indebted to Mr. Ridsdale for his attempt to put on a scientific basis a method of investigating defects of steel and iron. He was very glad to see that Mr. Ridsdale advocated the synthetic method of discovering the causes of the defect.

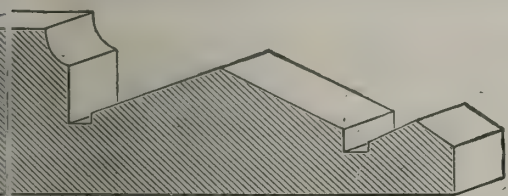
He himself had tried to discover the cause of blisters on wrought-iron in this way. He had introduced into a specimen those constituents which were supposed to be the cause of blisters, but the blisters did not follow. The explanation, he thought, was that one needed not only to have the materials necessary to produce the fault, but the proper conditions also.

The president (Mr. Andrew Carnegie) asked permission timidously to make a suggestion. Their distinguished fellow-member, Mr. Stead, had spoken of the "ailments" of steel instead of the "diseases." He would suggest that even Mr. Stead had not got the right word; it should be the "mysteries" of steel. He remembered that one of his managers—a German without scientific experience, but a practical man, who came to Pittsburg at six dollars a week and died a millionaire—they were great men these Germans—once said that he never allowed a test of iron to be made until it had lain for a week to cool. He found that its tensile strength was increased by so doing, the molecules having time to adjust themselves. All his life he (Mr. Carnegie) had seen more and more of the mysteries of steel. Steel had a soul in it. He was forced many, many times to recall the words of Professor Tyndall that we were yet to find all forces in matter when he saw sand into which a magnet was put cohering to the magnet when placed in another direction, and separating when the magnet was turned in the opposite direction, showing that every grain of sand had a positive and negative life. He could never pass a bar of steel without being reverent, because in that bar there were perhaps all the mysteries of human life. We were on the threshold of great discoveries. He wished that he could be made immortal along with Mr. Ridsdale and Mr. Stead, the one the apostle of the diseases of steel, the other of its ailments, and himself of its mysteries.

THE HOUSING PROBLEM IN JOHANNESBURG.

In South Africa, as in various parts of Great Britain, the question of accommodation for the less wealthy members of the community requires an urgent answer. In Johannesburg a Housing Commission is holding an inquiry. Some of the statements presented will suggest the difficulty.

Mr. Evans, the secretary of a building society, wrote:—There is undoubtedly a considerable scarcity of houses at from 4% to 5% rent per month, and I think such scarcity will become more acute, owing to the extension of shops, which, in many



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cases, renders necessary pulling down houses of the class workmen live in. Owing to the prohibitive price of land within a radius of three miles, landlords are compelled to erect houses, which will give a reasonable return on the capital sunk in the ground, and that necessitates the erection of houses which will let from 10% and upwards. On account of this factor, very few, if any, strictly working-men's cottages are now being erected.

I think it very hard that a working-man, earning, say, 25% per month, should have to pay, say, 10% a month for a house. I heard of an instance the other day in which a foreman carpenter, earning 25% per day, was paying 15% per month for a semi-detached house of four rooms and a kitchen, on a 50 by 50 feet stand, and I know of other cases in which the parents and half a dozen children are herded together in houses of three rooms and a kitchen, the rooms being about 10 by 10 feet in size. The working-man has no choice; he must live near his work and he has to pay whatever rent is asked. (In the term "working-man" I include clerks and salesmen, who are perhaps married on a salary of 25% per month or less.)

I think the cause of the scarcity is largely due to the expansion in the building trade. Workmen from other towns, and even from Australia, have flocked to Johannesburg to secure the high wages. When a lull occurs, these workmen will take their departure; there are not any large factories in Johannesburg employing numerous hands; the mines house their own employes, and it seems to me that this must be the chief cause.

Personally, I think the factors are in favour of a great increase in the population of Johannesburg in the course of a few years.

If cheap land were available, I believe private enterprise would remedy the existing congestion; but what do we see? Land situated east, west and north is held at high speculative prices, and in many instances the owners of private townships look askance at the erection of houses at a cost of less than 1,000% sterling. The working-man's cottage is tabooed anywhere within a reasonable distance of Johannesburg; owners of townships desire to have high-class houses on their estates.

Improved means of locomotion would be a great assistance, if it took place to where land was cheap, and subject to no restrictions, but it will not serve the purpose aimed at, to open up townships where land is already held at prohibitive prices, and no tramway or railway should be built to serve one purpose only. To succeed they must carry many interests.

Seeing that land is not available east, west or north of the town, the only avenue is south, along the line of the new Vereeniging railway. I think, if Government would lay out township on generous lines on one of the farms it is about expropriate, at a distance of from fifteen to twenty miles away from Johannesburg, and sell the land to heads of families (Europeans) in acre plots at cost price, not exceeding 10% per acre, and run convenient workmen's trains at low fares, would induce a great many respectable workmen to make the homes there. The plot-holders could combine and form building society amongst themselves, by means of which they could build their own homes.

Mr. Otto Schuller, a property owner, gave in the following statement:—

As a resident here since 1888, and as a property owner Johannesburg; I think my opinions may be of interest to the Commission. My experience is that houses having three, four or five rooms, kitchen, pantry and bathroom, are in great demand anywhere within easy distance of the business part of the town. I consider that the rents paid for houses of this kind are quite out of proportion to the accommodation and conveniences offered. It is, however, to the enhanced value of property in Johannesburg that the cause of high rentals must be laid, and not to the extraordinary greed of landlords, as has so often been stated. In many instances in the early days small houses were built upon stands which have tremendously increased in value. These stands have changed ownership from time to time, always at enhanced values, and as consequence the inadequate accommodation erected thereon has to be charged for at a most disproportionate price in order to pay even a very low percentage upon the capital invested. time, no doubt, many of these places will be pulled down and replaced by business premises, warehouses, &c., and, as a natural consequence, the population will have to seek dwelling further removed from the centre. Almost continuous surrounding Johannesburg innumerable townships have been laid out. Some have been sold as freehold lots, others again as leasehold. In my opinion, the making of these townships accessible will immediately relieve the present congested state of the town itself. On the north and east of the town townships have been laid out as far as eight miles away, on the west up to six miles, and on the south to four or five miles. Some of these places are almost inaccessible on account of the bad state of the roads leading thereto. In fact, residence most of them is almost impossible from this cause alone.

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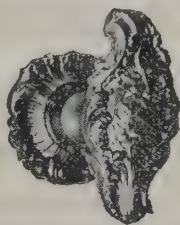


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here is, however, another great deterrent to residence in suburbs I have mentioned, and that is the almost total absence of any water supply and the lack of sanitary arrangements. In some of the townships, no doubt, water can be obtained by means of wells, or by damming up small water-courses and springs which exist thereon, but in others there is utterly no water obtainable by any other means than the laying of pipes and pumping water from considerable distances, by a regular waterworks system. In some places recourse has been had to the collection of rain water in tanks, but the use of such a supply must always be considered precarious, in an exceptionally dry season places the unfortunate residents in a most unenviable position. It is to the opening up of townships alone that we must look for relief from the present excessive rents demanded in the town; and townships can only be opened up, firstly, by the building of roads in different directions, or laying a light circular railway with branch lines; secondly, by securing an efficient water supply and sanitary service; and thirdly, by the making of good main roads from the town to the outlying districts. It does not hold with the view that it is the duty of the Government to lay out portions, or to acquire land from the present holders and sell to intending purchasers. There are thousands of cheap unsold stands in the near vicinity of Johannesburg, where there is plenty of room in the townships were they made accessible by road and rail, and habitable, by having a water supply and sanitary service. Stands within a few miles of Johannesburg can be purchased for as little as 4c. and 5c., so that in these instances the amount of interest required on the purchase price of the land is a very small factor.

Mr. Ewart S. Grogan read the following statement:—
I believe that the root causes of the present appalling conditions in the town are identical with the causes which have induced the hopeless collapse of the Government's attempt to introduce settlers on the land.

The main cause is the facility with which a "corner" can be induced and maintained because of—(1) The concentration of large sums of money (subscribed by the public) in the hands of operators who are interested in maintaining an artificial shortage of land; (2) the inducements to subscription afforded by the speculative attractions of the financial rights vested in land ownership; (3) the insignificant financial strain necessary to maintain such a "corner," due to the practical immunity of the land from taxation or compulsory beneficial occupation. Thus millions of acres can be

held back at no greater cost than the sum total of company administration; (4) the corner is completed by the tenacity of the land-owning Boer, who is in most cases simply a squatter and not a holder of land on a commercial basis.

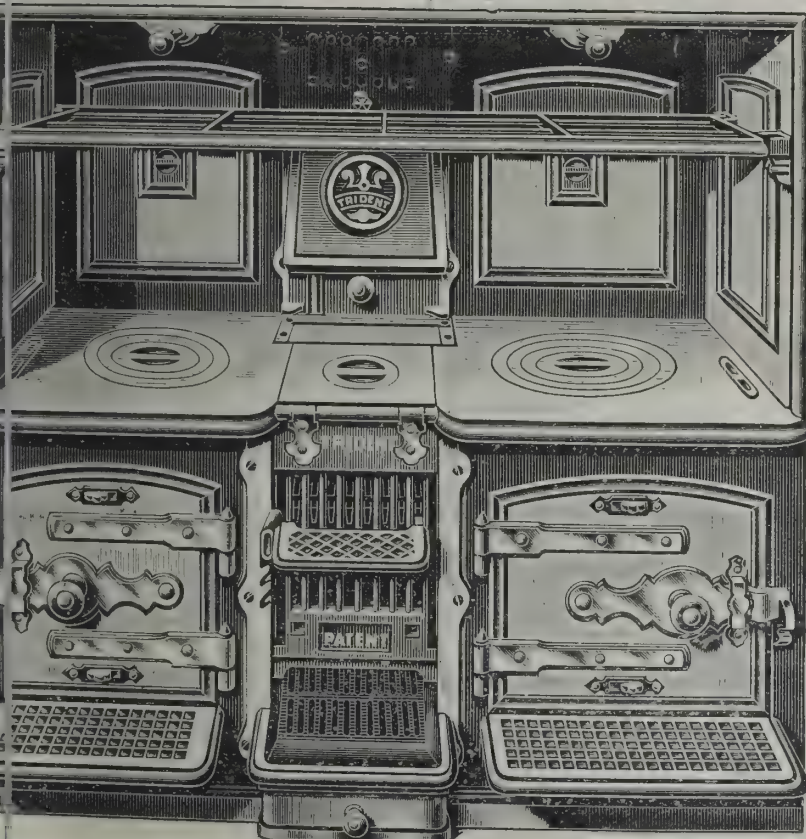
Thus the supply is beautifully regulated, and every jump in price due to a sudden wave of demand can be indefinitely maintained. In fact, the demand is being scientifically fed.

The chief contributory cause is the temporary and unexpected "corner" in developments on land. That is to say, there has been a sudden and excessive demand for stands and farms with buildings, while at the same time the congestion of the railways, the perpetuation of the same by the notable incapacity of the railway administration, the shortage of spot building material and of labour to handle same, the tightness of money and the general feeling among those willing to embark capital in building enterprise that the inflation, which has evolved from such a combination of causes, cannot be maintained, have prevented an increase of supply sufficient to overtake the demand for habitation.

In the case of urban property there can be little doubt but that the immediate cause of the enormous increase in post-war rents has been brought about by a grave shortage in buildings, and that in the first stage this rent represented the monopoly price of bricks and mortar. But later, owing to the completeness with which the activity of Johannesburg has been ring-fenced by enormously powerful corporations, it was found easy to snatch a large proportion of this monopoly price of bricks and mortar and tack it on to land. Thus although we find that the interest on capital invested on building land is gradually resuming what we may consider under existing conditions to be the normal figure, yet rents still remain practically constant and the difference is being netted by land. This process must continue until the large holders have to a much greater extent unloaded on the public.

Now it follows that, if my diagnosis is in the main correct, any extension of tramways or facilities of approach to outside areas, which by the way are just as effectually cornered by strong holders, can only result in an increase in land prices. With an increase in land prices the temptation to build will disappear and the present conditions will tend to perpetuation. As an example, the mere suggestion that an observatory and a road would be constructed for the beautification of Bellevue East has materially enhanced the price of the stands in that township. In the course of time, as the holding of land is more generally distributed over the community, there will be

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a tendency for prices to become normal, that is, resultant upon the free play of supply and demand.

No immediate relief can be obtained except by taxation of urban areas, such taxation to be assessed on the unimproved value and made payable by the ground landlord. This would have the effect of forcing the landlord to himself build or throw his land on the market, to be taken up by someone who was prepared to build. It would to a great extent destroy the speculative element in prices, and in time "burst the corner." There can be no doubt but that the retrograde action of the Government in ignoring the Town Council's desire to rate on unimproved values only has been a considerable factor in maintaining the present cruel pressure on the active element on the land. It should also be made illegal for landlords to fix their prospective liabilities on tenants, and any measure tending to obviate this evasion should be made retrospective.

If anyone doubts the effectiveness of the "corner," I would refer him to the terms offered by the Kensington estate, which are to the effect that the purchaser may buy land, may then lease it, such lease to carry the right of purchase; but that the land shall still remain in fact (except as regards payment of rates or taxes on the land) the property of the landlord, who shall have perpetual servitudes over, and to whom it shall eventually revert without further process. I believe that even this is considerate compared with some of the extant forms of tenure.

THE SOUTHWARK BRIDGE IMPROVEMENT.

THE Bridge House Estates committee of the City Corporation have issued a report on the following reference:—"That, having regard to the prospective increase in the income arising from the Bridge House Estates, it be referred to the Bridge House Estates committee to consider and report to the Court generally upon the existing facilities for traffic across the river Thames within the City's jurisdiction, and to make such arrangements for increasing such facilities both as regards bridge accommodation and otherwise as they may deem expedient in the interests of pedestrian and vehicular traffic, and more particularly as to the desirability of improving the northern approach to Southwark Bridge by the construction of a viaduct starting from a point in Queen Street adjacent to Cannon Street, over Upper Thames Street to the commencement of the bridge. And, further, to consider as to the practi-

cability of removing the cast-iron semicircular arches of bridge and replacing them by low-crowned elliptic arches adopted at Westminster Bridge." The committee report to the City surveyor (Mr. A. Murray) and Mr. E. W. Cruttwell, the then assistant consulting engineer to the Town Bridge, were instructed to consider the best means of effecting improvements to Southwark Bridge and its approaches. They accordingly reported, and suggested the following methods of improving the bridge:—(1) By lowering the present bridge and its approaches and raising the levels of Upper Thames Street; and (2) by lowering the present bridge and constructing a viaduct across Upper Thames Street." It was considered by the committee that the cost of carrying out the latter plan, together with the necessary spur streets, would be far too heavy to justify its being recommended to the Common Council for adoption. The first-named design contemplates the lowering of the summit of the bridge between 7 feet and 8 feet, the improvement in the gradient of Queen Street, the raising of the level of Upper Thames Street between 3 feet and 3 feet 6 inches (where the approach to the bridge intersects), and the streets and lanes leading therefrom proportionately. The special sub-committee recommended that that scheme should be adopted and carried out at an estimated cost of 350,000/. Vehicular traffic returns have been taken over the four City bridges, and have proved that owing to the gradients, Southwark Bridge is not much used by heavy vehicular traffic. The new scheme entails a reconstruction of the bridge, the only portion of the present structure to be utilised being the shore abutments. The width between the parapets is at present 42 feet 6 inches, and is proposed to increase it to 60 feet 6 inches. The scheme will result in an improvement in the gradient of the north side from about 1 in 23 to about 1 in 50, and on the south side from about 1 in 23 to about 1 in 40.5, comparing very favourably with the gradient of Blackfriars bridge, which is 1 in 40. The actual amount that the bridge may be lowered will depend largely on the views of the Thames Conservancy Board, whose consideration will, no doubt, be influenced by the fact that a headway at Cannon Street railway bridge at high water is 25 feet 4 inches, while at Southwark bridge it is 28 feet 9 inches. The committee state that the improvement now suggested, if carried out, will no doubt result in the bridge being used to a much greater extent by the heavy wharf and warehouse traffic which will not cross while the present gradients remain. The Common Council will be asked to consent to the proposal.

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The Architect.

THE WEEK.

ALTHOUGH the evidence given before the War Commission has importance for every inhabitant of Great Britain, it was not until Major HILLS, who has charge of mapping in the Intelligence Department, described his experience that civilian readers who follow technical pursuits could be expected to realise the extent of the mismanagement for which the War Office is responsible. Every surveyor knows the value of correct maps, and can realise that success or failure in war may sometimes depend upon them. One of the causes of the failure of the French in the Franco-German war was their defective maps. There was perhaps some excuse for the inadequacy of the maps representing the seat of war in South Africa, although it would have been easy to have had useful plans prepared. But with the exception of the gold-yielding area of the Gold Coast Colony no attempt has yet been made, says Major HILLS, to survey upon sound, well-considered methods any portion of any of the British possessions in Africa. The maps are crude, and based on all sorts of heterogeneous material. In other parts of the world there is the same indifference to surveying, arising, no doubt, from the belief that war is never likely to take place in those regions. France spends nearly 60,000*l.* a year on military surveys. The outlay in Germany is unknown, but they possess the most accurate maps existing not only of their own possessions but of those of other countries. Italy spends about 20,000*l.* In England the annual expenditure on military surveying is 6,500*l.* The Ordnance Survey in England has cost so much money, and the operations have been spread over so many years, there is some reason for supposing that a military survey of the colonies would become an intolerable burden on taxpayers. But a different class of work would serve. It is considered that all the plans which are absolutely necessary could be carried out by a staff of seventy officers and 340 assistants, including all expenses, for 170,000*l.* a year. Compared with the outlay in other branches of the service, that sum seems only a trifle.

In the majority of cities fashion has of late years preferred the western side. Berlin is no exception. The favour in which the western suburbs of Charlottenburg, Schöneberg, Wilmersdorf are held is suggested by the number of applications made for permission to build. In April last there were 542 applications, 628 in May, 647 in June, while in July they totalled 679. This shows a steady progress. Out of the 679 as many as 588 permissions have been granted, and the others are still under consideration. It is on the western side that the forests of Spandauer, Arnswald and Tegeler still exist, and building sites in the vicinity are necessarily most picturesque. There is also a long line of lakes. The places are easily approached by railways and tramways. There are moreover several of those beer-gardens, some having excellent theatres, which are always attractions to Germans.

If the Italians are eager to see a successor to the Campanile erected in Venice they would do well to call in a foreign architect and allow him to consummate the work without local interference. So great a sacrifice might be more than the Italian nature could bear, but there is so much jealousy existing it is doubtful whether a Venetian can satisfy the rest of Italy, or an architect from any other of the Italian cities can satisfy the Venetians. This peculiar condition of affairs is made evident by the publication of Signor LUCA BELTRAMI's pamphlet, which he calls "Seventy-two Days' Work on St. Mark's Campanile." It will be remembered that he resigned his appointment as architect for the reconstruction. His motives were dismissed, and the general opinion was that Signor BELTRAMI had come to a conclusion about the impossibility of carrying out the work in a satisfactory manner, and it was better to escape the responsibility than to be for ever associated with a failure. He does not now express any opinion about the practicability or the reverse of the plans which

were prepared. But he appears to imply that he would not have the support from the Venetians which was desirable with so important a work. It is also apparent that he was not confident about the use of materials from the old campanile. The tests to which samples were subjected in Milan he considers were insufficient. In such cases as Signor BELTRAMI's it is generally advisable to read between the lines of an explanation, and there is little doubt he has had to endure enough heart-burning during ten weeks to compel him to leave the unsatisfactory duties of his office to be accomplished by men of a different class.

THE statue of RENAN which was unveiled a few days ago at Tréguier, his native place, is likely to give an erroneous idea hereafter of his intellectual gifts. The academician is represented as seated; he was too ungraceful to form a standing figure, and beside him is posed the goddess PALLAS-ATHÈNÉ. That suggests a man who was devoted to Greek literature, philosophy or art. It is true that in his old days, when RENAN visited the Acropolis of Athens, he knelt in worship of the spirit of the place, which was personified to him by the guardian deity of the city. But his tendency throughout life was Semitic rather than Hellenic. When he was twenty-four he won the Volney prize of the Institute for his "General History of Semitic Languages." At a later time he sought the chair of Hebrew and Chaldaic languages in the College of France, and although unsuccessful he obtained a consolation prize in the appointment to Phœnicia, where he was to seek after inscriptions. Subsequently he obtained the coveted chair, and after a single lecture was deprived of it. The majority of his books relate to the subject of religion, and especially the relations between the Hebrew religion and Christianity. It would be only by subtle reasoning that his numerous volumes could be supposed to be inspired by the Athenian goddess.

It may not be generally known that a collection of photographs of places having geological interest in the United Kingdom are being obtained, and it already numbers 3,771 views. Large as is this total, the following twenty-five counties are still entirely unrepresented:—Cambridge, Huntingdon, Rutland, Carmarthen, Clackmannan, Dumbarton, Dumfries, Kincardine, Kinross, Roxburgh, Selkirk, Carlow, Kildare, Kilkenny, King's Co., Leitrim, Longford, Monaghan, Queen's Co., Roscommon, Tyrone, Waterford, Westmeath, Wexford and Wicklow. The work is unofficial, but the collection is stored at the Museum of Practical Geology in Jermyn Street. The funds obtained are small, for in thirteen years 130*l.* was received and 101*l.* 10*s.* expended. The British Association has therefore acquired a valuable and unique collection at the cost of rather less than 6½*d.* per print. There is a duplicate collection of 450 views, which is lent to local societies on application. The secretary of the committee is Professor W. W. WATTS, of the Birmingham University.

ONE of the consequences of the marital difficulties between OBERON and TITANIA was, in SHAKESPEARE'S words, that "the nine men's morris is fill'd up with mud, and the quaint mazes in the wanton green for lack of tread are undistinguishable." The game referred to was known in France as "merelles," or "marell," and according to STRUTT was sometimes played at a table with black spots at the angles and intersection of the lines, and sometimes with holes in the ground. A curious discovery by Dr. SCHNEIDER, an archæologist of Mayence, has revealed that the game was also in use in Germany during the twelfth century. He has come across in a high gallery of the cathedral of Worms two representations of it. Evidently the parties engaged were the workmen employed on the building, and who at their dinner hour or other interval amused themselves with the game. The arrangement corresponds with the practice still followed in some parts of Germany. The cathedral is an old building, and is supposed to have been completed either in the eleventh or beginning of the twelfth century. Dr. SCHNEIDER considers that the eastern part where the gallery is found dates from 1121, and that other parts were not finished until 1234. Whichever date is accepted it becomes a proof of the antiquity of "nine holes" as a recreation for masons and workmen.

COAST PROTECTION.

A REPORT was presented to the British Association at the Southport meeting which does not appear to have received much attention. Because it bears no renowned names it is likely to be overlooked by the public in general. Yet the subject is of unquestioned importance, for it relates to changes in the sea-coast of the United Kingdom. Five years ago it was resolved to request the Admiralty to arrange for the co-operation of the coastguards in securing systematic observations on the erosion of the land by the sea. Every one acquainted with the history of the British Association is aware that at some of the early meetings papers were read by members of that force. The "handy-man" occasionally finds time to think and reflect. The ocean has interest for him in more ways than for landmen, since experience has given him those mental faculties which add strength to sight. It is not difficult to turn him into a skilful observer. To enable him to follow a systematic course in this case, instructions were prepared by a committee of the Association, as well as forms on which the observations were to be recorded. For the last four years they have been collected and filed. So much material was accumulated it was decided to tabulate and collate the data. The duty was undertaken by Mr. JOHN PARKINSON, M.A., of St. John's College, Cambridge.

A geologist knows that the sea continues to be the most important agent in the transformation of the surface of the globe. To his mind's eye Great Britain and Ireland were once united and constituted a part of the continent which we now call Europe. He observes, too, that the destructive force seems to be mainly directed at the level of the habitable land; for at great depths it is doubtful whether the operations of the mass of waters are equally effective. No doubt in some cases the waves appear to defeat themselves, for through their agency beaches are formed which become ramparts. The Chesil Bank between Portland and the mainland is an instance of this compensatory reaction. The destruction of a particle of matter is believed to be an impossibility, and it may therefore be assumed that what the sea demolishes in one place is used in building up islands and continents somewhere else. As is usual in all natural operations the debit and credit sides of the account are found to be evenly balanced.

We poor mortals are incapable of deriving consolation in broad views of physical forces whenever our own petty but selfish interests are imperilled. While we are endeavouring to hold our own against our fellow mortals in other parts of the globe, our little island is being wasted by those waves we are accustomed to look upon as our best protection. In different places we hear of buildings and even villages which have vanished. The Londoner who cannot allow himself more than a half-day excursion ticket is able to visit spots where the land has had to succumb to the sea. In the tenth century at Walton-on-the-Naze, or Walton-le-Soken, a church with houses existed, which, owing to the fear of pirates, were erected at some distance from the coast. No traces of them are now visible. Better known is Reculvers, which is not far from Herne Bay, on the Kentish coast. DOUGLAS JERROLD, who loved the little town, said that in his day "at lowest tides the people still discover odd, quaint household relics, which, despite the homely breeding of the finders, must carry away their thoughts into the mist of time, and make them feel antiquity. The very children of the village are hucksters of the spoils of dead centuries." He acknowledged that it was difficult to conceive the annihilation of a whole town engulfed in the ocean, and fancy suggested that only a "sea change" was suffered, and that the old inhabitants are carrying on their everyday business somewhere else. In the time of HENRY VIII. the parish church of Reculvers was nearly a mile from the sea. Indeed, Kent affords many remarkable proofs of the coming and going of the sea in respect to the land-line, as well as of what can be done to prevent destruction. To anyone who has an interest in reclamation, Romney Marsh is one of the most interesting parts of England.

People who live inland imagine that the wear and tear of the waves along the coast is so gradual it can scarcely be expressed in feet and inches. Sir CHARLES LYELL was told by a Hampshire farmer that along that part of the coast

the average loss was taken to be a yard in width per year. In parts of Devonshire the average was believed to be 10 yards a year. Some of the beautiful bays which are now enjoyed by visitors on the west coast are to geologists visible evidence of erosive power. Fortunately, however, the sea recognises the advantages of a give-and-take policy. Southport, where the British Association meetings were held, is an example of recession, for a sea bath is not only to be obtained at some distance from the shore. On the whole it is considered by those who have investigated the subject that the area of England and Wales at the present day is not less than the area of the country five centuries back.

It must be admitted the destruction now causes greater inconvenience than was possible in the fifteenth century. Those who had to traverse the sea in ships were obliged to live on the shore. But where the trade was not great people wisely resided at some distance from it. In modern times when those who have been pent in cities look on a sojourn at the seaside as indispensable, houses have been erected for their gratification as close to the sea as sites can be found. The possibility of destruction becomes then a more serious affair than it is for the farmer whose fields stretch to the shore. The losses which can arise are now exhibited in some of the seaside resorts on the east coast. The work of destruction is frequently facilitated also by the withdrawal of shingle, gravel and sand, and it cannot be denied the materials are used mainly for building. The information sought through the agency of the coastguards partly related to those abstractions of protective elements, and it is not difficult to realise the advantages which would often be gained if more control were exercised over what SHAKESPEARE calls the unnumbered pebbles of the beach.

The reports received from Scotland mainly deal with the eastern coast. It is stated that a road which was dangerous near Stranraer is now protected by concrete walls. At Helmsdale in Sutherland there has been a loss of land, but it is partially stayed by a breastwork of wooden piles. At Gourdon the coast suffered through the removal of shingle and the absence of groynes. There seems to be no regular custom with regard to shingle. In some places it is not allowed to be carried away, in others permission is given. Near St. Andrews landslips have occurred and material is removed by building contractors.

The changes in the English coast from St. Abb's Head to Saltburn are said to be insignificant. In a part north of Blyth sand is carried off, but for some miles south of Blyth it is not removed. Between Filey Point and Flamborough Head the coast is reported to be stationary, but in Filey Bay and the neighbourhood the loss is about 3 feet per annum. There was formerly an annual loss of about 6 feet north and south of Bridlington Harbour, but through the agency of piling and groynes the scour is prevented. Along the reach of coast forming a continuous line between Bridlington and Spurn Head the coast is receding where not specially protected at the rate of 6 feet per annum. At Withernsea the loss is 9 feet. In addition there are occasional falls of cliff which are locally attributed to the scarcity of sand at the base. At the estuary of the Humber chalk-stone groynes have prevented erosion. At Cleethorpes 20 feet of bank have been washed away since 1899. Along the Lincolnshire coast as far as Saltburn the losses are insignificant. In parts of the Wash the sea is receding, and efforts are made to reclaim the land for cultivation. On the East Anglian coast, between Saltburn and Harwich, there is continuous erosion. It may be taken as from 6 feet to 9 feet per annum. The lighthouse on Lowestoft Ness has had to be moved back 249 feet "as a consequence of a loss to the headland on which it stood of 120 feet in the year." The annual loss at Happisburgh is estimated at 9 feet. From Covehithe to Dunwich, a distance of 6½ miles, the yearly loss is 10 or 12 feet. Dunwich is a historic sufferer, for once it possessed a dozen churches, which the sea claimed as victims. At Felixstowe 2½ miles the coast gained by being groined. Along the Essex coast there is little change, owing, it is believed, to the protections, which are mainly groynes. The lengthening of the pier at Walton-on-the-Naze has added to the land.

The northern part of Kent would appear to be most liable to erosion. The eastern and southern shore seem

gain from the shingle. Near Hampton the yearly loss is from 15 to 20 yards. Between Birchington and Reculvers it is about 6 feet. St. Margaret's Bay, near Dover, about which so much was anticipated, has suffered greatly since 1900. At Dover the sea has encroached about 40 feet in twenty years. Coming to Sussex, it is found that the groynes at Brighton retard the shingle from working east; but the cliff from the Aquarium eastwards crumbles away with high winds and spring tides. At Felpham, near Bognor, the groynes have become useless through neglect, and a loss of 40 feet is reported in two years. On one side of Chichester harbour there are no groynes, and the land consequently suffers. There are fourteen records of encroachment from the Isle of Wight. In those parts where coast defences have been set up they have, at least, saved the land from the waves. In Dorset the encroachment varies from 2 to 3 feet, but in several places there are falls of the cliff. Only a few reports have been received from Devonshire, and they do not mention any important changes. Cornwall also has only slightly suffered. A slight encroachment occurred at Newlyn which caused the road along the seafront to be abandoned. The cliffs are continually falling in the neighbourhood of Clovelly and Hartland Point, where there are no groynes. Out of twenty-four reports received from South Wales, eight record loss of land.

It is needless to say that some kinds of rock are more liable to destruction than others. Not only is there little resistance in several of the formations, but in rocks where there are fissures the compressed air also operates and there is a front and rear attack. Sometimes it happens that the shingle acts like bullets, but in certain conditions of tide the whole of the force is expended on the pebbles and the shore line is preserved. The construction of groynes can be regarded as no more than a temporary expedient, for it is absolutely necessary by restorations to keep all the timbers, whether piles or sheetings, in sound condition. The report presented to the British Association has yet to be considered by experts, but the lesson inculcated by the returns is that no time should be lost in setting up groynes in all places where they are likely to be useful. It must be admitted that the work is often found to be disheartening. There may be a succession of severe seasons, and in each of them the groynes may suffer. It is some satisfaction that they are not an expensive class of construction, and if they are successful they may repay the outlay a thousandfold.

GIOVANNI BAPTISTA PIRANESI.

AMONG the men who have devoted their lives to the glorifying of architecture there is not one who has more claim to remembrance than PIRANESI. He produced about two thousand etchings, some of them being 10 feet in length, and the majority were intended for the exaltation of Roman buildings. It cannot be said that of late years his plates have received the attention they deserve. This arises from a supposition of their inaccuracy. Artists are allowed to depict the creations of nature, such as mountains, rivers, trees, clouds, men, animals, in an imaginative way. The aggrandisement of subjects is supposed to denote a vigorous mind. But in architecture, which can be considered an imaginative art, the exercise of imagination in representation is not tolerated. To PIRANESI's eyes everything architectural appeared magnificent, and his plates are judged as if they were no more than working drawings. The manner in which kindred spirits can consider them is suggested by a passage in DE QUINCEY's "Opium Eater," relating to his own architectural dreams:—

Many years ago when I was looking over Piranesi's *Antiquities of Rome*, Mr. Coleridge, who was standing by, ascribed to me a set of plates by that artist called his "Dreams," and which record the scenery of his own visions during the delirium of a fever. Some of them (I describe only from memory of Mr. Coleridge's account) represented vast Gothic halls, on the floor of which stood all sorts of engines and machinery, wheels, cables, pulleys, levers, catapults, &c., expressive of enormous power put forth and resistance overcome. Creeping along the sides of the walls you perceived a staircase, and upon it, groping his way upwards, was Piranesi himself. Follow the stairs a little further and you

perceive it came to a sudden abrupt termination, without any balustrade, and allowing no step onwards to him who had reached the extremity, except into the depths below. Whatever is to become of poor Piranesi, you suppose, at least, that his labours must in some way terminate here. But raise your eyes and behold a second flight of stairs still higher, on which again Piranesi is perceived, by this time standing on the very brink of the abyss. Again elevate your eye, and a still more aerial flight of stairs is beheld, and again is poor Piranesi busy on his aspiring labours, and so on until the unfinished stairs and Piranesi both are lost in the upper gloom of the hall. With the same power of endless growth and self-reproduction did my architecture proceed in dreams. In the early stage of my malady the splendours of my dreams were, indeed, chiefly architectural, and I beheld such pomp of cities and palaces as was never yet beheld by the waking eye, unless in the clouds.

There was a time when in many old-fashioned houses in this country half a dozen or more of PIRANESI's plates, which bore some relationship among them, used to be hung on the walls of rooms. In WALTER SCOTT's diary after his financial crash there is a pathetic entry concerning one of those sets. He wrote:—"Promised SHARPE the set of PIRANESI's views in the dining parlour. They belonged to my uncle, so I do not like to sell them." Few engravings were better adapted for the mural decoration of an apartment. The vigorous lines, the strong contrast between light and shade, and the subjects which could be comprehended at a glance, made them seem more fitted for a wall than for a portfolio. But fashion changes, and photographs are now considered a better decoration.

The date of PIRANESI's birth is uncertain. In French books of reference it is put down as 1708; in English as 1720. He was a Venetian. As his father worked as a mason it is not improbable he belonged to a family who followed that trade, and the love of architecture in the young JOHN BAPTIST was hereditary. His father was desirous to make an architect of him, and in order to give him the fullest scope he sent him to Rome with an allowance of 6 piastres, or about 30s., monthly. Architectural studies in those days were based on a different system to that now adopted. PIRANESI may have been following the usual routine when he devoted himself to the representation of Classic buildings, and for an artist of his ability it was almost as easy to etch as draw in pencil or colour. In any case, the father thought three years was a sufficient stay, especially as he was likely to anticipate there could be co-operation between himself and his son. Rome had, however, thrown her glamour over the young artist, and he declined to return to Venice. His allowance, small as it was, was withdrawn. JOHN BAPTIST may have anticipated that he could gain independence by his etchings.

In 1741 he brought out his first collection of some two hundred plates relating to the antiquities of Rome. The pencil, as DRYDEN says, speaks the tongue of every land, and strangers in Rome were glad to obtain copies. The earlier engravings of buildings were either timid or coarse. It was at once realised that PIRANESI was an interpreter and was able to impart some of his own characteristics to his subjects. The exaggerations were believed to resemble those of SALVATOR ROSA, and much would be pardoned for the sake of the power to be seen on every plate.

In spite of his success PIRANESI for a time suffered poverty. He was married and his plates were produced in the midst of the noise inevitable with young children in a small house. Sometimes, however, he insisted on seclusion, and, indeed, there was as much need for it in his case as there would be for any painter or sculptor engaged on original creations. Young architects who take part in architectural excursions are not likely to approve of PIRANESI's methods. As an enthusiast every ancient example in Rome was likely to make a deep impression upon him. He appears in many instances to have depended mainly upon the strength of his recollections. He rarely made any preliminary drawings or sketches on paper. He usually attacked the plate directly. Sometimes, after etching the outline, he would endeavour to show the effect of masses by working on the plate during moonlight in front of the building. It would be an error to compare his etchings with those of REMBRANDT, which represent a different class of subject and were treated on a different principle. But PIRANESI's plates can assert themselves beside the Dutch master's, for they have a solidity

which is remarkable. Most of the subjects are derived, not always with exactitude, from ancient examples, with the exception of "Carceri d'Invenzione," the plates with which COLERIDGE was fascinated. The majority of those dealing with antiquities before his time were generally no more than outlines. The massiveness and darkness of those by PIRANESI were considered an innovation and gave rise to much discussion. That by some authorities his work was regarded with favour is evident from his being elected a member of the British Society of Antiquaries. If imagination had been carried to excess by him he would not be admitted by so learned a body.

English artists were also willing to utilise his services. For ROBERT MYLNE he produced a view of Blackfriars Bridge, showing the work in process of construction and before the centreing had been removed from the arches. He also executed a plate or two for ROBERT ADAM, the architect. Lord CHARLEMONT, an Irish peer, wished to display himself as the patron of the artist, and to have the "Architectura Romana" dedicated to him. But in some way PIRANESI believed himself to be slighted, and for his lordship's name others were substituted. The nobleman, however, appealed to the courts of law in Rome, and judgment was given in his favour. In those days controversies with all their consequences could hardly be avoided. PIRANESI published letters in which he maintained with some vehemence that the Romans did not derive all their arts from the Greeks. The buildings demonstrate the influence of Etruscan monuments which were of a nobler style than those of the Greeks. He had other controversies with respect to the dates of some of his temples, a perilous question for a passionate man. His knowledge of architecture was considered to qualify him for the superintendence of several works in churches. The exuberance to be seen in his etchings was displayed in some of them, for they are overloaded with ornament. One remarkable example is the church of S. Maria Aventina, which he restored in 1765. A man who subjected himself to severe restraint could not, apart from architectural work, produce twenty-nine folio volumes, some having immense folding plates. The titles of the most important among them are as follows:—"Architectura Romana," 208 plates, 4 vols., atlas folio; "Fasti Consulares Triumphalesque Romanorum;" "Antichita d'Albano," 35 plates; "Campus Martius," &c., 54 plates; "Magnificenza dei Romani," 44 plates; "Vedute di Roma," 2 vols., 130 plates of modern buildings at Rome; "Collection of Candelabra, Vases," &c.; "Collection of Chimney-pieces;" "Carceri d'Invenzione," 16 plates; "A Collection of Antient Statues and Busts," 350 subjects; "The Trajan and Antonine Columns;" "Antiquities of Herculaneum and Pompeii." He was assisted, no doubt, by some pupils as well as by his five children, but the lion's share was performed by himself. This will be sufficiently evident from a comparison with the plates by his son published in Paris, many of them being coloured. Although excellent and more in keeping with modern taste, they do not display the tremendous force seen in JOHN BAPTIST's plates. He died in 1778. It was recognised at the time that none of his predecessors had represented architecture, whether in ruins or well preserved, with more vigour. Although he might have had imitators, he was without any rivals. In his imaginative work he allowed himself the fullest scope, and it was appreciated by his contemporaries. To understand him we must endeavour to go back to Rome in the eighteenth century. Tameless had become the characteristic of art. In PIRANESI the spirit of reaction was strong. If, instead of being an etcher, he had devoted his skill to painting, it is possible his name would now be better known. He attached himself to architecture, a class of work which can only appeal to a few, and as the few applied rigorous rules to what were free translations, PIRANESI has failed to please them. His position among lovers of art is therefore likely to be always uncertain.

The Additions to the Palace of Laeken for the King of the Belgians are expected to be sufficiently completed to allow of habitation next year. In order that there may be no disappointment, about 700 men are engaged under the direction of M. Charles Girault.

MATHEMATICS AND MANUFACTURES.*

I FIND myself confronted with the difficulties that prevent us in this country from succeeding as we used to do in the international struggle—a struggle the issue of which is daily becoming more and more a question of brains, of education, of skill and enterprise in manufacture, and finally of that great virtue extolled by the President of the United States, strenuousness.

It is the duty of everyone who sees the way in which we are being outstripped in the race to do what in him lies to scrape off the rust which is clogging our educational machinery. I now refer to the defects which hamper the intellectual progress of the majority of our youth. I believe the public school mathematics in this country stands on a level of its own, well below that of any other. In England, owing to our complicated system of weights and measures, which our Ministers and our Parliament dare not abolish for our own good, the scanty hours allowed for mathematics are devoted to the learning of tables which should never have to be learned at all, to compound reductions designed merely to puzzle but not to lead to any new step, and even if our present system were not futile enough, to learning lists of antique values which serve the useful purpose of giving the boys something to do. The result is that beyond having time to acquire a few elementary algebraical rules the boy is never introduced to algebra proper; he has no idea of algebraical reasoning; his trigonometry often does not exist, and the very sound or suggestion of co-ordinate geometry or of the differential calculus, which might be well within his reach, produces a shiver of dismay. Geometry is presented for the first time in the form of Euclid, a form as repulsive to most boys as it well could be. I must confess to having been attracted and not repelled by Euclid, but the boy does not care for time. Now that I look at Euclid again I have also to confess that any lingering regard for an old friend vanishes before the archaic language and the unnecessary circumlocution. If Euclid must be retained let it be translated into English, the English that any parent would use in explaining the ideas to his son; let it be illustrated by constant reference to real things so as to appeal to the boy who does not revel in the abstract. Let the ideas and the terms first be presented in the form of experiments and of measurements with instruments; let the schoolmaster dare to throw over the intolerable conservatism which prevents our doing anything ten times as well lest some item should prove to be a trifle worse; in fact, let us take some heed of the possibly extreme, but none the less genuine and valuable preaching of Professor Perry. I have so far referred only to the miserable use that is made of the odd hours grudgingly given to what is called mathematics. Is it any use to repeat the long-standing complaint of the way in which the schoolmaster insists upon overdoing his Latin and Greek under the belief that they are at least essential to intellectual development, if, indeed, they do not supply the only stimulus? A society is constituted they are essential to education as an extensive knowledge of Confucius is essential to an educated Chinaman, so that we may mix one with another, appreciate the works of our great authors, understand the same allusions and have the same kind of knowledge of the development of our civilisation. Few men of science, perhaps none, wish to see all of this, some of which is essential to a general education, abolished; all that we ask is that the schoolmaster shall not continue to impose upon the community the unbalanced learning which corresponds to mathematics and science without letters. The time given to classics is exorbitant; more must be reserved for those pursuits which draw out the habit of independent thought, creation and originality. I would be well if every schoolmaster could read an admirable article by James Swinburne on the two types of mind fostered by the two complementary types of education, but this buried in an inaccessible number of the *Westminster Review*.

The classic is unfortunately still in possession, and where as is still often the case, he is innocent of any appreciation of the educational value of post-Newtonian studies it is not surprising that he thrusts into odd moments the subjects he does not understand, and which he therefore despises, and the boys committed to his charge and living in such an atmosphere are half-ashamed of showing any interest in the science which is within their reach. It is almost impossible to believe that such can be the case, but I have referred to the impression to which the appointment of the first science master at my own school gave rise. I now refer to the contribution of a discussion on education but a year or two ago by that experienced teacher, Principal Griffiths. Fortunately our public schools are not the only ones in the country. Smaller and less fashionable schools pay more attention to education and suffer less from what, in defiance of all rule, I can only call didactic method.

* From the address of Mr. Charles Vernon Boys, F.R.S., president of the Mathematical and Physical Section of the British Association.

I am not aware that the result of this almost total exclusion of tabooed subjects in favour of Latin and Greek is producing a standard of classical attainment in our youth greatly in advance of that to be found in other countries, but it is certain that in history, modern languages, mathematics and science the product of our public schools is sadly deficient.

There is another point related to our deficient general scientific training on which I wish to offer some remarks, and that is in relation to manufacture. It is the fashion among some of our scientific people to talk of our manufacturers as if they were a very ignorant lot, and to suppose that one word from some professor who has never been outside a laboratory would be sufficient to put them right. Now in my somewhat varied experience I have had occasion to become acquainted with corners of our great manufacturing areas, and while my experience is small and not enough to generalise upon, it is nevertheless several times as great as that of some who are ready to adopt the superior attitude, but have none.

The loss of one industry after another is only too patent. In so far as this may be due to want of enterprise in our men of business we are not concerned with the cause in this section; in so far as it may be due to want of that little assistance which the fiscal arrangements in other countries make possible for our rivals again we are not concerned in this section; in so far as our patent laws are unique among those of manufacturing nations in allowing the foreigner to manufacture in his own country under the protection of our patent law, so that the most valuable school we possess, the manufactory, as well as the manufacture, is conducted to the advantage of our rivals—a point which I suppose it is unnecessary to commend to the notice of Mr. Chamberlain—with this, too, we have no concern in this Section; but in so far as this, or the want of enterprise or of foresight that leads to it is due to ignorance and to want of appreciation of scientific advance, we are very much concerned with it. If I may refer to my own limited experience, there is a lamentable contrast in the manner in which a great number of our own countrymen look at any proposition put before them and that in which the alert American does. It is useless to explain that which would be self-evident to a man with a moderate knowledge of chemistry and physics, such as our schools ought to supply, or for which they should at least lay the foundation, for the words have no meaning; they are merely words. He distrusts anything new; he has heard of a new process before that did not work out well; his experience on the Continent to him is no experience at all, for he believes the inhabitants in such distant parts of the earth are not capable of knowing as well as the enlightened Englishman whether a thing is properly done or not, and so he goes on as he did before, perfectly content. This attitude would not be possible with the most elementary understanding of common principles.

But there is another side to this picture. Anyone who has discussed any scheme with the board of directors, the manager, the engineer and the chemist of one of our great manufactories must have been struck with the concentrated ability there and in harness. It has often seemed to me that it is a great misfortune that our professors of mechanics, of physics and of chemistry are in so many instances precluded from a better acquaintance with the working of these great machines—a misfortune not for the works, at least directly, but for the professors, and more especially for their pupils.

Nowhere are scientific problems of greater complexity constantly having to be solved than in a great manufactory; nowhere is such concentrated talent necessary as in a works organised and carried on in competition with all the world. Look upon these as our most valuable schools, and the closer the touch between them and those whose province it is to teach, the better for the teacher and the pupil.

It is, perhaps, hardly desirable to mention any one where there are so many. I am tempted to dwell upon the problem which has been at last successfully solved by Parsons, this being the joint product of the school and of the works; but there is one picture—a contrast, I will not say of light and shade, but of colour and colour—to which I must refer. I remember in my early days, in the surroundings of a classical atmosphere, the general feeling of contempt for the manufacturer, the intellectually inferior creature who only made money, but who knew nothing of *τίππω* or *τέτυμμα*. I am not sure that some such feeling does not still exist among those whose horizon is limited to the Latin and Greek that they have learned—or should I say limited by instead of to? This recollection came back to me when not long ago I was visiting one of the best organised and most skilfully conducted works in the country—I mean Willans & Robinson—when I remembered that another great manufactory, conducted on American lines, was near by, and when across the road I saw the walls of one of our most famous English schools. I pictured the old contrast: on the one hand the conviction impressed upon me in a boy that there is something intellectually superior in the struggle with a paragraph of Xenophon or a page of Herodotus, while manufacture is merely mechanical, sordid and

base, with what I believe to be the reality on the other. I wondered in what spirit the erection of these works was viewed at the school and to what extent the high intellectual attainment there so essential and so evident is properly appreciated.

Of the last of the three headings, strenuousness, we have plenty, but at school it is most apparent in cricket and football, and in after life in various expensive ways of murdering defenceless animals.

However, a change is already beginning to be felt. The public schools no longer withhold the elements of chemistry and physics, and those who have benefited, even in small degree, are taking responsible places vacated by those who had no such opportunity. The numerous polytechnics are providing more serious instruction to thousands of our young men, and it may be hoped that in time even the official—I mean the mere official whose only conception of activity is centred in obstructing progress and enlightenment—will have some appreciation of things as well as of words.

RECENT DISCOVERIES AT SILCHESTER.

OUT of the 100 acres composing the site of the buried Roman city at Silchester, Hants, between eighty and ninety have already been excavated. This year's operations have been unusually successful, because they have brought to light the public baths of the city. The whole of the foundations have now been laid bare, the area being nearly 200 feet long and about 100 feet wide, and although everything down to the floor-line has been destroyed, there still remains enough to show the whole system and its arrangement. The baths are like those discovered at Uriconium, near Shrewsbury, but larger. The courtyard at the entrance, apodyterium, frigidarium, tepidarium, sudatorium and caldarium, with the hypocausts and remains of the hot-air flues can all be traced. It is evident that during the hundreds of years that these baths were in use many changes were made in the original design. This is particularly observable in the changes of floor level and in the alterations made in the size and shape of some of the rooms. For instance, in the frigidarium there are remains of a division wall built upon the tiled floor. In this room can be seen the lead pipe through which the water was drained off, while the floor and remains of the walls show the specially durable cement which the Romans generally used for lining receptacles for water or fire. In some places a cement floor is found, in others tile and in others brick laid in herring-bone fashion. Some excellent specimens of both coarse and fine mosaic work are also visible. At one end of the caldarium was found part of a fallen wall made of brick and flint, showing on the under side the plaster with which all the walls were covered both within and without. This fragment shows clearly the side of a window, which must have been square-headed. In almost every room are visible the pilæ which carried the floors. A number of bone pins, beads, styli, &c., were found, as well as portions of columns of different sizes, parts of a basin which must have been 8 feet or so across, and a very good specimen of a Roman altar, unfortunately not inscribed, and a handsome Doric capital. The efforts of the past year have also brought to light a number of sites of small houses. It is hoped that these discoveries will bring more contributions to the excavation fund, which has of late suffered from the deaths of some subscribers and other causes.

EXPLORATIONS AT CHESTER.

ON Saturday there was an excursion of the Liverpool Geological Association to Chester. Under the guidance of Mr. R. Newstead, curator of the Grosvenor Museum, who had kindly consented to take charge of the party, a visit was paid to the seed warehouses of Messrs. Dickson in St. John Street. In the cellars of these stands, *in situ*, a very fine specimen of the original Roman wall round the city. It is the furthest remains of this wall yet found to the south of the city, and is a specimen of massive but rough masonry. The stones are the sandstone Bunter of the district, and contain numerous pebbles, and a very striking feature of the wall was the cement which bound it, and seemed practically harder and stronger than the stone itself. This old wall lies about 10 feet outside the present wall, and a similar position exists in respect to the furthest remains of the old wall on the north-west to be seen on the Roodee near the grand stand. Mr. Newstead says that the present wall is altogether Mediaeval or modern, and does not by any means coincide with the original Roman wall, the direction of which is far from being accurately known. Leaving the walls the party proceeded to visit the various places in the city where Roman remains are to be found *in situ*, having been unearthed during the excavations required for city improvements in the past few years. In Northgate a descent was made into the cellars of a

large toyshop, and here lay some specimens of Roman pillars—bases *in situ*, shafts broken and lying horizontal, evidently extending under the shops lying nearer Eastgate, the cellars of which have not yet been excavated; and sundry capitals, of which there may be a doubt as to whether they belong to the bases there *in situ*, or have fallen from shafts further away. There has been much speculation as to what class of Roman building these columns represent, but the weight of opinion is in favour of their having formed part of the Forum. In Watergate, at the rear of a butcher's shop, was found another base and part shaft *in situ*, a class of building not known. In Bridge Street, during recent alterations to modernise an old Chester hostelry, numerous Roman remains were found, and to-day, hidden by a drawable curtain, one side of the bar parlour consists of sundry Roman pillars *in situ*. Similar pillars are found running at right angles a short distance away, and from the number of pieces of metalwork in various stages of completion found during the excavations it is conjectured that this is the site of some Roman workshops in bronze and other metals. A stroll across Bridge Street brought the party to a small stationer's shop, at the back of which, about seven steps down, was found a Roman bath in fair preservation. It was fed by a natural spring, and contained about 3 feet of very clear water. The hypocaust (heating chamber) beyond the bath was rather choked and ruinous, but the stone heating flues were still well defined.

A move was made to the Grosvenor Museum, but so much time had been spent in city explorations that only a hurried inspection could be made. It contains a small but admirably posed collection, and, as might be expected, Roman remains form one of its strong points. There is an array of inscribed stones (tombstones) principally relating to officers of the 20th Legion, which seems to have been the crack Roman legion of the period. Many of the dates are uncertain; some, however, are indisputably fixed at 74 and 78 A.D. The museum authorities secured the fine collection of ancient British, Roman and Saxon relics gathered on Meols and Leasowe shore by the late Mr. Potter, and it has been admirably mounted and cased by the curator. A cordial vote of thanks was given to Mr. Newstead for his efforts.

EXCAVATIONS AT CAERWENT.

A DESCRIPTION was given at the British Association by Mr. T. Ashby, jun., M.A., F.S.A., Assistant Director of the British School at Rome, of the explorations at Caerwent. He said:—The Romano-British city of Venta Silurum, the site of which is now occupied by the village of Caerwent, Monmouthshire, five miles west of Chepstow and eleven miles east of Newport, is only mentioned by this name in the Antonine Itinerary and by the Geographer of Ravenna. In the former it appears as a station upon the Roman road from London *via* Bath to South Wales. In the classical authors it is not spoken of, though the tribe of the Silures is mentioned by Tacitus; but an inscription recently discovered in the centre of the city shows that it was the centre of the tribal organisation under which the Silures lived in Roman times. The text is as follows:—*... leg(ato) leg(ionis) ii aug(ustæ) proconsul(is) provinc(ia)e Narbonensis leg(ato) Aug(usti) pr(o) pr(atore) provinc(ia)e Lugudunen(sis) ex decreto ordinis respublica civit(atibus) Silurum.*

The external walls of the city are still clearly traceable. They form a rectangle of about 500 (east to west) by 400 (north to south) yards, and on the south side are preserved to a height of some 20 feet. Some remains of the east and west gates still exist, while the north gate is preserved up to the spring of the arch, and shows signs of modification. Within the wall and parallel to it a mound of hard clay has been discovered in many places, which is believed to have been the original fortification of the city; whether its origin is military or civil is a point as yet uncertain.

Excavations are still in progress, and, if circumstances permit, may be carried on for several years more, as the greater part of the site is unoccupied by buildings.

The ancient city appears, at one period of its existence at any rate, to have been divided into twenty *insulae*. The modern highway, which runs from east to west through the centre of the site, follows the line of the ancient road, and at almost equal distances north and south of this ancient roads have been brought to light. There seem to have been four roads running from north to south, of which the easternmost alone has not yet been discovered in any part of its course. It is obvious, however, that our statements on this point must be subject to reserve, inasmuch as much further excavation remains to be done.

The buildings which have been brought to light consist chiefly of private houses, and some of these present a ground plan which appears to be unique in England, having the rooms arranged round all the four sides of a rectangular courtyard. The walls are strongly built of blocks of limestone, and in

some cases the painted plaster upon the walls is found *in situ* in good preservation. Some interesting mosaic pavements have been found.

A large building near the north gate (so far only partially excavated) may have had some public character, and a little to the east of this gate an amphitheatre (apparently of late date) has recently been discovered within the city walls. So little is it preserved that it must be supposed to have been mainly of wood; the arena wall, which exists almost in its entire, encloses an oval the diameters of which are about 145 and 125 feet.

The smaller objects include a roughly sculptured head of sandstone, probably of some deity, while pottery, bronze and iron objects, &c., are found in profusion. Some of the coloured enamel is especially good.

EXPLORATIONS AT KNOSSOS.

A COMMUNICATION from Mr. Arthur Evans was read at the meeting of the British Association. He said:—

It had seemed to the excavator possible that this year's campaign in the prehistoric palace at Knossos might have definitely completed the work. But the excavations tooled wholly unlooked-for development, productive of results of first-rate importance both on the architectural and general archaeological side, and calling still for supplementary researches considerable and indeed, at present, incalculable extent.

The search for the tombs, which was principally carried out in the region north of the palace, only resulted in the discovery of a necropolis of secondary interest in a much destroyed condition. At the same time remains of houses were brought to light, going back to the earliest Minōan period, and proving the continuous extension of the prehistoric city for a distance of over a quarter of a mile north-east of the palace.

At its north-western angle the palace area itself has gained a monumental accession. The building proved to extend beyond the paved court which lies on this side, and excavations here brought to light what can only be regarded as the real theatre. This consists of two tiers of limestone steps, eight in number and 30 feet in width, on the east side, varying from six to three, with an extension of 50 feet on the south, while between the two is a raised square platform. The steps, low seats and platform overlook a square area where the shows must have taken place. Owing to the made character of the ground to the north-east the limestone slabs on that side have either disappeared or were brought out in a much disintegrated condition, and it was found necessary for the conservation of the rest of the monument to undertake considerable restoration. This was, however, facilitated by the fact that the lower courses of the outer supporting wall were throughout preserved. The theatre would have accommodated about five hundred spectators. A somewhat analogous feature was discovered on the Italian mission, bordering the west court of the palace at Phaistos, but the arrangement at Knossos is much more complete, and gives us the first real idea of the theatre in prehistoric Greece. The pugilistic shows represented on certain small reliefs at Knossos and Hagia Triada and the traditions of the "dancing-ground" of Ariadne, executed by Dædalos for Minos, may throw a light on the character of the performances in this theatrical area.

Between this building and the west court of the palace area was explored containing a very complex mass of constructions representing at different levels every age of Minōan culture, and apparently belonging to a sanctuary connected with the Cretan cult of the Double Axe and its associated divinities. Painted pottery and other objects were here found with designs referring to this cult. Among other discoveries were highly decorative polychrome vases belonging to the Middle Minōan period, more or less contemporary with the twelfth dynasty of Egypt. Of later palace date was an extremely important deposit consisting of a bronze ewer and basins, with exquisitely chased ornamentation in the shape of lilies and various kinds of foliage.

On the north-east of the palace, built into the side of a hill, was uncovered a remarkably well-built house, constructed largely of fine gypsum blocks, which appears to have been of the kind of royal villa. Here, as in the domestic quarters of the palace, the upper storey is also well preserved, and there are two stone staircases, one with a double head. On a platform here was found a magnificent painted jar containing remains of papyrus plants in a new technique. The principal chamber was a columnar hall with a tribuna at one end, backed by a square apse containing the remains of a gypsum throne, the whole presenting an extraordinary anticipation of the style of the basilica.

Within the previously uncovered palace area supplementary explorations of lower levels have been carried out on an extensive scale. A whole series of deep-walled chambers, perhaps representing the dungeons of an earlier palace, have been opened out. Excavations below the floor-level of the

live Press area have brought to light the floor-levels of more ancient chambers containing exquisite painted pottery belonging to the Middle Minóan period and sealings throwing an interesting new light on its glyptic art and the early "pictographic" type of script. Beneath the pavement of the Long gallery of the magazines a continuous line of deep stone cists (sasses) was discovered, and from the remains of chests laid with glazed ware and crystal mosaic, accompanied by quantities of gold foil, it is clear that these repositories had once contained treasure. Near the east pillar room a small cist was found beneath the floor-level containing vases and other objects belonging to the earliest Minóan period that immediately succeeds to neolithic, and affording the first collective view of a representative type series of that period. The character of the glazed beads found in this deposit seems to indicate relations with early dynastic Egypt. The exploration of the neolithic stratum which to a depth of 25 feet underlies those of the "Minóan" buildings was continued, several new shafts being dug within the palace area. The successive phases of the local neolithic culture are thus becoming more clearly defined.

The investigation of the cause of a slight depression in the pavement of a store-room immediately north-east of the east pillar room led to a discovery of extraordinary interest. Beneath the pavement and a small superficial cist belonging to the latest Palace period were found two spacious repositories of massive stonework containing, in addition to a store of early vases, a quantity of relics from a shrine. These had evidently been ransacked in search for precious metals at the time of the construction above, but a whole series of objects in a kind of glaze like the so-called Egyptian "porcelain," but of native fabric, had been left in the repository. The principal of these is a figure of a snake goddess, about 14 inches high, wearing a high tiara up which a serpent coils, and holding out two others. Her girdle is formed by the twining snakes, and every feature of her flounced embroidered dress and bodice is reproduced in colour and relief. A finely modelled figure of a votary of the same glazed material holds out a snake, and parts of another are also preserved. The decorative fittings of the shrine include vases with floral designs, flowers and foliage in the most naturalistic imitations of nautilus and cockles, rock-work and other objects, all made of the same faience. The central aniconic object of the cult, supplied in the formerly discovered shrine of the Double Axe, was here a marble cross of the orthodox Greek shape. The cross also occurs as the base of a series of seal-impressions, doubtless originally belonging to documents connected with the sanctuary found with the other relics. A number of other seal impressions deposited with these show figures of divinities and a variety of designs, some of them of great artistic value. An inscribed tablet and clay sealings with graffite characters was also found, exhibiting a form of linear script of a different class from that of the archives found in the chambers belonging to the latest period of the palace.

In view of these important results it is obvious that further investigations beneath the later floor-levels must be carried on throughout the palace area. The search for the royal tombs is also to be continued. The region about the theatre and the north-west sanctuary still requires methodical excavation on a considerable scale, and the neolithic strata call for continued investigation. The need for further assistance from those interested in the results already obtained is still urgent.

YORKSHIRE ARCHÆOLOGICAL SOCIETY.

THE members of the Yorkshire Archæological Society made an excursion on the 9th inst. to Kirkby Hill, Boroughbridge and Aldborough.

The first place visited was Kirkby Hill, or Kirkby-on-the-Moor, Church. It is a very quaint little structure, which was presented to Newburgh Priory, now the residence of Sir George Wombwell, by one Roger de Mowbray. The nave measures 24 feet in length by 14 feet 10 inches in width. The walls of the tower are almost 3 feet in thickness, and the base of the nave are pretty nearly as substantial. Many old sculptured stones are preserved in the building, and the party shown amongst others a Roman slab, with an illegible inscription on it, which was built into the south-west angle of the tower, and was nearly 2 feet thick. It was pointed out that many of the quoins and large stones built into the tower were also of Roman workmanship, and that the cap and base of a pillar built into the west wall of the porch was a Roman hypocaust. Another object of interest was a fine old press, dated 1699.

The famous monoliths, known as the Devil's Arrows, at Boroughbridge, were next visited. Mr. Wm. Brown acted as guide, and said that it was not known when or how these monster stones came into their present position. Two of them are 22½ feet high and 18 feet in circumference, and the third

18 feet high and 22 feet in circumference. They are of limestone grit, which is found in the neighbourhood, and are now three in number, but Leyland says that there were "four main stones" in the fifteenth century. The tops of these stones are scarred and channelled by the rain, and the bases, which are buried in the ground some 4 to 6 feet, bear marks of rough dressing. The theory was advanced that they might be the remains of a Druidical temple, like Stonehenge, but this was discounted by a number of the members on the ground that the stones are in a straight line and too far apart to have been a portion of a circle, which in that case would necessarily have been so large.

After inspecting some ancient fragments built into the vestry wail of Boroughbridge Church, the party had luncheon in a tent erected in a field not far from the church. After luncheon they proceeded to Aldborough, the ancient Isurium Brigantum. The old church, dedicated to St. Andrew, was the first place of interest. Mr. Brown again acted as guide. He directed the party to the old brass of William de Aldeburgh, circa 1360, which was let into the wall of the north aisle. He noticed out the various points of interest in the brass, including the peculiar shield worn on the left arm, the royal spurs, and the small dagger which was used to give the finishing stroke to a foe. He said that it was evident from the armour that the period was that of the Black Prince. Another thing which attracted a good deal of attention was a seventeenth-century monument, in bad condition, to William, son of Richard de Aldeburgh. In the middle passage is a curious stone slab placed there in memory of James Brooke, of Ellenthorpe, twice Lord Mayor of York, who died in 1675, and also of Priscilla, his wife, who died in 1692. At the west end of the north aisle a figure of Mercury, of Roman workmanship, was pointed out by the guide.

The old Roman town of Isurium Brigantum was then explored. Mr. Haverfield, the well-known authority on Roman remains, acted as guide, and told the party that Isurium Brigantum, or Roman Aldborough, was probably occupied in the first instance by a detachment of soldiers from the garrison at York. The people who had lived at Aldborough, however, were probably not so much soldiers as civilians. They were engaged in trades and agriculture, and he thought that they were principally natives who had adopted Roman customs and Roman manners, and lived in Roman houses, with two or three of their own Romanised nobles at their head. Most of them, he conjectured, spoke Latin, and that was the case right down to the domestic servants and labourers. He drew a parallel between these Romanised settlements and our settlements in India.

A great deal of the old town of Isurium Brigantum lay where Mr. A. S. Lawson's house and grounds now are, and by the permission of that gentleman the party visited the excavations and the museum. The old town enclosed within its walls a roughly rectangular area of 60 acres. Possibly at first it was a British town of the Brigantes, which the Roman legions were intended to overawe. A few tiles which have been discovered may indicate the presence in its early days of a detachment from the Roman fortress at York, where the ninth legion was quartered till about A.D. 115, and the sixth legion from about A.D. 120 onwards. But the garrison must have been soon removed, and during the second, third and fourth centuries traces only of the comfortable civilian life of a county town can be found. The houses so far excavated seem to have been of the type common in Britain. They were warmed with hypocausts adorned with painted wall-plaster and floored with mosaics, of which several very fine specimens have been discovered. One mosaic which the party inspected was said to represent a muse seated on Mount Helicon, with the name of the hill inscribed in Greek, and the guide said that probably this was the only tessellated pavement bearing a Greek inscription in England. In the museum many ordinary domestic articles of Roman life are preserved, including Samian and other pottery, fibulae, glass, lamps, &c. Inscribed and sculptured stones, including an altar to Jupiter of the Matres were seen, and also two sculptures of Mercury. The excavated walls were also viewed, and after the inspection the party were entertained to afternoon tea by Mr. and Mrs. Lawson. After tea Sir Thomas Brooke expressed the thanks of the members to Mr. and Mrs. Lawson for their hospitality.

The Exhibition of the remaining works of the late Mr. Phil May, which include a large number of his drawings for *Punch*, will be held in about a fortnight's time at the Leicester Galleries in Leicester Square. The collection will be thoroughly representative of his work, and many unpublished drawings and sketches in colour will be shown, in addition to a series of portraits of eminent politicians which Mr. May only completed shortly before his death. The exhibition will take place in the Hogarth room, which Messrs. Ernest Brown & Phillips have just added.

NOTES AND COMMENTS.

IN the Pitti Gallery, Florence, there is a *Concert*—two monks playing, who were at one time supposed to be LUTHER and CALVIN, with a youth listening to them—which some experts ascribe to GIORGIONE and some to TITIAN. The painting has been restored perhaps more than once, and the process has increased the difficulty of identification. Opinions on the authorship are equally divided, and either master would have been competent to produce the work. A new theory has been lately advanced on the subject. It is suggested that the general idea of the scene was GIORGIONE'S, but that the middle figure was painted by TITIAN, and the excessive dimensions of the black mantle are taken as a sign that something had to be concealed. It may be some injury to the original work. If the two masters can be accepted as co-operating, there would then be grounds for believing that a third master may have put in the side figure. The discussion about the work is another instance of the influence of MORELLI'S scepticism. Pictures are now scrutinised more microscopically than was formerly considered allowable, and the canvas and colours receive as much attention as the handling. The doubtfulness of the pictures may compel some spectators to take more interest in them; but the majority will feel that time is too precious to be wasted over uncertainties.

THE sanitary condition of Prussian schools is not so satisfactory as is desirable, especially when judged by the modern standards found in other lands. In 1896 there were, according to the returns, over 36,000 elementary schools, with an attendance of about 5½ millions of children. The medical officers of the various districts are supposed to report from time to time on the state of the school buildings. But in several cases it is found there is laxity in performing the examination. Instructions have lately been issued which it is expected will put an end to perfunctory visitations. All new schools will have to be carefully examined and tested. The same rule will apply whenever there are additions or alterations which are likely to be risky. Attention will have to be given to the means to ensure cleanliness among the pupils. Shower-baths will be necessary not only in schools in towns, but also in those in the country. It is not unusual for the teacher's residence to form part of the school. Henceforth there must be a separation between the two to prevent illness which might break out in the teacher's family attacking the children in the classrooms. The heating and ventilation of the buildings will no longer be optional on the part of local authorities.

THE teaching of architecture in colleges and universities is a subject about which authorities differ. It is difficult, no doubt, to amalgamate the special courses with others which appeal to the ordinary students. Moreover, precedent, which prevails in most educational institutions, does not sanction the arrangement. The chief obstacle is really one of finance. Benevolent people who give large sums for education are commonly indifferent to the fine arts, and particularly to architecture. An arrangement has been entered into in Leeds which suggests what can be done in other places when funds are not forthcoming to establish a chair or chairs. The architectural classes of the local institute of science, art and literature have the approval and support of the Leeds and Yorkshire Architectural Society, and are framed with the definite object of preparing students for the preliminary, intermediate and final examinations of the Royal Institute of British Architects. The lectures will be illustrated by a large collection of casts, specially large photographs, lithographs and numerous lantern slides. There are preliminary, intermediate and final courses. In the classes of design during the coming session there will be visits by Mr. BUTLER WILSON, Mr. C. B. HOWDILL, Mr. G. F. BOWMAN, Mr. G. B. BULMER, Mr. H. S. CHORLEY, Mr. W. H. THORP, and Mr. E. J. DODGSHUN. The fees are very moderate.

ILLUSTRATIONS.

DESIGN FOR HULL TOWN HALL—PROPOSED EXTENSION.
THE proposed arrangement is shown on the plan. It was considered a waste of money to adapt the old buildings, as they were out of repair. The basement would be utilised for strong rooms and storage, and the internal walls retained where possible on the ground floor, the cornices and other sound stones being used in the new structure. The law courts could be entirely completed without interfering with the present court. According to description the concrete in foundations and under basement floor is to be of lime and ballast in the proportion of 1 to 8. Mortar to be composed of lime and sharp sand in the proportion of 1 to 3. Basement floors to be paved with patent granolithic paving. The walls to be constructed of sound well-burnt bricks. The exterior and entrance walls to be faced with stone from an approved quarry, the interior columns to be marble. The floors to be fireproof, composed of hollow tiles and steel joists covered with cement concrete in the proportion of 1 to 6, the corridors paved with mosaic. The entrance halls would have black and white marble, other floors covered with deal. Areas and vanes with white glazed bricks, the walls of cells salt glazed bricks, and all lavatories covered with opalite. Façades to corridors, and also office stairs, service-rooms and kitchens. Drains to be approved stoneware sockets, jointed drain pipes, laid to falls in cement concrete and jointed in cement, with manholes and traps. The flat roofs to be constructed of steel joists and hollow tiles covered with cement concrete and asphalt; other roofs covered with slates bedded in expanded metal, lathing and cement. The design is by Mr. J. HATCHARD SMITH, F.R.I.B.A., of Moorgate Station Buildings.

BILLIARD-ROOM IN CARNICK HOUSE, AYR.
THIS billiard-room was designed for Mr. T. C. ARTHUR, Carnick House, Ayr, being part of considerable alterations made to his house under the direction of Mr. J. A. CAMPBELL, architect, Glasgow.

PORTIONS OF MEMORIAL CHANCEL FITTINGS IN ROTHBURY CHURCH, NORTHUMBERLAND.
THE illustration shows a portion of some chancel fittings recently constructed in the above church. The vestry screen is part of the gift of Lord and Lady ARMSTRONG as a memorial to the late Lord and Lady ARMSTRONG. The choir seats, a portion of which is shown, were put up by the YOUNG family in memory of late Canon YOUNG, rector of Rothbury. The Bishop's confirmation chair is the gift of Miss E. WILKINSON, Sebergham Castle, Cumberland, and formerly of Rothbury. The tracery, &c., is more delicate in execution than shown on the sketch. The architect is Mr. ARTHUR PLUMMER, F.R.I.B.A., of Newcastle-on-Tyne.

HOUSE AT BYFLEET, SURREY.
HOUSE IN DARTNELL PARK, BYFLEET, SURREY.
THESE houses are now being built in Dartnell Park, Byfleet, for Mr. F. C. STOOP, the owner of the estate. The illustrations show the preliminary designs which differ in some respects from the contract drawings. The larger house has been increased by about 5 feet at the whole length of the garden front, part of this forming a verandah entered from the drawing and morning room, and the remainder being added to the morning-room, dining-room and servants' hall; bedrooms 2 to 5 are enlarged. In addition to the accommodation shown on the two plans, four bedrooms, together with two rooms, &c., are provided on the second floor. The walls will be panelled to the height of 7 feet. The smaller house contains six bedrooms on the first floor and three on the second. The external walls are faced with red bricks to the top of the plinths, and above this covered with cement roughcast. A terrace will be formed along the garden front of each house about 3 feet above the existing surface, and steps will lead down from the lawn. The two houses are being built by Messrs. J. GARRETT & SON, of Balham Hill, and the paneling and mantelpieces will be carried out by Mr. JOHN WHITE, of the Pyghtle Works, Bedford. The architect is Mr. G. L. SUTCLIFFE, A.R.I.B.A., of the firm of Messrs. SUTCLIFFE & SUTCLIFFE, 11 Argyll Place, W.

REDBOURNE AND HEMEL HEMPSTEAD.*

WHEN the imperfect history we have of our own country commences, Britain was peopled by the Celts, a branch of the Aryan family. The Aryans were a very primitive race, heard of in Central Asia, from whence they migrated into Europe. From them are believed to have sprung the Hindoos, Persians, Greeks, Latins, Celts and Anglo-Saxons; and among the Celts who came from Western Europe, the Erse, Manx, Cymric and other tribes are included. Many of the names the Celts gave to the physical features of the country remain with us to-day, and among them may be mentioned the river Ver, which rises in the chalk hill on the east side of St. Albans and runs through Redbourne; the Rev. H. Fowler, M.A., too, regards Redbourne as being derived from the Celtic word Reidh, a piece of moorland lying against the hills. Salmon's definition was somewhat similar, "Aubury, or Arbury Camp, is accepted as of Celtic origin. It is now known as The Aubreys, the space outside the earthworks to the extreme north being termed the Aubrey, and the northern half of the enclosure Middle Aubrey; the southern portion is called New Swathe, a more recent designation. It has been pointed out by the Rev. J. H. P. L.L.D., that Aubury Camp is exactly similar to the camps described by Mr. Warne in his work on "The Celtic, Saxon and Danish Camps of Dorsetshire," and it also bears a close resemblance to the old earthworks at St. Albans. Measurements of Aubury, as taken by Dr. Griffiths, are 440 yards from north to south and 415 yards from east to west. The camp is of an ovate shape, and encloses about 100 acres. The fosse is from 9 to 13 feet deep, and on the north and south sides, where the mounds are double, it is from 45 to 60 feet wide at the top. Towards the north end the ground is higher, and at the lowest part the ditch is deeper and wider

curator, however, took possession of the whole, and when Boadicea, the widowed queen, protested he ordered her to be scourged, and he violated her daughters. Gathering her forces together she proceeded to the Roman municipium, which with fire and sword she devastated in 61, and Redbourne may have been traversed by the contending armies; it certainly was by Suetonius Paulinus. The triumph of the unfortunate queen, as we know, was but a brief one, and when eventually her forces, through fear forsook her, she ended her life with poison.

Verulamium was soon rebuilt, the site was strengthened, and important roads were formed or improved, including the Watling Street, which twice crosses the Ver at Redbourne. No Roman remains have been found at Redbourne, but at Hemel Hempstead on the road to Boxmoor a Roman villa was discovered, and glass, pottery and Roman ornaments are occasionally found there.

About A.D. 304, during the persecutions under Diocletian, a Christian priest was sheltered at Verulamium by a Pagan named Albanus. The pure life of the man and his devotion to the Almighty so impressed Albanus that he became a convert. The Governor of Verulamium hearing that a Christian was hiding sent soldiers to arrest him, but Albanus, donning the priest's gown, gave himself up and permitted the clerk to escape. The Governor was at the altar sacrificing when Albanus was taken to him, and he commanded him to sacrifice or suffer death. Albanus confessing himself a Christian was scourged and executed on a wooded height named Holmhurst, on the opposite side of the Ver. The priest endeavoured to escape to Wales, but was overtaken and brought back with some comrades to Redbourne Heath, where they were martyred, and in two graves, according to a legend, they were there buried.

After nearly 400 years' sway the Romans left England, and



REDBOURNE CHURCH.



HEMEL HEMPSTEAD CHURCH.

everywhere, probably as a reservoir. On the western side of the entrance in the middle of the fosse, from a high rampart runs southward. At the extreme south end of the double vallum has been destroyed for the construction of Foster's Farm, and at the east and north-east parts levelled for cultivation. No antiquities of any kind have been found in the Redbourne Camp, for the probable reason that they have not been searched for, but permission was granted for excavations to be made, and it is believed that the work will be undertaken by the St. Albans Archaeological Society.

The reason to suppose that the Oppidum, or chief seat of Cassivellaunus, was at Verlam, which, like Redbourne, is in the hundred of Cashio. There he was pursued by Julius Caesar who captured the town by assault, and probably Redbourne Cassivellaunus made his escape. Caesar was at the town but a short time, however, and Verlam for 100 years was a British city of considerable im-

portance. The Saxons came, and from one of their tribes—the Hartings of Hertfordshire takes its name.

Offa, king of the Mercians, had murdered Ethelbert, king of the East Angles, and in 793, being desirous to expiate his crime, he was commanded in a vision to seek the body of St. Alban and to found a monastery there; so with Humbert, archbishop of Lichfield, and the Bishops of Leicester and Lindsay, he proceeded to Verulamium, and a light guiding them the body of the proto-martyr was found. On the site Offa built a church which he dedicated to St. Alban, and it is believed that the church at Redbourne was also erected in his honour. At the other side of Redbourne Heath or Common a chapel of St. James was built, possibly for the use of the pilgrims who annually assembled by two mounds on the heath, which were known as the Hills of the Banners, and walked in procession to St. Alban's shrine chanting Litanies as they went.

The next important point in the history of Redbourne was probably in the time of Edward the Confessor, when Abbat Leofstan improved the Watling Street by constructing two bridges over the Ver at Redbourne, and then we read that William the Norman being opposed by Frederic, the last Saxon abbat, for a time took possession of Redbourne. Leofstan had felled trees and blocked the road with them. And now it may be as well to glance at the Gesta Abbatum and the record of the survey made by the Conqueror. At Hemel Hempstead there were two manors and they were differently spelt, the one entered as Hamelamstede, meaning the thrifty village station, belonged to the Saxon kings; the other, spelt Henammestede, the high village station, was owned

by Mr. W. Harradence and Mr. J. Stanley read before the members of the Upper Norwood Athenaeum.

by a Danish noble named Sexi. The Danish portion was given to St. Albans Abbey, the King's portion to Earl Moreton, half brother of William. This eventually passed to Edmund, Earl of Cornwall, the son of Richard, king of the Romans, and by him in 1277 it was granted to the College of Bons Hommes, Ashridge. The Manor of Redbourne was owned by Egelwyne the Swart—the swarthy we might term him—and Wynefed his wife, and by consent of Edward the Confessor and his Queen Editha, they granted it to the abbots of St. Albans. Of the hides, virgates, carucates, mills, cattle and hogs it is hardly necessary to speak.

In the reign of Henry II., about 1178, the proto-martyr appeared in a vision to an elderly burgess of St. Albans, named Robert, who followed the saint to Redbourne Heath, where he showed him the two hillocks called the Mounds of the Banners, and said, "That one contains the relics of my master." Abbot Simon of St. Albans had the mounds opened, and the remains of the converter of St. Alban, with his disciples, were found. The relics were carried to the high altar at St. Albans, the shrine of St. Alban being brought out to meet them. There being no record of the name of the clerk, he was termed St. Amphibalus, meaning the holy cloak. His shrine was erected in the nave, and in the retro-choir an altar was dedicated in his honour. In connection with the little chapel of St. James, a small priory of Benedictine monks was founded in honour of the Blessed Amphibalus and his friends, and in 1219 the reverence for the saint had so increased that Redbourne Church was rededicated to him. The priory was only for four monks, who had their food sent from St. Albans; no cemetery was attached, and the dead brothers were taken



BURY RUIN.

through St. German's Gate for burial in the monastery. Newcome states that in 1347, although the number of the monks at St. Albans had been reduced by plague, there was difficulty in obtaining food for them, so Thomas de la Mare, the abbot, sent sixteen of them to dwell at Redbourne; he also sent clothing and furniture and had additional rooms built at the priory, including a study for himself.

With the Wars of the Barons Redbourne is associated, for in 1217 the army of the Barons and the French, numbering 600 knights and 20,000 soldiers, set out from London to relieve the Castle of Mount Sorrel in Leicestershire. On May day they passed through Redbourne, where they pillaged the priory and stripped the monks of their habits.

In December 1290 a solemn procession passed through Redbourne, when the sorrowing Edward I. bore the embalmed body of his queen to London. Along the route from Lincoln to Westminster the twelve Eleanor crosses were afterwards erected.

On October 10, 1323, just after the celebration of mass in St. Albans, two Norman piers on the south side of the nave fell outwards, and shortly afterwards the roof gave way; not a soul was injured, and to the presence of the relics of St. Amphibalus the congregation attributed their preservation.

In the Wars of the Roses Redbourne played a part, for the struggle commenced in 1455 with the battle of St. Albans, and at the second battle in 1461 Redbourne Church was greatly injured and turned into a stable by Margaret of Anjou's forces.

As we have already seen, Hemel Hempstead and Redbourne were the possessions of the Church, and at the Reformation they were seized by Henry VIII. The shrines of St. Alban and St. Amphibalus were destroyed and the relics were scattered, and we may suppose the priory at Redbourne was demolished. Facts relating to Hertfordshire are not always to be obtained, for a fire at Westminster in 1731

injured the Cottonian Library, and the original roll of the survey of the county made by Henry VIII. was lost in the First Fruits Office. It may be interesting to note that in the shrine of St. Alban, which was reconstructed by Mr. Jackson about 1872, there is a carving of the decolletage of St. Alban within the tympana at the west end, while at the east end the scourging of St. Amphibalus is represented. Portions of the shrine of St. Amphibalus were also discovered and pieced together. In the screen erected by William Wallingford, as now restored, the figure of St. Alban is placed in the niche on the north side of the reredos, while the companion niche on the south is occupied by St. Amphibalus wrapped in his cloak.

The Manor of Redbourne was retained by the king, and James I. granted it for the use of his son Charles. During the Commonwealth it was conveyed to Sir Thomas Meanley, Gorbamby, and it eventually passed, through Sir Henry Grimston, to the Earl of Verulam, and during the Commonwealth Redbourne Church was injured by the Ironsides.

The Manor of Hemel Hempstead, formerly the property of the abbots of St. Alban, was given by James I. to his son Henry, and then to his son Charles, Prince of Wales. Restoration Charles II. received it, and granted it to his son, Catharine of Braganza. The portion possessed by the Rector and Convent of Ashridge was known as the Bury. Bury Sted. In 1535 it was granted by Henry VIII. to an auditor, John Waterhouse. Four years later Waterhouse invited the king to a grand entertainment at the Bury, and obtained from him the charter, incorporating the town under the title of the Bailiff and Inhabitants of Hemel Hempstead. Tradition states that the charter making the town a Bailiwick was announced from the little room above the gateway. Cussans suggests that the architecture is of the date; a portion may be, but the gateway has obviously been repaired, and the flintwork one may readily regard as a Tudor.

The church of St. Mary at Hemel Hempstead was built in 1150. The chancel roof is groined, and springs from Norman columns with square capitals of different designs. The tower is supported by four horseshoe Norman arches; the west doorway is Norman, and Norman moulding is seen in the tower windows. On the west side of the south aisle there is a brass to Robert Albyn and his wife dated 1480. In the north aisle a stone 6 feet long by 2 wide commemorated Thomas de la Mare, whose extraordinary height and spare body showed that he had to reach Heaven. The church was restored in 1888, when the mural decorations were repainted and coloured.

Redbourne Church is now known as St. Mary the Virgin. The dedication of many churches was altered in the reign of Henry VIII., and it seems probable that this was one of them. The present church is believed to have been built about 1150. The Norman work was unaltered until the Decorated style was built. The Norman arcade remaining on the north side of the nave consists of three round columns with fluted capitals supporting semicircular arches, around which there is a simple billet moulding. The south side, owing to damage done in the time of Henry VI., was rebuilt by John of Wheathamsted, abbot of St. Albans. The parapet on the north aisle consists of brick sunk panels under small trefoil arches with perpendicular mouldings. In the south wall there is a double sedile, and an Easter sepulchre on the north side. The carved oak screen is remarkably good, and is the only example of a groined and canopied screen in the county. There are brasses to members of the Peckham family and to Sir Richard Reade.

In the compilation of the above paper reference is made to the writings of Sir William Dugdale, Dr. John Edwin Cussans, the Rev. Mackenzie Walcott, Mr. Thorne, A. J. Foster, M.A., the Rev. Baring-Gould, the Canon Davys, M.A., the Rev. H. Fowler, M.A., the Rev. Griffith, LL.D., Sir Bernard Burke, W. D. Whitney, Wedlake Brayley, John Britton, Thomas Frost, the Rev. W. Hunt, the Rev. Thomas Perkins, M.A., and others. The author is also indebted to the Rev. Lewis Browne for valuable information and other kind assistance.

The illustrations are from photographs by Mr. C. W. and Mr. H. Virgoe.

The peculiar shaped church at Mundesley which is in ruins has given place to a more modern but much more picturesque building, part of the ruins being left as a reminder of the former church. Opportunity was taken in connection with the restoration to enlarge the church, which has been opened on Sundays during the height of the holiday season, and has been opened just in time for the influx of visitors to the seaside resort. Mundesley also possesses a mission church, and a Wesleyan church, both of them, as is the case with the parish church, facing the road from North Walsham to Mundesley which runs through Mundesley.

WATER SUPPLY.*

everyone a plentiful supply of good water is not only a luxury, but almost a necessity of existence, yet how few amongst the more intelligent of the millions who are doomed to find such a supply ready to hand at the nearest have more than a very imperfect notion of the works that are to be constructed to obtain it, or the daily care and attention given to secure and maintain its purity, to insure its distribution, and to prevent its waste by careless, ignorant, or reckless consumers. It may, therefore, not be out of place that when the chair of this section of the British Association happens, as now, to be occupied by one whose professional life has been largely associated with waterworks, that he should address you on that subject, and direct your attention briefly to some of the main points of waterworks construction and management. In following that course I shall, however, necessarily have to say what is already well known to at least a portion of my audience, on whose indulgence I must therefore rely.

Water supplies may be divided into two main classes, namely, "Gravitation" and "Pumping." In some instances a combination of gravitation and pumping is resorted to, especially in those cases in which the more elevated portions of the district to be supplied are situated above the gravitation level. In selecting a suitable source of supply the main points for consideration are the quantity and the quality of the water. The quantity should be such as will not only suffice to meet the requirements throughout the most protracted periods of drought and frost of the existing population to be served, but also provide for the probable growth of that population for a reasonable number of years to come. The quality of the water selected should be the best that can be obtained, due regard being given to considerations of expense. The question of altitude being sufficient to permit of a supply by gravitation is far less moment than those of quantity and quality, and the difference in cost between water derived by gravitation and that obtained by pumping is, in the United Kingdom, generally supposed; indeed, contrary to popular opinion, gravitation water is frequently more costly than pumped water, owing to the much greater capital outlay usually incurred in the construction of the works for storing and conveying it.

Waterworks may be divided into three classes, namely, those in which water is taken directly from a spring or stream, those in which it is taken from a natural lake, and those in which the surface level of the water is usually raised so as to increase the capacity of the lake as at Thirlmere, and there are numerous cases in which the water of a spring is collected in an artificial reservoir generally formed by the construction of an earthen or masonry dam across the valley through which flows the stream to be taken.

In the more populated portions of England it is becoming more and more difficult to find an unappropriated gathering ground available as a source of water supply. The gathering ground or drainage area as it is frequently termed, should be free from human habitations and other sources of pollution, or any pollution arising therefrom should be of being efficiently disposed of by removal from the gathering ground or otherwise.

The gathering ground must also possess a site suitable for the construction of an impounding reservoir. When this has been selected it next becomes necessary to ascertain the amount of the available rainfall, as recorded by rain-gauges in the drainage area or its immediate vicinity, or where it is not available, as deduced from the returns obtained from more distant rain-gauges, care being always taken that the least of the gauges have been observed for a sufficient number of years to enable the true average rainfall to be determined.

To store the whole of the water flowing from a gathering ground during a cycle of wet years in order to utilise it during a cycle of dry years would entail the construction of a reservoir of enormous capacity, at a cost incommensurate with the benefit to be attained; it is therefore customary to make them of a size as to enable the supply to be maintained without failure throughout the three driest consecutive years, the annual rainfall of which years generally amounts to one-fifth of the average taken over a long period—say, fifty years. From the mean rainfall of the three driest consecutive years a deduction must be made for loss by evaporation, which is usually between 12 and 16 inches. The

known as the available rainfall, and represents the quantity of water which can be drawn continuously from an impounding reservoir without fear of failure in the driest years. The whole of this water can rarely be abstracted from a gathering ground without injuriously affecting mill-owners or other owners on the stream below the reservoir; therefore the water to be compensated for the injury they sustain. This is usually done by payments in money, but where the mills are numerous it is generally more economical to

make compensation in water delivered into the stream immediately below the reservoir, because the same water compensates each mill in succession as it flows down the stream.

It has now become an accepted principle that one-third of the available rainfall flowing down a stream in a regulated quantity day by day throughout the year is of greater benefit to the mill-owners (with few exceptions) than the whole of the rainfall allowed to flow in the irregular manner in which it is provided by nature. This compensation water is discharged from the reservoir into the stream either during certain hours on working days or by a uniform flow throughout the twenty-four hours of every day; a method now frequently demanded by county councils on so-called sanitary grounds, but which is in my opinion not infrequently detrimental to the interests of mill-owners without a corresponding advantage to the public.

Where compensation in water is given there remains for distribution in the district to be supplied a quantity equal to only two-thirds of the available rainfall.

Assume for the sake of illustration a case in which the gross annual rainfall is 40 inches. Then we have:—

	Inches.
Gross annual rainfall	40
Deduct to arrive at the mean annual rainfall of the three driest consecutive years—say, one-fifth of forty	8
Mean annual rainfall of three driest consecutive years	32
Deduct for evaporation, say	14
Available for supply if no compensation water be given	18
Or if compensation water be given deduct one-third	6
Leaving available for supply	12

Having now ascertained the amount of the rainfall available for the supply of the district, it remains to be seen whether or not the area of the gathering ground above the reservoir is sufficient to give the required quantity of water. If it is not, the area may in some cases be extended by means of catchwaters in the form of open conduits cut along the sides of the valley below the embankment of the reservoir and at such an elevation as will enable them to discharge the waters they collect into the reservoir above its top-water line.

Almost all waters derived from gathering grounds are much improved by filtration before use for potable purposes. In some cities and towns in this country, more especially in Lancashire and Yorkshire, the benefit derived from filtration has not been sufficiently appreciated, and the water is still delivered into the houses unfiltered; but I am of opinion that the time will come when nearly every town of importance supplied with water derived from gathering grounds will adopt filtration, for it not only removes matters in suspension but it also diminishes the discoloration due to peat which is to be found in most moorland waters.

Reservoir dams in Great Britain consist either of earthen embankments or masonry walls. Of the former, examples of considerable size may be seen at the reservoirs of the Manchester Waterworks, designed by Mr. J. F. Bateman, F.R.S., past president Inst.C.E., who was president of Section G of the British Association at the Manchester meeting in 1861; and at the Rivington reservoirs of the Liverpool Waterworks, designed by my father, the late Mr. Thomas Hawksley, F.R.S., past president Inst.C.E., who was president of this section at the meeting at Nottingham in 1866.

Earthen embankments are formed of the most suitable materials to be obtained by excavation in their neighbourhood; the water is retained by a wall of watertight clay puddle forming the core of the embankment, extending for its whole length and continued at each end into the natural ground forming the hillsides. This puddle core has to be carried down into the ground until watertight strata be met with, occasionally necessitating a puddle trench having a depth of 80 feet or more below the bottom of the valley and 200 feet or more in depth in the hillsides. Where the strata forming the sides of the valley are not watertight it is necessary to continue the puddle core along the sides of the reservoir by means of wing trenches. The determination of the depth and extent of the puddle trench in order to secure the watertightness of the reservoir is one of the most difficult and anxious duties of the engineer on whom rests the responsibility of its construction. In forming his judgment he has to rely entirely on his experience for guidance, this being one of those matters which cannot be learnt at an engineering school or even in an engineer's office. How much depends on the exercise of a wise and trained judgment may be understood when it is realised that an error in this respect may result in very costly works having to be subsequently undertaken to stop an escape of water which might in the first instance have been prevented by a comparatively small outlay.

Provision has to be made for the passage of flood-waters during the construction of the embankment. This is ordinarily effected by the construction at about the level of the stream of a tunnel of sufficient diameter to convey with only a slight head the volume of water produced by the greatest flood which

* In the presidential address to the Engineering Section of the Association, by Mr. Charles Hawksley.

experience has taught us to anticipate. This tunnel is sometimes formed beneath the embankment, but preferably, where the circumstances are favourable, it is carried through the natural ground near to one end of the embankment. A shaft is built in connection with the tunnel, in which, after the embankment has reached its full height, are placed the outlet valves of the reservoir.

It is of the utmost importance that ample provision should be made for carrying off the flood and other surplus waters coming from the gathering ground when the reservoir is full, for if this be not done serious consequences may ensue, including the washing away of the embankment with resulting destruction of property and even of life. The surplus waters sometimes fall down a shaft erected within the reservoir, and make their escape by means of the tunnel previously mentioned, but more frequently they flow over a masonry weir and reach the stream below the embankment by means of a bye-wash formed in the hillside. In my opinion the latter method is in most cases to be preferred, as being free from the risk of blockage by ice to which the shaft and tunnel are liable. Engineers are occasionally reproached with extravagance in the magnitude of the provision made for the escape of flood waters, but it must always be borne in mind that a maximum flood has to be provided for, such a flood as may occur only once in twenty or thirty years, but which must find a means of escape when it does occur, without danger to life or property.

Masonry dams are not so frequent in this country as earthen dams, partly by reason of their greater cost and partly because the geological conditions are generally not favourable to their formation, for not only do they require a supply of suitable stone near to hand for their construction, but they also need an incompressible foundation, such as rock or very strong shale. Any irregularity in the compression of the foundation occasioned by the weight of the dam would be liable to fracture the masonry of which it was built.

In the case of masonry dams a tunnel for the passage of flood waters during construction is formed at a suitable level in the masonry of the dam, and after completion of the work they are generally allowed to pass over the top of the dam for the whole or a portion of its length, thus obviating the necessity for and the cost of an independent bye-wash.

Whilst masonry dams have the advantage over earthen dams of not being liable to be breached by a waterspout, I am not aware of any case in which an earthen dam has been destroyed in that manner, and so far as I am able to form an opinion the accidents due to other causes have been as frequent in the case of masonry dams as in that of earthen dams. The destruction of masonry dams has in some instances been the result of too great reliance having been placed on theoretical calculations, without sufficient allowance having been made for the many defects in material and workmanship which might occur in a work of that kind. It was the opinion of the late Mr. Thomas Hawksley that in some cases the destruction of masonry dams had been occasioned by the neglect of the effects of uplift due to the pressure exerted by water finding its way beneath the bottom of the dam, a possible condition which he was very careful to take into account when designing the masonry dam of the Vyrnwy reservoir of the Liverpool waterworks.

Examples of large masonry dams in the United Kingdom may be seen in that constructed by Mr. G. H. Hill at Thirlmere Lake, from which the city of Manchester is partly supplied with water. Also at the Vyrnwy reservoir of the Liverpool Corporation Waterworks, designed by and partially carried out under the direction of the late Mr. Thomas Hawksley, after whose retirement it was completed by Mr. G. F. Deacon, who presided over Section G on the occasion of the visit of the British Association to Toronto in 1897, and again at the reservoirs near Rhayader, in Wales, now approaching completion, from the designs and under the direction of Mr. James Mansergh, F.R.S., past president Inst.C.E., for the supply of water to the city of Birmingham.

From the impounding reservoir the water has to be conveyed to the point of distribution by an aqueduct. This aqueduct, which is sometimes of great length, may consist either wholly of metal pipes, usually of cast-iron, or partly of a conduit constructed of masonry, brickwork or concrete following the contour of the ground, with occasional tunnels where high ground has to be passed through, and metal (inverted syphon) pipes where valleys have to be crossed. These conduits may be either open or covered, the latter method being generally adopted, when they become what is technically known as "cut and cover" conduits. In the case of a continuous pipe-line of considerable length it is divided into sections by means of break-pressure tanks interposed at suitable elevations, each tank being, say, 100 feet or thereabouts below the preceding tank, by which means the pipes are relieved from the excessive pressure to which they would be subjected if the head due to the elevation of the impounding reservoir was carried forward to the service reservoir, from which the water is distributed to the consumer. Steel pipes

are frequently used abroad where the cost of carriage but they have not yet been much employed in this country, sufficient experience not having yet been gained in reference to the deterioration of steel pipes due to the action of the water from within and of the ground in which they are laid from without.

The lines of pipe are provided at intervals with stopcocks, sluice-valves and air-valves, and also in some cases with self-acting valves which close automatically in the event of the velocity of the water in the pipe becoming abnormally increased owing to the bursting of a pipe beyond.

I have already stated that most waters obtained from gathering grounds are much improved by filtration. The process of filtration may be carried on where the water flows into an impounding reservoir or at any convenient point on the line of the conduit thence to the place of distribution, provided the filter beds are situated at such an elevation as to place them in line of hydraulic gradient. Various considerations influence the determination of their position, but it is generally found that the water should not be subjected to long exposure to light after filtration. Filtration by the slow passage of water through a bed of sand from 2 feet to 3 feet in thickness, supported by small gravel or other suitable material, is the method usually adopted in Europe, though what is known as mechanical filtration has been used to a considerable extent in the United States, and may under certain conditions be employed. However I do not think it is likely to be placed to any considerable extent in this country of the system of sand-filtration introduced so long ago as 1828 by the late Mr. James Simpson, past-president of the Institution of Civil Engineers. The rate of filtration, though thoroughly effective must depend on the condition of the water to be filtered, but a rate of from 450 to 550 gallons per square yard of surface of sand per day (*i.e.* twenty-four hours) is usually found to be efficient. Filter-beds are generally situated above the sky, but occasionally, when situated at considerable elevations, they are covered by roofs to prevent interruption of the process of filtration by the formation of ice in times of severe frost. In certain exceptional cases in which the water is difficult to treat it is twice filtered, with excellent results. The water after filtration is discharged into a pure-water tank or service reservoir of sufficient capacity to enable the process of filtration to be carried on at a uniform rate by night as well as by day without giving rise to irregularities in the rate of demand in the district of supply.

The particles in suspension in the water, which are intercepted by the process of filtration, gradually form a film on the surface of the sand and thus improves the filtration. This film at last becomes so thick as to unduly reduce the rate at which the water passes through the sand. The film is then laid off, and the water having been withdrawn from the filter, the sand is scraped off to a depth of about a quarter of an inch, the sand thus removed is washed in suitable machinery from the matter intercepted during the process of filtration, and is afterwards replaced in the filter-bed either immediately or after several similar scrapings have taken place, care being taken that the thickness of the sand left in the bed at any time be reduced below that required to insure efficient filtration. From time to time the sand is removed to a depth of several inches and washed, and occasionally it is replaced by fresh sand washed to its full depth. From the foregoing it will be understood that the filtration of water, as a simple process, is one which necessitates constant watch and care on the part of those responsible for the management of the waterworks undertakings in which the water is filtered.

As near to the termination of the aqueduct conveying the water from the impounding reservoir to the point of distribution as the levels of the ground will permit, a service reservoir should be constructed for the purpose of equalising the flow of water along the aqueduct, and for maintaining the pressure in the district during any temporary interruption on the aqueduct due to a burst pipe or otherwise. The service reservoir should contain not less than one day's supply of water, three days, and in exceptional cases, even more being sometimes desirable. Service reservoirs should by preference be covered so as to exclude light, and thus prevent the growth of vegetation which would otherwise take place. They are often when consisting of brick arches, has also the advantage of keeping the water cool in summer, and preventing the water from becoming too much reduced in winter. The draught on the service reservoir is continually varying throughout the day and night according to the hourly requirements of the population which it serves. This variation is considerable, amounting during certain hours of the day to at least twice the average rate of consumption during the twenty-four hours. It will therefore be apparent that were the service reservoir the equalising effect of the service reservoir the aqueduct to have a capacity at least double that which is needed for the service reservoir is available. At Southport, for example, the service reservoir is situated at a distance of about seven miles

because, owing to the great extent of comparatively flat the neighbourhood of Southport, it was impossible to a suitable elevation nearer to the town than Gorse Hill, summit of which the reservoir stands. Consequently in pipes thence to the town have to be of sufficient to convey the water at a rate corresponding with the at the time of maximum consumption, or in other of about twice the capacity which would have been if the service reservoir could have been placed close to n, when these pipes would, for the greater part of their have been situate on the inlet instead of on the outlet the reservoir.

ing now followed the water in the case of a gravitation from its source to the service reservoir from which it is distributed to the consumers, it will be convenient to a similar manner water obtained by means of pumping, until later the consideration of its distribution, which, leaves the service reservoir, is common to both gravita- pumped water.

ing supplies may be divided into two sections; first, here the water is drawn from a source only slightly he level of the pumping engines, such as where the taken from a stream or lake, or from culverts formed l beds, or is discharged from impounding reservoirs t too low a level to enable the water to gravitate to the distribution; and secondly, where the water is raised p wells sunk in the sandstone, chalk, or other water- strata.

he first-mentioned cases the water has usually to be when it is generally found convenient to place the is at the pumping-station, the water being firstly lifted it will gravitate) on to the filter beds; and secondly, ration, and by means of a separate pump, forced pipes up to the service reservoir whence it is to be ed.

e case of deep wells the water seldom, if ever, requires and is usually raised either directly or through pipes service reservoir, the total lift being frequently divided lift pumps and force pumps with the object of y the work to be done by the engine.

times the well alone will yield a sufficient supply of it often it has to be aided by boreholes or by drifts or driven horizontally in the water-bearing strata near of the bottom of the well, and occasionally continued siderable distance, even as much as a mile or more t well, the length of the headings depending on the of water which can be profitably obtained from d also on other considerations too various to be id here. There are cases in which it is possible to efficient water by boring from the surface of the ground ring a pump down the borehole. The expense of a ll is thus saved, but it is, of course, impossible to the supply by drifting.

me at my disposal will not admit of any observations nerits of the various kinds of engines and pumps in raising water; they are not only very numerous, has to be considered in relation to its suitability for ular circumstances of the case in question. Suffice it t although most of the water pumped in the United is raised by means of steam engines, water turbines, es, oil engines, and (to some slight extent) electric e also employed. It may be mentioned that one of t oil engines in this country is engaged in pumping a deep well, and it is not improbable that gas and is will in the future become more largely employed orks purposes.

ld here be mentioned that there are a few instances ntry, and many in the United States of America, in vice reservoir is dispensed with, and water is pumped to the main and distributing pipes of the district to e a method which, although employed with success, n, in my opinion, be adopted where the circumstances he use of a service reservoir. Where direct pumping ovision must be made to insure continuous pumping ght without intermission, so as to avoid interruption ly of the district, and the speed of the engines must ly varied to meet the demands of the consumers for nt. The maintenance of uniformity of pressure in pipes may be assisted by the employment of large air y accumulators such as are used for the supply of pressure, or preferably by a combination of air al accumulators.

l now return to the service reservoir. When this situate between the source of supply and the district plied, it receives the whole of the water and into the district as needed for use; but when the s between the source and the service reservoir, the excess of supply over consumption, and on and makes good any deficiency during those hours consumption exceeds the supply. In either case oir has the effect of equalising the flow from the

source to the reservoir throughout the twenty-four hours of the day.

From the service reservoir the water is conveyed by one or more main pipes into the district of supply. These pipes are gradually reduced in diameter as they pass through the district; the water which they convey is taken off by other main pipes branching from them, and finally enters the service pipes, which are usually from 5 inches to 3 inches diameter, and are those from which the consumers' communication pipes are taken. The service pipes should in all cases be controlled by valves, so that the water can be shut off from them without interfering with the flow through the main pipes. Consumers' communication pipes are not generally allowed to be attached to pipes of greater diameter than 5 inches, and where a pipe of 6 inches diameter and upwards is carried along a street, another pipe of 3 or 4 inches diameter (preferably the latter size), and called a ryder pipe, is laid alongside to receive the attachments of the communication pipes. The ryder pipe is divided into lengths of from 350 to 400 yards, each of which is controlled by a valve at its junction with the main pipe. Hydrants for use in case of fire are attached to the ryder and other service pipes throughout the district at a distance apart not exceeding 100 yards. Except in streets where the houses are small and not high, it is desirable to lay the service pipes of not less than 4 inches diameter, not because a smaller pipe would not suffice to meet the requirements of the domestic consumers, but in order to insure an ample supply of water in case of fire. When determining the sizes of the main pipes to be laid throughout a town, the engineer commences with the pipes most remote from the service reservoir, and gradually increases the diameter according to the probable number and magnitude of the supplies to be taken from them.

Pipes of cast-iron having sockets run with lead and set up with a hammer are mostly used for waterworks purposes, but in some instances turned and bored joints put together without lead have been used with success, but these are only suitable where there is an unyielding foundation. I remember a case in Yorkshire where turned and bored pipes were, much against the advice of the engineer, used for the distribution of gas in a colliery district, with the result that in a few years nearly every joint was leaking. Fortunately the engineer had anticipated that result, and had laid the pipes with sockets in addition to the turned and bored joints; consequently, by opening the ground at each joint and running the joint with lead, the leakage was stopped without necessitating the relaying of the system of pipes. The main pipe of 44 inches diameter, conveying water from Rivington to Liverpool, passes for several miles over a coalfield, and the ground has in places subsided over the coal workings as much as 4 feet without interfering with the supply of water; the ground having been opened at the pipe joints, the lead, which had been partially drawn from the joints, was forced back by hammering, and the joint was again made sound.

In some countries, where the cold is intense, water pipes have to be laid at a depth of from 10 feet to 12 feet below the surface of the ground to protect the water from frost, but in the United Kingdom a depth of 2 feet 6 inches to 3 feet has been found to be sufficient even in very severe frosts.

Water, especially when soft, causes the interior of cast-iron pipes to become incrustated with nodules of iron, which reduce the effective diameter of the pipe and so diminish its capacity. This action is greatly retarded and in some instances entirely prevented by the application to the pipes, soon after they have been cast, of the coating introduced many years ago by the late Dr. Angus Smith, a process now nearly always employed.

It was at Southport that I witnessed the bursting of a main pipe, the only occurrence of the kind that I have seen during a period of forty years, of which a considerable portion has been spent amongst waterworks. Owing to the introduction of a new supply of water the original main pipe was charged with water at a higher pressure than it had been intended to bear, with the result that several fractures occurred. I happened to be standing on one of the roads at a little distance from the town when I heard a sound, and looking in the direction whence it came, saw in a field near by a black column rise vertically in the air for about 40 feet in height. A girl who happened to be working in the field put her hands to her ears and fled, probably thinking she had seen Satan himself, but the column soon became clear, the black colour having been caused by the peat carried up with the water.

Having traced the water from its source to the door of the consumer, we now enter into another branch of the subject. Up to this point the water has been entirely under the control of the company or local authority by whom it is provided, but from the moment it enters the consumers' communication pipe, or where the communication pipe is the property of the water supplier, from the moment the water reaches the premises of the consumer, it comes under his control, subject only to such regulations and supervision as the Legislature has given the water supplier power to make and to exercise.

re of their remains and their tombs, appeared to belong to the dynasty of ten kings which preceded Menes, the first of all Egypt. Of the first dynasty all the eight kings had identified; their tombs, vases, sealings and officials were now familiar, and the gradual changes between one reign and another could be traced as clearly as we could during the century or two. The growth of the use of writing could be seen on the seals, the impressions of over two hundred which had been collected—at first only a single sign for a name of a king; then a more complex name; then the name named with the king; next the titles of various offices; and in the end of the second dynasty, full names in a style as complete as in any later age. The people of the dynastic period were entirely different from any prehistoric age, though it united with it and overlaid some features of it. Broadly, the predynastic people were mechanical and the dynastic race was artistic, and in the earliest works of the kings there was an ability of a new style, though still archaic. By the end of the reign of Narmer and under his successor, the artistic types had become fixed, and they remained the patterns to which the Egyptians recur at each successive renewal of art during the years. The most completed stage was in the middle of the third dynasty, and at its close there was certain degradation. The state of art between the first and the fourth dynasties is not yet clear; it seemed to have become conventional and slowly devitalised, until it made a fresh start with the great revival of activity under the pyramid builders. The royal tombs of the early kings were enlarged forms of the prehistoric pit. A pit in the ground had, during the prehistoric age, been improved on by making it a large chamber, lined with mud, roofed with timber and brushwood, and furnished with a number of vases and other objects. The earliest royal tombs were much the same, only lined and floored with stone, the offerings being dropped in between the timber and the side of the pit. Then regular cells were built for the offerings; next a row of small chambers apart from the tomb, and, lastly, an elaborate series of store-chambers of various sizes. The tomb originally had an entrance, then a sloping passage to it, next a stairway, and lastly, a long, sloping passage to the pyramids. The outer form was at first a slightly raised heap over the roof of the tomb. This was next walled to retain the earth; after that the walling was raised, and a block of brickwork with sloping sides on the outside, the brick mastaba. This later became expanded by adding around it, and extension upward, so as to be a mass of brick coats, and when translated into stone at the end of the third dynasty it suggested a pyramidal outline, and so led to the pyramid type. Dr. Petrie concluded his lecture by saying that now for the first time could be seen what was going on in each generation over a period of nine or ten centuries. A few dark times still needed the filling-in of, but the general course of man's development and could now be understood with a completeness which had been a solid basis for some general views. Archaeology and the scientific knowledge of the past of man, gave us a new basis for comparisons for estimating his future.

The subject of the second lecture was "The Temples of Egypt." He said that after Mariette had worked on the ruins of the Osiris temple at Abydos, he declared that the temple remained of the old temple, that even the foundations were destroyed to the roots, and that any further research was impossible. From that very ground the work of the past century had produced foundations of ten successive periods of time, one below another, occupying nearly 20 feet in the soil. The examination and recording of these buildings required over 4,000 measurements and 1,000 levellings. The first temple was of Amasis (twenty-sixth dynasty), then Amenhotep III. (twentieth dynasty), then Amenhotep III., then Amenhotep I. (eighteenth dynasty), then Amenhotep III. and Useratesen I. (thirteenth and twelfth dynasties), then Sankhkara (eleventh dynasty), then Mentuhotep I. (eleventh dynasty), then Pepy (sixth dynasty), then the temple of the fourth dynasty, below that the temple of the third dynasty and at the base of all the oldest temple, of the first dynasty. Thus the site was continually reused during 4,000 years; these periods of building followed entirely different plans, and the successive plans had scarcely any relation one to another.

The principal results were in the first dynasty. The fine ivory carving at that time showed work equal to that which succeeded it in later history. The appreciation of the delicacy of the muscular curves and the power of the arm were as good as in the best Classical or Renaissance art. The art of glazing was applied to large wall-tiles, covering brick walls, and to vases, as shown by part of a vase with the name of Menes. The use of two colors, a purple inlay in green, appeared in the name of Menes. Hence glazing was as advanced at the beginning of the third dynasty, about 4700 B.C., as it was for 3,000 years later, when polychromatic glazes of the eighteenth dynasty. The relations of Egypt were further illustrated by finding

the same black pottery in the first dynasty that was now known in Crete as late Neolithic. The camel was shown in the first dynasty by a well-modelled head; hitherto it was not proved to have been in Egypt till about 4,000 years later. In the well-known age of the fourth dynasty we had for the first time the portrait of the best known of all the kings—Cheops, or Khufu—whose appearance, however, was till then quite unknown. A minutely carved ivory figure, the face of which was only a third of an inch high, showed his character in an astonishing manner. The energy, decision and driving power was perhaps stronger than in any other portrait that was known. The tradition of his closing the temples and forbidding sacrifices was fully confirmed by finding that no large temples existed in the fourth dynasty such as those of the earlier or later times. Only a bed of vegetable ashes was found in a cell, and throughout it hundreds of clay *figulina* as substitutes for sacrifices, not a single bone of an animal occurring in the whole mass. The worship in the temples of Abydos was originally that of the jackal god Up-ua-tu, "the opener of ways," who showed the paths in the desert for the souls to go to the West. Osiris did not appear in any temple inscription for 2,000 years, and was not prominent till yet later. Some large decrees of the fifth and sixth dynasties had been found, and the oldest piece of certainly-dated iron, apparently a wedge, of the sixth dynasty, about 3,400 B.C. This site had fully shown how important it was to dissect minutely a temple site in which only earth remained, and where at first the absence of stone walls might lead to the idea that nothing was left there. The art of the beginning of the Egyptian monarchy lay hidden in that ground.

Mr. Arthur Evans spoke about the similarity between the pottery he had recently excavated at Knossos, in Crete, and that described by Dr. Petrie as belonging to the period of the first dynasty in Egypt, and on the great importance chronologically of the results obtained by Dr. Petrie's wonderfully interesting discoveries, which went back to the fifth millennium before the Christian era. In respect of the widespread custom of using seal impressions they helped one to an understanding of the impulse which brought about a similar state of things in Crete.

Dr. Forbes, referring to the illustration given by Dr. Petrie of an animal which he called a bear, asked what evidence there was of the bear being found so far south at the period denoted by the first dynasty in Egypt.

Dr. Petrie replied that the illustration was clearly a bear, and that during that period in Egypt there were lions, giraffes, elephants and other animals that had been driven out at later periods. The bear was then and much later found in the adjoining country of Syria, only a little further north of Egypt.

Professor Conway asked how Dr. Petrie equated the reign of the dynastic kings with exact periods of years so as to get the chronological date of the different dynasties.

Professor Petrie replied from the tablets and writings of the Egyptians of even the earliest dynasties, so exactly were their records kept. Even in respect of the high-water periods of the Nile this exactness was to be found, continuing down to later times, so that there was no reason for thinking that the historians of the later dynasties were incorrect in their statements of the various lengths of the reigns of the earliest dynastic kings.

A hearty vote of thanks to Dr. Petrie was carried with applause.

PLANT-EVOLUTION AND GOTHIC PERIODS.

IN concluding his address to the Section of Botany at the meeting of the British Association, Mr. A. S. Seward, F.R.S., lecturer on botany in the University of Cambridge, said:—

There is no more fascinating task than to follow the onward march of the plant-world from one stage to another and to watch the fortunes of the advancing army. We see from time to time war-worn veterans dropping from the ranks and note the constant addition of recruits, some of whom march but a short distance and fall by the way, while others, better equipped, rise to a position of importance. At long intervals the formation is altered and the constitution of the advancing and increasing host is suddenly changed; familiar leaders are superseded by new-comers who mark their advent by drastic reorganisation. To change the metaphor, we may compare the stages of plant-evolution to the records of changing architectural styles represented in Gothic buildings. The simple Norman arch and massive pier are replaced, with apparent suddenness, by the Pointed arch and detached shafts of the thirteenth century; the latter style, which marked an architectural phase characterised by local variations subordinated to a uniformity in essential features, was replaced by one in which simplicity was superseded by elaboration, and new elements were added leading to greater complexity and a modification of plan. Similarly, the Palæozoic facies of vegetation passes with almost startling suddenness into that which monopolised

the world in the Mesozoic era, and was in turn superseded by the more highly elaborated and less homogeneous vegetation of the Cretaceous and Tertiary periods. In taking a superficial view of architectural styles we are apt to lose sight of the signs of gradual transition by which one period passes into the next; so, too, in our retrospect of the changing scenes which mark the progress of plant-evolution, we easily overlook the introduction of new types and the gradual substitution of new for old. The invention of a new principle in the construction of buildings is soon followed by its wide adoption; new conceptions become stereotyped, and in a comparatively few years the whole style is altered. As a new and successful type of plant-architecture is produced it rapidly comes into prominence and acts as the most potent factor in changing the facies of a flora. Making due allowances for the imperfection of the geological record, we cannot escape from the conclusion, which is by no means opposed to our ideas of the operation of the laws governing evolutionary forces, that the state of equilibrium in the vegetable kingdom was rudely shaken during two revolutionary periods. The earlier Transitional period occurred when Conifers and Cycads became firmly established, while for the second revolution the introduction of the Angiospermous type was mainly responsible. As in the half-effaced documents accessible to the student of architecture "the pedigrees of English Gothic can still be recovered," so also we are able to trace in the registers imprinted on the rocks the genealogies of existing botanical types.

KING'S COLLEGE, LONDON.

THE Division of Architecture, which was separately constituted a year ago, will resume work on October 1, when the various courses of lectures and the studio for day students will be opened. A feature of the past session has been a visit paid by the students for measuring and sketching to Oxford, and it is intended to arrange a similar week's visit to some centre of architectural interest during the Easter vacation of the new session.

The evening lectures and the studio for evening students supported by the Carpenters' Company will open on Monday, September 28, when there will be a short opening lecture by the Professor, and new students can be enrolled. The evening fees have been somewhat reduced in most of the evening classes, and the Carpenters' Company are prepared to grant nominations to deserving students as in previous years.

COLDRUM AND STONEHENGE.

AT the meeting of the British Association Mr. George Clinch, F.G.S., stated that the district which lies immediately to the north-west of Maidstone is remarkable for an interesting series of prehistoric megalithic remains. The best known of these is Kits Coty House; a fallen cromlech called the "Countless Stones," lower down the same hillside; several other ruined examples in Addington Park, and Coldrum, or Coldreham, which stands less than two miles north of this on high ground overlooking the Medway valley, and within sight of Kits Coty House.

The remains of Coldrum comprise a central cromlech without capstone, an irregular line of large blocks of stone on the western side and traces of a tumulus. The published descriptions of it do not, however, mention its most important and characteristic feature, namely, that between the two upright stones which form the sides of the chamber there stand two stones, about midway, forming a partition which divides the space into two adjoining sepulchral chambers. The size of the upright stones is remarkable (7 feet high by 11 feet by 2 feet 3 inches thick), and still more the regularity of their form. Seventeen irregularly placed stones, enclosing a small space on the west side of the cromlech, represent a part only of what was probably a quadrangular or oblong enclosure, placed at the foot of the tumulus, by which the whole cromlech was originally concealed.

The arrangements above described—of a two-chambered cromlech with a square or oblong tumulus and massive outline wall—are of great rarity, and the whole structure suggests a late date in the Neolithic Age, when the form of the sepulchral chambers was followed out in the construction of the mound. A similar somewhat larger neolithic megalithic structure at Sievern, in Hanover, has been fully published, with illustrations, by Fr. Tewes. The regular form, good proportions and flat surfaces of the upright stones at Coldrum are very remarkable, and suggest artificial shaping and perhaps dressing. These also point to a late period in the neolithic age, and present remarkable similarities to the forms at Stonehenge. That these careful forms and surfaces could be produced with stone tools has been shown in the case of Stonehenge by Professor Gowland, "Recent Excavations at Stonehenge. The idea of

enclosing the principal structure within a line of stones is common to Stonehenge and Coldrum; but whereas the latter was obviously a sepulchral monument, Stonehenge, following to some extent the same arrangement, was constructed on a more ambitious scale, and probably designed for a different purpose.

The megalithic structures of Kent furnish a valuable illustration of the constructive skill of neolithic man. At Kits Coty House the two main uprights lean somewhat inward against the middle upright between them, thus distributing the weight of the capstone so as to consolidate the structure, the resistance of which to complete destruction proves also the excellence of its foundations. At Coldrum construction has developed further, for the uprights still erect, even though no capstone remains. The authorities on these rectangular megalithic monuments the prototypes of a series of Anglo-Saxon churches, sometimes called "Celtic" or "British," of which good examples are to be seen at Boarhurst, Hants, and in Dover Castle.

GENERAL.

An Exhibition of works by Thomas Bewick, the engraver, was opened on Saturday at Newcastle. The whole of the blocks for the "British Birds" and "Quadrupeds" have been lent, and first copies of the engravings. The engraver's methods of work are also illustrated in various stages, and many of his engravings are exhibited.

The Italian Government have undertaken excavations at the site of the Campus Martius, and have discovered the foundations of the monument erected by the Senate 13 B.C. under the consulship of Nero and Quintus, in honour of the Emperor Augustus.

The Glasgow University Court decided last week to continue to carry out the extensions on the original plan, which provide two separate buildings, one on the north and the other on the north of the main avenue. An estimate of the expenditure will be about 100,000*l.*

A "Sun Chariot" has been found in a moor of the island of Denmark. From the site where it was found it is estimated to be not less than 3,000 years old. It is now in the collection at Copenhagen. The subject is of great interest for the Scandinavian and Germanic race.

New Buildings are about to be erected in Midland by Mr. J. Falkingbridge Parker, the architect, at the estate.

A Memorial to James Watt is to be set up on the site of his birthplace at Greenock. The form the memorial will assume was not determined last week by the committee. Appeals for contributions are to be made to users of steam throughout the civilised world.

Forty Panels, which are exquisite examples of carving, have been discovered in the Garde-Meuble at Versailles. In style they are of the period of Louis XIV, and belonged to the palace at Versailles, from whence they were removed in the middle of the last century.

The Italian Police have made several arrests in connection with the theft in January of a bas-relief from the Lucca della Robbia in the church of S. Severo at Calenzano. The relief has been broken, but will be repaired.

Copies of the *Venus* and the *Mercury* by the sculptor Pigalle are to be prepared for the Kaiser's collection at the Museum, Berlin.

The Chief Rabbi dedicated on Saturday the new Newington Synagogue and Class-rooms in Shackleton Road, N.E. The new synagogue gives seating accommodation for 450 men and 300 women, while in the classroom room for 250 children. The total cost, including the cost of the building, is about 12,000*l.* There is a handsome pulpit with a canopy of Carrara marble. Mr. Lewis Solomon is the organist.

A Society of Painters, Sculptors and Architects has been formed in Paris, under the presidency of M. Frantz, with the idea of holding an exhibition at the end of the year and hereafter annually.

A Committee has been formed in Dublin to consider the question of the housing of the working classes in the city and it has been asked to report upon the following subjects:—The number of working people in the city and the number of proper dwellings. The probable total cost of providing necessary dwellings. The districts and areas in the city which need housing schemes. The manner in which the question of housing the labouring population has been dealt with in Great Britain and in foreign countries, and the measures necessary to improve the existing law relating to the subject, and to consider any other means of dealing with the question.

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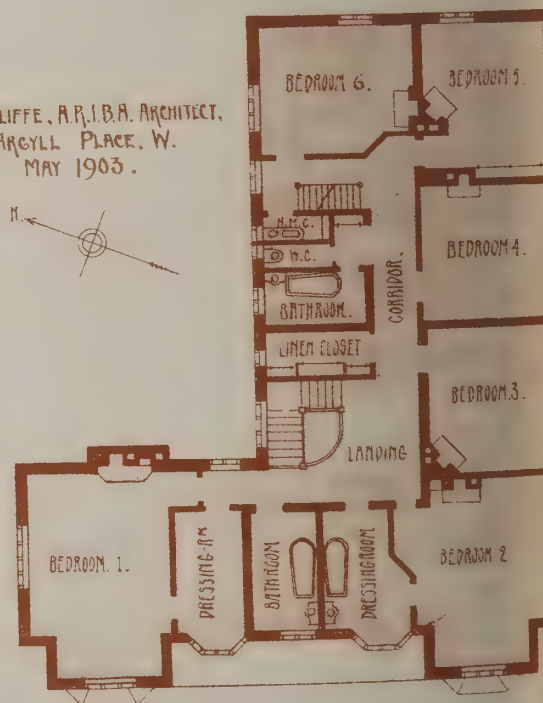


HOUSE AT BYFLEET, SURREY.



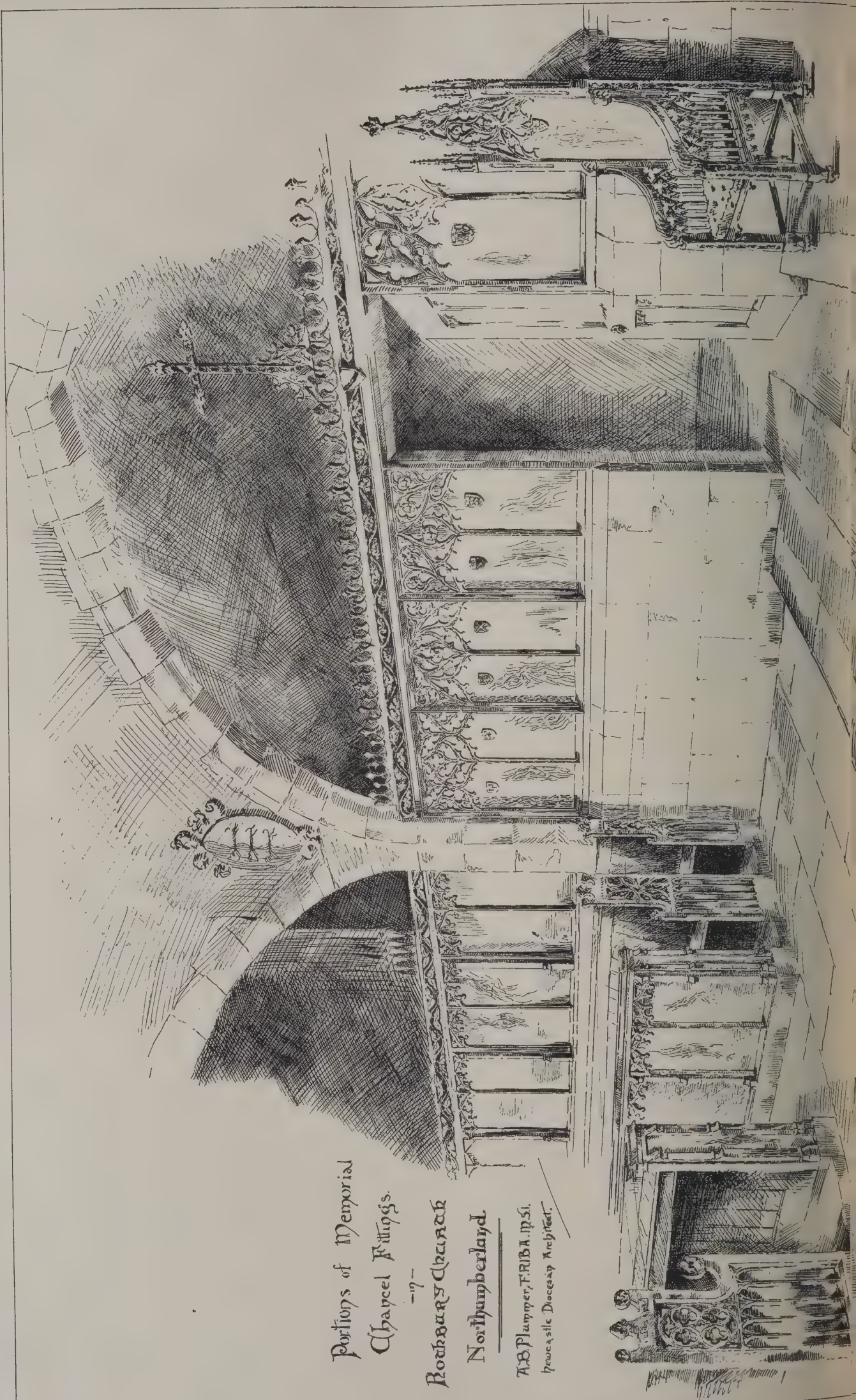
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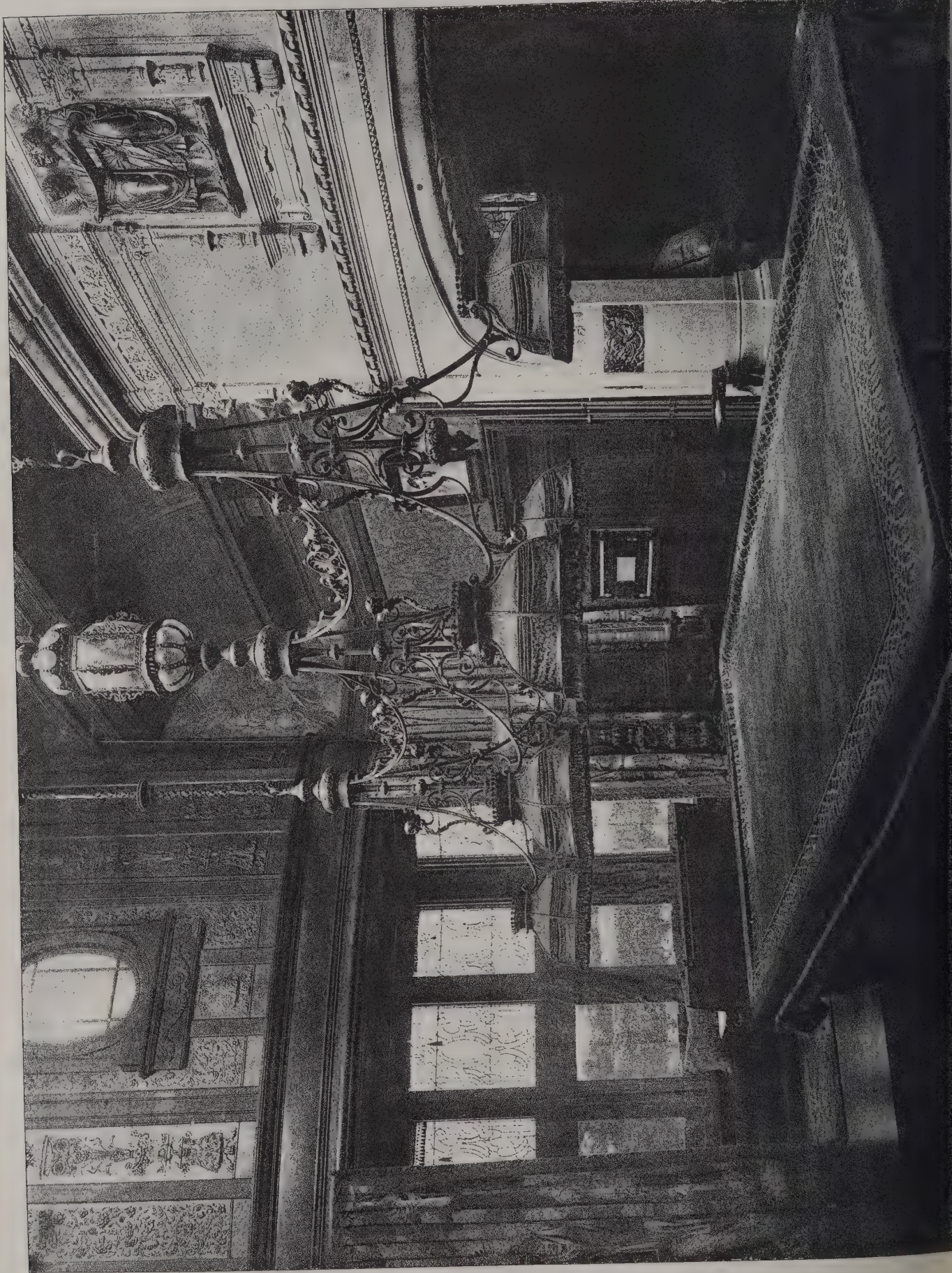
Portions of Memorial
Chapel Rillings.

—17—

Rothbury Church
Northumberland.

A.B. Plummer, F.R.B.A. m.S.
Newcastle Diocesan Architect.

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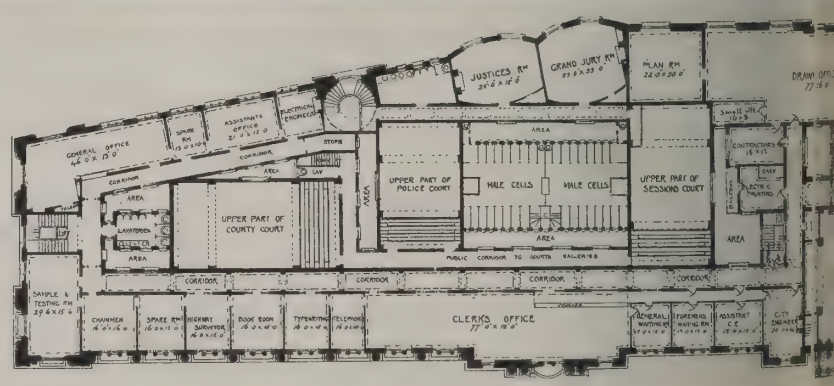
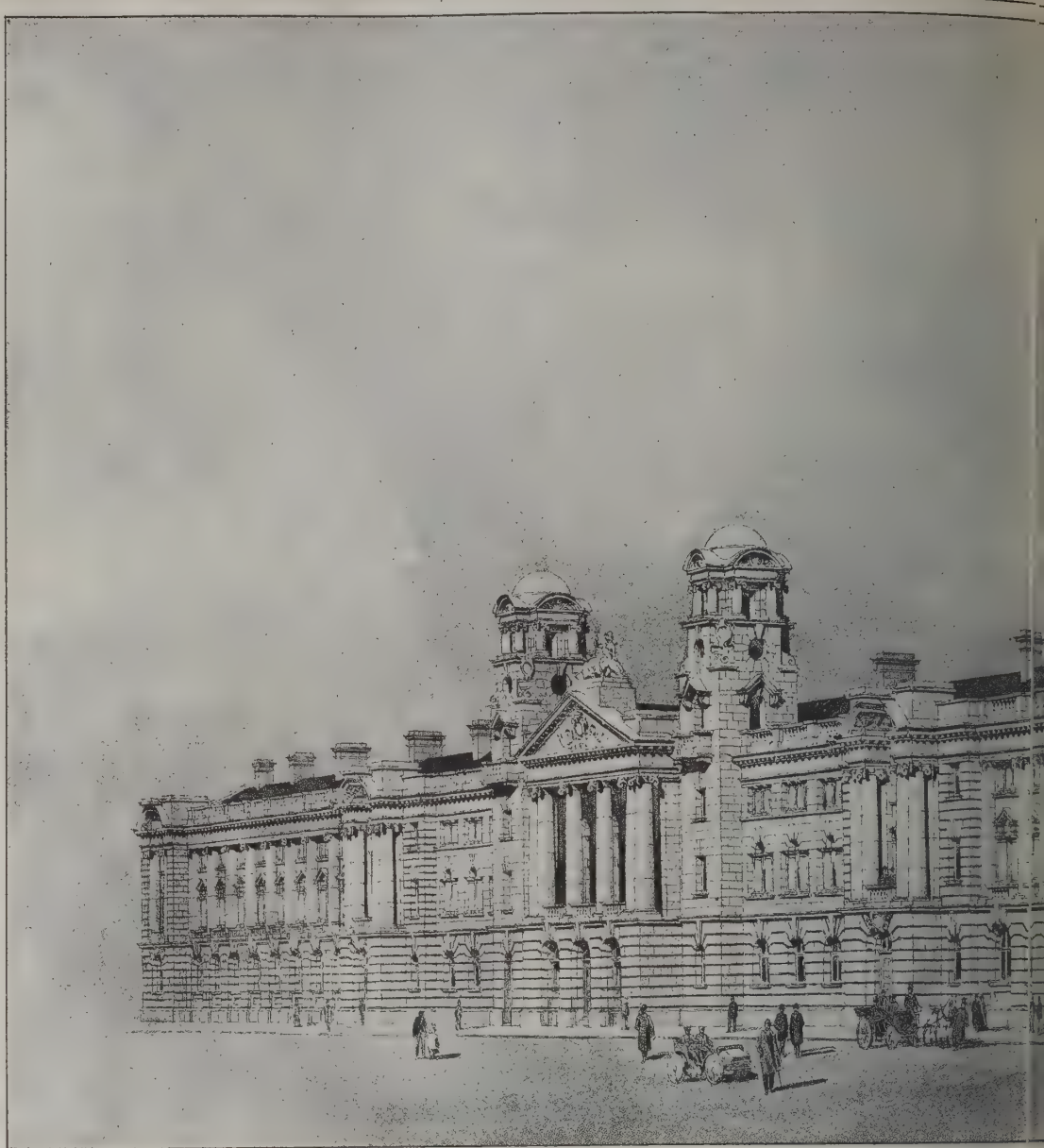


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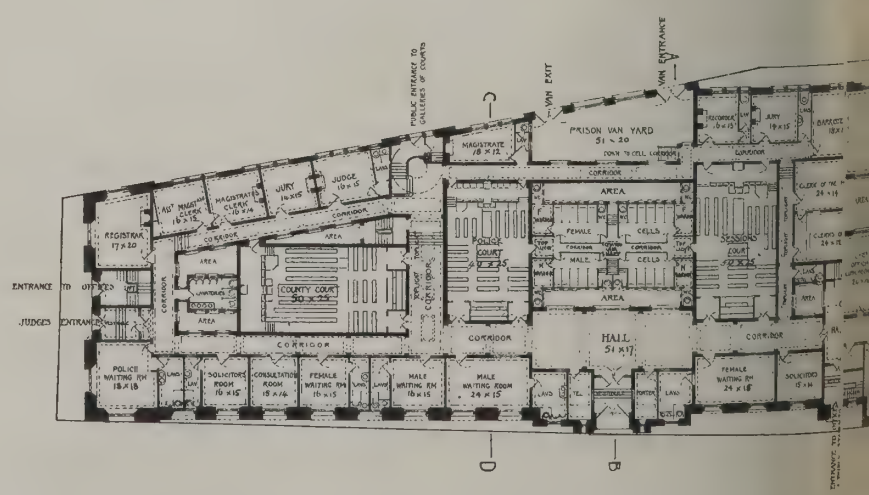
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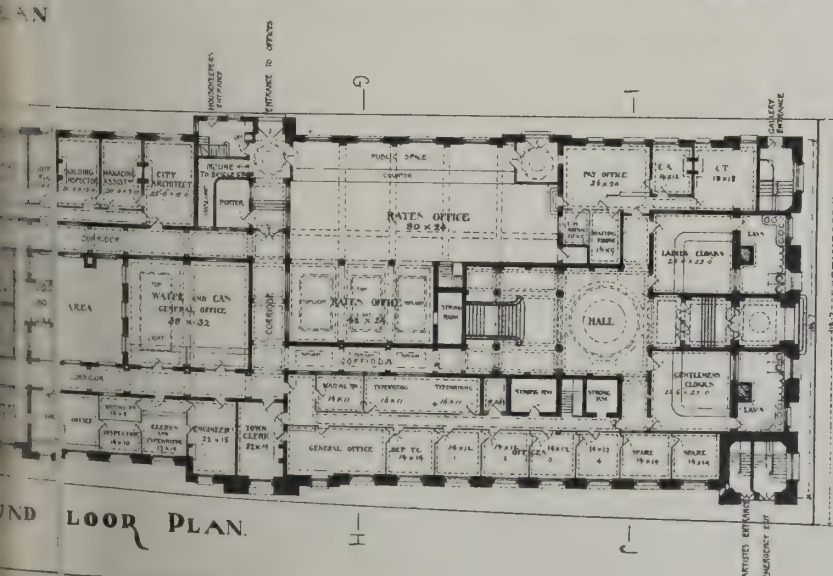
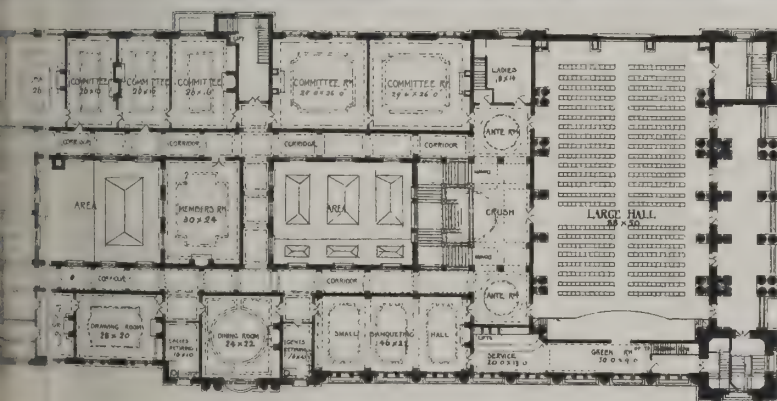
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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

authors of signed articles and papers read in public must necessarily be held responsible for their contents.

communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

spondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

s great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

HTON.—Nov. 9.—Designs are invited for a new school. Premiums of 50l., 30l. and 20l. will be paid to the second and third premiated designs respectively. Paid up to Sept. 29 on receipt of 1 guinea, which will be paid on receipt of design. Mr. Leonard Holmes, hon. Secy, Brighton and Hove Hospital for Women, 76 West Brighton.

LIN.—Sept. 30.—Designs and specifications wanted for men's cottages, semi-detached or terraces, each cottage to exceed £100. The successful plan to become the property of the company on payment of £20. Mr. Francis B. O'Connell, Great Southern and Western Railway, Kingsbridge Road, Dublin.

AM.—Oct. 7.—For sewage disposal of the village of Ashford. Report, plan and estimate of probable cost not to exceed 30 guineas. Further particulars, Mr. R. Lonergan, Ashford Place, Folkestone.

AND.—Sept. 26.—Plans are invited for the laying-out and development for municipal and other purposes of about 100 square yards of land in Church Road and Sandy Lane,

Leyland, Lancs. A premium of 15l. 15s. is offered to the author of the plan considered to be the best design. Mr. M. H. Wilkinson, surveyor, 21 Towngate, Leyland.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75l. for design placed first, and one of 25l. for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100l., 50l. and 30l. respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—Sept. 22.—Competitive plans are invited for the erection of a hospital and offices. Conditions of the competition and full particulars may be obtained from Mr. J. E. Shaw, clerk to the Lunacy Board, County Buildings, Ayr.

SHEPTON MALLET.—Oct. 15.—For the erection of a hall to be used as drill hall and for musical purposes, cost not to exceed £1,200. Plan of site and copy of conditions on payment of 1s., which will be returned, from Mr. H. Charles Budd, 12 Commercial Road, Shepton Mallet.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100l., 50l. and 25l. will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20l., 10l. and 5l. will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

CONTRACTS OPEN.

ABBEY WOOD.—Sept. 25.—For the erection of a temporary public elementary school at Crossness, Abbey Wood, Kent, to accommodate 150 children. Mr. W. Egerton, architect, 12 Queen's Road, Erith.

ALNWICK.—Sept. 26.—For the conversion of St. James's manse into Sunday-schools, classrooms, &c. Mr. George Reavell, jun., architect, Alnwick.

BIRMINGHAM.—Sept. 23.—For the erection of the Council school in Odknow Road, near Victoria Park, Small Heath. Mr. A. Rowse, surveyor, 3 Newhall Street, Birmingham.

BOOTLE.—Sept. 30.—For the extension of present boiler-house at the electric-light station, Pine Grove. Mr. J. Henry Farmer, town clerk, Town Hall, Bootle, Lancs.

BRADFORD.—Oct. 1.—For the erection of office, store, shed, &c., at Gouthwaite Lodge, near Pateley Bridge. Mr. James Watson, Town Hall, Bradford.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CLACTON-ON-SEA.—For the erection of detached residence in Clacton-on-Sea. Mr. George Gardiner, architect, 11 Marine Parade, Clacton-on-Sea.

DARTFORD.—Sept. 23.—For alterations, repairs and re-decorating Southfield House, near Joyce Green hospital, Dartford, Kent, for the Metropolitan Asylums Board. Mr. W. T. Hatch, engineer and surveyor to the Board, Embankment, E.C.

DOVER.—Sept. 22.—For disinfecting laundry, &c., block at the small-pox hospital at Poulton, near Dover. Mr. Henry E. Stilgoe, engineer, Maison Dieu House, Biggin Street, Dover.

EXETER.—Oct. 2.—For the erection of a pair of cottages at East Woodley farm, N. to St. Cyres. Messrs. Ellis, Son & Bowden, surveyors, Bed'ord Chambers, Exeter.

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FAREHAM.—Sept. 21.—For the erection of an engine-house, &c., at the county asylum, Knowle, Fareham, Hants. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

FULHAM.—Oct. 7.—For the erection of two lodges, with refreshment-rooms, lavatories, &c., attached, situate in the South Park, Fulham. Mr. Francis Wood, engineer, Town Hall, Fulham, S.W.

HALIFAX.—For the erection of a pair of semi-detached villas on the Greenroyd estate, Skircoat. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

HALIFAX.—Sept. 21.—For the erection of three through houses in Hullen Edge Lane, West Vale. Mr. Fred F. Beaumont, architect, Southgate Chambers, Halifax.

HALIFAX.—Sept. 29.—For the erection of silversmith's works at Mile Cross, Halifax. Messrs. Walsh & Nicholas, architects, Museum Chambers, Halifax.

HAMPSTEAD.—Sept. 30.—For the erection of tenements, stabling, sheds, workshops, &c., at the new depôt and stoneyard at Lymington Road, Finchley Road, Hampstead. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

IRELAND.—Sept. 23.—For an addition to the gate lodge, People's Park, Limerick. Mr. W. M. Nolan, town clerk, Town Hall, Limerick.

IRELAND.—Sept. 24.—For rebuilding the chimney of the Kilkenny dispensary. Mr. Kieran Comerford, clerk, Kilkenny.

IRELAND.—Sept. 28.—For the construction of a pumping-station, including a dwelling-house and auxiliary works at the west end of the Pigeon House Road, in the city of Dublin. Mr. Spencer Harty, City Hall, Dublin.

IRELAND.—Oct. 13.—For constructing and laying fireproof floors at the new male block (in course of erection) at the asylum, Letterkenny, co. Donegal. Mr. J. P. McGrath, architect, Commercial Buildings, Foyle Street, Londonderry.

IRELAND.—Oct. 7.—For the erection of sixteen labourers' cottages throughout the rural district, Nass. Mr. D. J. Pursell, clerk, R.D.C., Nass.

JOHANNESBURG.—Oct. 19.—For the supply alternatively of gas generating plant or steam generating plant, and of gas motors or steam motors, with electric generators and all accessories, to the following specifications:—Specification No 2.—Section A: Gas producer plant, capable of gasifying $7\frac{1}{2}$ tons of Transvaal coal per hour, with coal conveyer, clean-

ing and cooling plant and all accessories; sections B, C, D and E: Four gas-engines, each for driving a 1,350 kw. dynamo (2,000 B. h.-p.); one gas-engine for driving a 675 kw. dynamo (1,000 B. h.-p.); three gas-engines, each for driving a 675 kw. two-phase alternator (1,000 B. h.-p.); two motor generators, each consisting of a 250 kw. two-phase alternator and two 150 kw. dynamos; two balancers, each consisting of two 50 kw. dynamos. Specifications, forms of tender, and a plan of the site may be seen on and after September 7, at the offices of the Town Clerk, Johannesburg, or at the offices of the Council's consulting engineers, Messrs. Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W.

KING'S LYNN.—Sept. 24.—For the erection of a Shepherd's hall at Middleton, King's Lynn. Mr. J. Belderson, Bridge Street, King's Lynn.

KINGSTON-UPON-THAMES.—Sept. 21.—For alterations at the municipal offices, Clattern House. Mr. Harold A. Winsor, town clerk, Kingston-upon-Thames.

LONDON.—Sept. 22.—For the construction of a floor over the first-class swimming bath at the public baths, High Street, Wandsworth. Particulars may be obtained at the Surveyor's Office, High Street, Wandsworth, S.W.

LONDON.—Sept. 25.—For sundry works to infirmary at Raine Street, Old Gravel Lane, E. Mr. J. R. Browne, clerk to the Guardians, Raine Street, Old Gravel Lane, E.

LONDON.—Sept. 29.—For the erection of a new sorting office at Ealing Dean, W. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

LONDON.—Sept. 29.—For alterations and additions to Ealing Telephone Exchange. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

LONDON.—Sept. 30.—For the erection of tenements stabling, sheds, workshops, &c., at the new depôt and stoneyard at Lymington Road, Finchley Road, Hampstead. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

LONDON.—Oct. 6.—For the construction of an underground convenience at the southern end of St. Martin's-le-Grand. The Town Clerk, Public Health Department, Guildhall.

LONDON.—Oct. 6.—For the repairing and repainting of Abbey Mills pumping station, Abbey Lane, Stratford. Particulars at the Engineer's Department, L.C.C., County Hall Spring Gardens, S.W.

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LONDON.—Oct. 6.—For the construction of an underground convenience in Falcon Square. Town Clerk, Public Health Department, Guildhall, E.C.

MANCHESTER.—Sept. 23.—For repairs to these cottages, 72, 74 and 76 Silk Street, Oldham Road, Manchester. Particulars may be obtained at the office of the City Architect, Town Hall.

MIDDLESBROUGH.—Sept. 21.—For the erection of an infants' school, providing accommodation for 500, in connection with the Marton Road schools. Messrs. J. M. Bottomley, Son & Wellburn, architects, 28 Albert Road, Middlesbrough.

MUSWELL HILL.—Sept. 22.—For the erection of a sorting office. Mr. J. Wager, H.M. Office of Works, Storey's Gate, N.W.

NELSON.—Sept. 28.—For the erection of a clock tower on the market hall. Mr. J. H. Baldwick, town clerk, Nelson, Lancs.

NORTH SHIELDS.—Sept. 29.—For the erection of shops and offices in Savile Street, North Shields. Mr. John F. Millie, borough surveyor, Tynemouth.

PICKERING.—Oct. 5.—For the erection of grammar school at Pickering, Yorks. Mr. J. D. Whitehead, clerk to the governors, Pickering.

PONTYPOOL.—Sept. 30.—For rebuilding the White Hart Hotel, George Street, Pontypool. Messrs. Fisher & Sons, architects, Pontypool.

PORTSMOUTH.—Sept. 21.—For additions and alterations to the post-mortem room at the rear of the public baths, Park Road. Mr. Alexander Hellard, town clerk, Town Hall, Portsmouth.

PRINCES RISBOROUGH.—Sept. 30.—For the erection of a Wesleyan chapel and schoolroom at Longwick, near Princes Risborough. Mr. Fred Taylor, architect, Temple Street, Wylesbury.

RUGBY.—Sept. 21.—For the erection of three cottages at Crownover Mill, Rugby, and the construction of Park Road on the end of the present roadway to North Street. Mr. G. Macdonald, surveyor, Rugby.

SALTASH.—Sept. 24.—For renovating the Wesleyan Sunday school, Saltash, including erection of new platform, dadoes, alteration to roof, painting, &c. Mr. J. H. Pooley, 104 Fore Street, Saltash.

SALTBURN.—Sept. 26.—For erection of Wesleyan church and schools at Saltburn. Messrs. Garside & Pennington, architects, Pontefract.

SCOTLAND.—Sept. 21.—For the erection of the Carnegie public library, Motherwell. Mr. James Burns, town clerk, Motherwell.

SCOTLAND.—Sept. 22.—For the erection of a manse in King Edward Street, Fraserburgh. Mr. W. S. F. Wilson, architect, Frithside Street, Fraserburgh.

SCOTLAND.—Sept. 22.—For heating and ventilating works and smiths' work of buildings being erected in St. Andrew's Square and St. Andrew's Street, Glasgow. Mr. J. Lindsay, clerk, City Chambers, Glasgow.

SCOTLAND.—Sept. 22.—For the erection of tenements in Adelphi, Muirhead and St. Ninian Streets, Glasgow. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

SCOTLAND.—Oct. 2.—For the enlargement of Ballingry school, consisting of central hall to accommodate 860 pupils, seven classrooms to accommodate 420 pupils, retiring-rooms, cloak-rooms, latrines, playsheds, drainage, septic tanks, boundary walls, railings and making of playgrounds, and alterations to the present buildings, consisting of new cloak-rooms, lighting, heating and ventilation. Mr. William Birrell, architect, 205 High Street, Kirkcaldy.

SCILLY ISLES.—Oct. 2.—For the erection of coastguard buildings at Telegraph, St. Mary's, Isles of Scilly, consisting of houses for four men, officer's room, telescope houses, &c. Copies of the drawings and specification can be seen at the Director of Works Department, Admiralty.

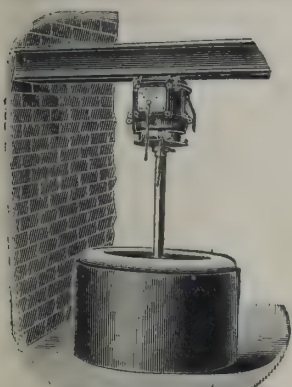
SEDBERGH.—Sept. 24.—For the erection of premises at Sedbergh for the Lancaster Banking Co., Ltd. Mr. J. Parkinson, architect, 67 Church Street, Lancaster.

SHENFIELD.—Sept. 26.—For the erection of two cottages at Shenfield, Essex. Mr. Lionel H. Marshall, surveyor, Chippenham, Wilts.

SHOREDITCH.—Oct. 6.—For pulling-down and rebuilding 5 Hoxton Square, N., to be used as stores for the electricity department. Mr. H. Mansfield Robinson, town clerk, Town Hall, Old Street, E.C.

STEPNEY.—Sept. 21.—For alterations to cider stores and rebuilding dwelling-house in Butcher Row, Ratcliff. Mr. Charles Dunch, architect, St. Clement's House, Clement's Lane, Lombard Street, London, E.C.

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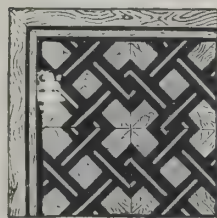
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SWINDON.—Sept. 23.—For the erection of car depôt stores, repair shops, &c. Messrs. Lacey & Sillar, engineers, 78 King Street, Manchester.

UTLEY.—For the erection of stable, coach-house and harness-room at Netherwood, Utley, Yorks. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

WALES.—For the erection of a mission house at Pwll, parish of Pembrey, Llanelly. Mr. C. A. Jones, Cilymaenllwyd, Llanelly.

WALES.—Sept. 22.—For the erection of forty-three dwelling-houses at Abertridwr. Mr. G. A. Lundie, architect, Queen Street, Cardiff.

WALES.—Sept. 22.—For the erection of an infants' school at Maindy, near Cardiff. Mr. G. E. Halliday, architect, 41 High Street, Cardiff.

WALES.—Sept. 23.—For the erection of the Llanguicke-Ynysmudw Infants' Board school. Mr. J. D. Rees, architect, Ystalyfera.

WALES.—Sept. 23.—For the erection of twenty-nine houses, Rowles Square, Rhymney. Mr. W. H. Trump, solicitor, Rhymney.

WALES.—Sept. 25.—For the erection of a schoolroom, near Hendrefelin, in connection with the Ysbytty Ystwyth C.M. chapel. Mr. T. Morgan, Pentfynon, Pontrhydygroes.

WALES.—Sept. 26.—For rebuilding the Cross Keys inn, Skewen. Mr. J. Cook Rees, architect, Neath.

WALES.—Sept. 28.—For alterations and additions to the Maescywmmer Board school, Mon. Mr. J. H. Phillips, architect, Clive Chambers, Windsor Place, Cardiff.

WALES.—Sept. 28.—For the erection of ten houses at Fochriw. Mr. Wm Walters, 5 Dynevor Street, Fochriw.

WALES.—Sept. 28.—For the erection of seventeen houses at Giffach Bargoed. Mr. Wm. Harris, architect, Giffach, Pengam.

WALES.—Sept. 30.—For the erection of thirty-five houses on the Cefn Bach estate, Deri, Cardiff. Mr. James Ward, Cascade House, Deri, Cardiff.

WALES.—Sept. 30.—For the erection of a Baptist chapel and schoolroom at Senghenydd. Mr. T. Nicholas, Station House, Senghenydd.

WALES.—Oct 2.—For the erection of a central public library, Holton Road, Barry. Messrs. Hutchinson & Payne, architects, 11 John Street, Bedford Row, W.C.

WIGAN.—Sept. 22.—For the enlargement of the post office at Wigan, for the Commissioners of H.M. Works and Public Buildings. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WOOLWICH.—Sept. 24.—For the erection of public baths and washhouses on site adjoining 240 High Street, Plumstead. Mr. Frank Sumner, borough engineer, Maxey Road, Plumstead.

TENDERS.

ALNWICK.

For sewage extension from existing manhole near bridge on South Main Road to west side of Coldstream branch railway line, with manholes, &c. Mr. GEOFFREY WILSON, town surveyor.

McLaren & Co, Embleton * £123. 0 0
J. & G. GREEN, Alnwick (accepted) 114 10 0

* Two shillings per yard to be allowed for sanitary piping supplied by Urban District Council.

AYLESBURY.

For alterations to sewage-disposal works, Mr. G. CHATTERTON, 6 The Sanctuary, Westminster.

B. COOKE & Co., Westminster (accepted) . £11,546 0 0

BARKING.

For street works in connection with the Ilford Lane improvement Mr. C. F. DAWSON, surveyor.

J. Smith £1,485 0 0
J. Jackson 1,445 15 10
W. Iles 1,190 0 0
B. W. Glenny 1,143 9 0
Parsons & Parsons 1,110 0 0
Anderson 1,074 2 8
D. T. JACKSON, Barking (accepted) . . . 1,051 18 6

BRADFORD.

For the erection of a propagating house at Bowling Cemetery. Accepted tenders.

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For erection of new boiler-house at King's Norton Union workhouse. Messrs. C. WHITWELL & SON, architects, 23 Temple Row, Birmingham.

B. Whitehouse & Sons	£3,145	0	0
G. Goodwin	3,119	0	0
W. Sapcote & Sons	3,098	0	0
A. C. Hughes	2,992	0	0
J. Dallow & Sons	2,983	0	0
W. Robinson	2,920	0	0
H. Dorse	2,865	0	0
W. H. GIBBS, King's Heath (accepted)	2,840	0	0

BRISTOL.

For erection of the Bell inn, Two Mile Hill. Messrs. C. & C. THOMPSON, architects, Nicholas Street, Bristol
Quantities by Mr. G. H. PEARSON.

Main building.

J. James	£2,880	0	0
H. A. Forse	2,825	0	0
Jones & Hill	2,650	0	0
M. Durnford	2,625	0	0
F. Chown	2,519	0	0
Eastabrook & Sons	2,500	0	0
E. Love	2,437	0	0
S. Williams	2,370	0	0
A. E. DENBY & CO, Bristol (accepted)	2,299	0	0

Boundary walls.

E. Love	263	0	0
Jones & Hill	235	0	0
H. A. Forse	235	0	0
F. Chown	230	0	0
A. E. DENBY & CO, Bristol (accepted)	229	0	0
J. James	220	0	0
Eastabrook & Sons	218	0	0
M. Durnford	195	0	0
S. Williams	180	0	0

DARLINGTON.

For painting at the gasworks.

W. SCOTT, High Northcote (accepted).

CHESHIRE.

For street works in Beech Street, Pedley Street and Market Street, Crewe. Mr. G. EATON SHORE, borough surveyor.

Beech Street.

T. Tucker	£2,457	8	8
W. Harris	2,282	0	4
R. Finnegan	2,119	4	8
BENNIE & THOMPSON, Warrington (accepted)	2,035	18	6

Market Street (part of).

T. Tucker	661	0	6
W. Harris	608	5	2
R. Finnegan	583	6	4
BENNIE & THOMPSON (accepted)	544	13	7

Pedley Street (part of).

T. Tucker	522	17	5
W. Harris	479	15	4
R. Finnegan	465	2	8
BENNIE & THOMPSON (accepted)	443	2	3

DISTINGTON.

For the enlargement of Dyon school, Distington.

T. DAVIDSON, Parton-on-Solway (accepted) £946 10 0

FRYSTONE.

For the erection of fifty-two houses and shop at Frystone, near Castleford, Yorks. Messrs. GARSIDE & PENNINGTON, architects, Pontefract and Castleford.

Rainey Bros.	£9,950	0	0
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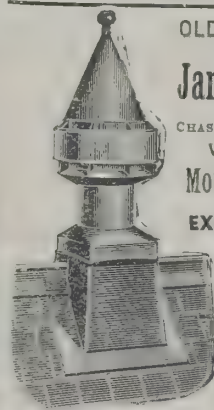
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 Mitchell Bros. 1,138 0 0
 T. SWAYNE & SON, Stoke Road, Guildford (accepted) 1,035 0 0

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A. Champniss 324 0 0
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 Wimpey & Co. 277 0 0
 J. Meston 277 0 0
 Victoria Stone Co. 276 0 0
 T. Adams 263 0 0
 FREE & SONS (accepted) 249 0 0

Angel Road.

A. Champniss 245 0 0
 Wimpey & Co. 230 0 0
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 J. Meston 208 0 0
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For the erection of new offices at the Phoenix Brewery, Green Lane, Heywood. Mr. W. E. GILL, architect, Derby Chambers, Fleet Street, Bury.

Taylor & Livesey	£2,313	0	0
Sutcliffe Bros.	2,170	0	0
G. Twelves	2,100	0	0
D. Diggle	2,038	0	0
J. Johnson	2,050	0	0
J. Inman	2,045	0	0
J. Tinline	2,000	0	0
Blakeley & Wild	1,985	0	0
Thompson & Brierley	1,980	0	0
J. Berry	1,970	10	0
S. BARKER, Pilsworth Road (accepted)	1,900	0	0

IRELAND.

For the re-erection of a windmill (which was blown down by the recent storm) at Callan workhouse.

T. MCKENZIE & SONS, Dublin (accepted)	£39	0	0
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KETTERING.

For the completion of fourteen private streets and parts of streets within the district, comprising a total length of 3403 yards. Mr. T. READER SMITH, surveyor.

W. Wilson	£13,217	7	1
W. H. Pickin	12,250	0	0
J. C. Trueman	12,221	0	0
G. Henson	11,742	10	0
A. Jewell	11,665	0	0
F. Kay	11,159	7	7
A. Lewin & Son	11,148	0	0
W. G. Wilmott	10,859	0	0
Empire Stone Co. and J. Barlow	10,632	0	0

LITTLEHAMPTON.

For the providing and laying of about 1,021 yards of 3-inch diameter cast-iron mains, with sluice-valves, fire-hydrants and irregulars, in various roads in Littlehampton and Wick. Mr. H. HOWARD, surveyor, Town Offices, Littlehampton.

Accepted tenders.

W. Wallis, Littlehampton, cast-iron water-mains, &c.	£349	10	0
W. Wallis, paving and kerbing works	219	0	0
W. G. Harbour, Littlehampton, cast-iron culverts	47	10	0

LONDON.

For Admiralty buildings extension, block 3, superstructure.

A. N. Coles	£118,553	0	0
J. Ferguson & Co.	109,000	0	0
J. F. Wright	106,000	0	0
Higgs & Hill, Ltd.	104,400	0	0
Leslie & Co., Ltd.	103,900	0	0
J. Chessum & Sons	102,850	0	0
J. Shillitoe & Sons	102,000	0	0
J. Mowlem & Co., Ltd.	99,650	0	0
Perry & Co.	97,251	0	0
Patman & Fotheringham, Ltd.	95,280	0	0
B. E. Nightingale	92,850	0	0
A. Kellelt & Sons, Ltd.	91,740	0	0
C. Wall & Co.	90,950	0	0
Holloway Bros (London), Ltd.	87,700	0	0

LONGPARISH.

For the erection of a steel girder and concrete bridge at South Side, Longparish, Andover. Mr. JOHN WORMALD, district surveyor.

A. G. Osenton	£263	14	0
P. Tryhorn & Son	181	14	0
T. W. Spratt	148	0	0
Rogers & Wood	146	12	0
S. Bell	143	5	0
H. A. Annett & Son	127	14	0
F. BEALE & SONS, Andover (accepted)	119	10	0

MACCLESFIELD.

For the supply of the machinery required for new laundry at the workhouse. Messrs. WHITTAKER & BRADBURN, architects, 19 King Edward Street, Macclesfield

Entwistle & Gass	£1,380	0	0
J. Armstrong & Co.	1,371	0	0
J. Braithwaite, Ltd.	1,209	11	0
Manlove, Allott & Co., Ltd.	1,185	0	0
Tomlinson & Milan, Ltd.	1,168	0	0
Moorwood, Son & Co., Ltd.	1,167	0	0
Tullis & Co.	1,102	15	0
C. Bell	1,055	15	0
Summerscales & Son, Ltd.	992	7	0
T. BRADFORD & CO, Salford (accepted)	987	0	0
Thomas & Taylor, Ltd.	920	10	0
Cherry Tree Machine Co, Ltd.	833	17	7
Ashwell & Nesbit, Ltd.	883	0	0

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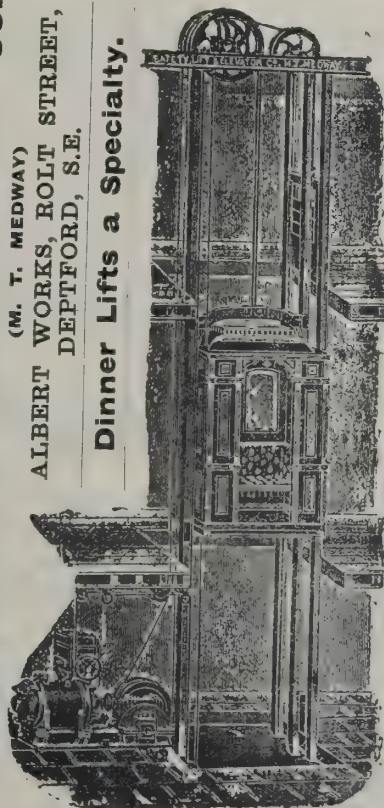
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NEEDHAM MARKET.

For laying about 900 super yards of concrete paving at Needham Market, Suffolk. Mr. H. MILLER, surveyor, 16 Museum Street, Ipswich.

G. BURGOYNE, Ipswich, concrete slabs, 3s. 6d. per super yard (*accepted*).

NORWICH.

For forming, sewerage and partly metalling a new road upon Hotblack's Dereham Road building estate. Messrs. MORGAN & BUCKINGHAM, architects, 3 Redwell Street, Norwich.

J. Evans	£669	0	0
W. J. Hannent	550	0	0
T. & J. Burgoyne	529	0	0
F. Hipperson	460	0	0
E. J. Edwards	441	5	9
H. S. WATLING, Norwich (<i>accepted</i>)	424	0	0

OSWESTRY.

For the erection of four cottages at Ifton Heath. Mr. W. H. SPAULL, architect, The Gables, Oswestry.

Coward & Co.	£2,100	0	0
J. Higgins	1,341	0	0
W. H. Thomas	1,298	0	0
W. GRIFFITHS & SON, Ellesmere (<i>accepted</i>)	1,180	0	0

REIGATE.

For the construction of bacterial sewage-disposal works at the sewage farm, Earlswood. Mr. FRED T. CLAYTON, surveyor.

S. Kavanagh & Co.	£15,542	14	6
E. Iles	14,957	19	2
F. W. Trimm	14,545	7	2
G. S. Faulkner	14,456	15	9
Streeters & Todhunter	14,397	0	0
Davis, Ball & Co.	13,275	9	10
B. Cooke & Co.	13,041	0	0
W. Cunliffe	12,241	19	0
BRAITHWAITE & CO, Newhay, Leeds (<i>accepted</i>)	12,189	0	0

ROCHDALE.

For painting the outside of the Bridgefold property.
W. H. BEST, Yorkshire Street (*accepted*)

SALCOMBE.

For providing, laying and jointing cast-iron water-mains, constructing reservoir, pump well, foundations to engine and pumps, &c.

W. E. BENNETT, Plymouth (*accepted*) . . . £1,111 10

SCARBOROUGH.

For the erection of an ice factory, engine and boiler-room, engine chimney, ice store and cold stores. Messrs. FREEMAN, SONS & GASKELL, architects, 11 Carr Lane, Hull.

Birkinshaw	£4,820	0
E. Good & Son	3,782	2
J. F. Wilson	3,734	0
R. Cook & Co.	3,710	0
J. Bastiman & Son	3,600	0
Hunter & Smith	3,564	6
R. Watkinson	3,472	5
W. T. Petch	3,452	0
J. Barry & Sons	3,450	0
Wilson & Bland	3,370	0
J. JARAM & SON, 16 Gladstone Street (<i>accepted</i>)	3,255	0

SIDBURY.

For the erection of a house for the Rev. J. B. Clutterbuck. Messrs. BARRETT & DRIVER, architects, 23 York Place, Baker Street, W.

Henry Wilcock & Co, Wolverhampton	£2,450	0
T. Morris & Sons, Shrewsbury	2,280	0
Henry Smith, Wolverley, Kidderminster	2,144	0
A. Estcourt & Sons, Gloucester*	2,100	0

* Recommended for acceptance.

SWANSEA.

For street works in Norfolk Street.

Weaver Bros.	£306	10
Bennett Bros.	298	11

SWINDON.

For street works in various private streets. Mr. H. J. HAN, borough surveyor.

FREE BROS., Marlborough, Ashford Road £658 2s. 8d.
Maidstone Road £125 19s. 8d., Rosebery Street £358 12s. 6d.
Graham Street £355 16s. 2d. (*accepted*).

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WALES.

For the erection of a shop and dwelling-house on site of old premises at Pontmorlais. Mr. C. M. DAVIES, architect, 112 High Street, Merthyr Tydfil.

S. Hawkins	£1,139	0	0
J. Jenkins	1,020	0	0
Jenkins Bros.	987	0	0
J. WILLIAMS, Merthyr Tydfil (accepted)	878	0	0

Received too late for Classification.

DEWSBURY.

For the erection of a choir vestry at St. John's Church, Boothroyd, Dewsbury. Messrs. JOHN KIRK & SONS, architects, Dewsbury.

Accepted tenders.

W. Scott & Sons, Dewsbury, mason and slater.
S. Armitage & Sons, Dewsbury, joiner.
F. Newsome, Dewsbury, plumber and heating engineer.

For works in Lees Hall Road and Ingham Road, Thornhill Lees. Mr. S. W. PARKER, surveyor.

Accepted tenders.

W. R. Thompson, Dewsbury, materials	£342	6	0
E. P. Sheard, Thornhill, labour only	133	6	0

SCOTLAND.

For the erection of the new infectious diseases hospital for the Burgh of Ayr.

Accepted tenders.

W. Watson & Sons, Ayr, mason, brick and steelwork	£4,569	8	11
J. McIntyre, Ayr, carpenter and joiner	2,769	16	0
A. Dalrymple, Ayr, slater and plumber	1,751	2	6
W. A. Vass, Ayr, plaster and cementwork	656	12	8
Kean & Wardrop, Glasgow, tile-laying and stoves	451	12	7
J. H. Fulton, Ayr, painter	229	17	7
Total	10,455	10	3

HOLYHEAD.

For carrying-out the electric-lighting scheme.

Accepted tenders.

National Electric Construction Company, for plant, mains, &c., £7,000; Meldrum Bros., Manchester, destructor, boiler, &c., £3,333; buildings, steam-mill, £3,000; alterations to buildings, £298; erection of chimney, £617.

KNARESBOROUGH.

For painting work at the Knaresborough union workhouse.

J. W. GILL, Denmark Street, Harrogate (accepted) £29 10 0

TRADE NOTES.

THE Royal apartments used by His Majesty the King last week at Doncaster Racecourse have been furnished with an electric passenger lift by Messrs. Archibald Smith & Stevens. The machine is a duplicate of that erected for the King's personal use at Epsom by the same firm, and was during the King's visit under the care of Mr. Major, on behalf of the makers and of the Doncaster race committee.

THE Columbian Fireproofing Company, Ltd., 37 King William Street, E.C., have obtained the contracts for fire-proof floors, and have commenced the work at the Hospital for Consumption, Liverpool, for which the architects are Messrs. Grayson & Ould, of Liverpool; and the new mission hall, Bethnal Green, for which the architect is Mr. S. Clifford Tee, 50 Moorgate Street, E.C.

A LARGE clock has just been erected in the parish church tower at Cornholme, Lancashire, which shows time on one large dial, and strikes the hours. It has been made by Messrs. John Smith & Sons, Midland Clock Works, Derby, to the designs of Lord Grimthorpe. The same firm have just received an order to make a large chiming-clock with four dials from the Nelson Corporation, in the same neighbourhood.

MESSRS. WILLIAM POTTS & SONS, clock manufacturers, Leeds and Newcastle-on-Tyne, have received instructions from Mr. James C. Winn, J.P., The Grange, Aysgarth, Wensleydale, Yorks, to erect a new clock from Lord Grimthorpe's designs at the parish church, Aysgarth. The clock will chime the Great St. Mary's of Cambridge quarters, strike the hours on the large bell, and show the time upon two external dials.

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ELECTRIC NOTES.

THE Bo'ness Town Council have arranged for the acquisition of ground at the east end of Main Street as a site for the generating station in connection with the lighting of the burgh by electricity. The site is at present occupied by some old house property, but accommodation is to be found for the tenants elsewhere. The purchase price was 1,245/, and the National Electric Wiring Company, the contractors for the scheme, have agreed to pay sinking fund, and interest at the rate of 6 per cent., on 1,000/. The rest is to be debited to street improvement, the Town Council having resolved to widen the thoroughfare by throwing some 20 feet at the widest part into the street.

THE mayor (Councillor W. G. Thomas) presided over a special meeting on Tuesday of the Carnarvon Town Council, convened for the purpose of pushing forward the proposed electric-lighting scheme for the borough. The Council has entered into a provisional agreement with the National Electric Wiring Company for an electric installation at Carnarvon, the Corporation providing capital to the extent of 17,000/, and the company undertaking to construct the works and to maintain them for a period of years, repaying the Corporation annual instalments of principal and interest on the loan, together with all profits over and above a specified amount. Since the Corporation made this provisional agreement the North Wales Power and Traction Company, Ltd, had made an offer. The inquiry by the Local Government Board has been fixed for Tuesday next.

THE extended electric-lighting scheme for Dublin has been practically completed and arrangements have now been made for the shutting-down of the Fleet Street generating station and the transference of the load to the Pigeon House Fort at midnight to-morrow (Saturday). The entire twenty sub-stations have been fully constructed and equipped, and the pressure tests to which the extra high-tension mains have had to be subjected have been carried out to the satisfaction of the consulting engineer. Private consumers in the new districts can have a supply direct from the Pigeon House station of the electrical energy for lighting and power purposes throughout the twenty-four hours. Some time back the experiment was made of temporarily shutting-down the Fleet Street plant and having the load taken over by the new plant at the Pigeon House. The result of this experiment was so satisfactory that arrangements for the permanent transference of the

generating centre to the Pigeon House Fort were immediately made; and the remaining portion of the Fleet Street plant will be now removed by the contractors who have purchased it. The space available after its withdrawal will be mainly used for storage purposes. Up to the present about 120 of the new arc lamps have been installed in some of the leading thoroughfares of the city; and they have been found very satisfactory both from the illuminating and mechanical points of view. Some difficulty has been experienced in regard to the completion of the arc-lamp contract, but the committee have taken steps to compel the contractors to effect the prompt delivery of the remainder. Guarantees have been furnished that all the arc lamps which have been ordered for the new system will be completely installed by October 15. On that date, it is expected, the working of the new system will be formally inaugurated.

BUILDING AND BUILDERS.

THE Congregationalists of Stalybridge have decided to erect new Sunday schools on the site of the old buildings in Melbourne Street, which have done duty for the last seventy years, and are now much too small to accommodate the increasing number of scholars.

THE congregation of the Bold Street Wesleyan church Warrington, are about to alter and improve the building at a cost of about 2,000/. The scheme includes the removal of the railings in front of the chapel, the erection of four ornamental lamps in their place, and the arrangement of the flags in front so as to form an open entrance to the church.

AT a number of Burnley places of worship structural alterations and improvements have been in progress for some time. The parish church scheme, it is thought, will take about six months to complete, and will entail a cost of about 4,000/. It consists of the erection of a new clergy vestry, the removal of one of the three galleries, the installation of the electric light, the erection of a memorial to the late rector (Canon Parker) and several other works.

EXTENSIVE alterations are in progress at the Oxford Road station of the Manchester, South Junction and Altrincham Railway. The old offices are to be pulled down, and the unoccupied piece of ground at the corner of Oxford Road and the entrance to the station is to be utilised for improving the approach and enlarging the station. The old build dirg on t



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ite side, which is now rarely used, is to be utilised as s. A large island platform is also to be constructed, i will be reached by a subway. The erection of a more odious booking office and refreshment-rooms is also ed in the enlargement scheme.

N Wednesday the foundation-stones of a new mission h in St. Mark's district of the parish of Christ Church, Bromwich, were laid. The new church which it is sed to build will accommodate 250 persons. The cost building will be 1,000/.

London County Council's workmen are engaged in ishing a large number of houses to the north of Leather upon the site of which dwellings will be built for the se of rehousing families displaced by the progress of the 1-to-Holborn improvement. The new dwellings will e accommodation for 2,650 persons. Provision has y been made for 4,000 of the dispossessed people. in the new dwellings will run from 5s. to 12s. 6d. per e according to the accommodation provided.

OM October 1 the service to Dresden and Vienna by the ch-Hook of Holland route will be greatly accelerated. agers leaving London, Liverpool Street station, at 3 M., will be due to arrive at Dresden 10.4 P.M. the next ead of 12 55 P.M., and at Vienna via Dresden 7.35 A.M. cond day after departure instead of 2.40 P.M.

VARIETIES.

THE Eccles Wesleyan chapel has been redecorated after an installation of the electric light. The cost is about 1,000/.

THE new vicarage at Royton, Lancs, which has cost 1,900/., was dedicated on the 12th inst.

THE new women's infirmary at Stratford-on-Avon, erected and furnished at a cost of about 4,000/., to accommodate thirty-three patients, was opened on Tuesday last.

THE premises of Messrs. A. Goslett & Co., plate-glass merchants, 127 to 131 Charing Cross Road, were seriously damaged by fire on the morning of the 15th inst.

A NEW Wesleyan church at Little Lever, Farnworth, was opened last week. The church has been erected at a cost of over 4,000/., and will seat 500 persons. It replaces a chapel which has done duty since 1850.

NEW naval barracks have just been completed at Portsmouth in which accommodation is provided for over 6,000 bluejackets and stokers. The ground covered is about a quarter of a mile square, while, where the old station stood, there has been erected a handsome building for the officers.

THE formal opening of the new Linlithgow public school took place on the 7th inst. The school is a plain, substantial two-storey erection, and consists of nine ordinary classrooms, in addition to a large central hall, cloak-rooms, teachers' rooms, &c. The accommodation provided for is 548, and the cost of the building was about 5,000/.

A NEW Roman Catholic church was opened last week at Prestatyn. It has been built at a cost of 2,500/.. It is situate in Gronant Road, is built of red brick and is capable of accommodating about 200 people. It is dedicated to St. Peter and St. Francis. Mr. Edmund Kirby (Liverpool) was the architect of the new building, and Mr. T. Jones (Prestatyn) the contractor.

THE Ebenezer Baptist chapel, Burnley Lane, Burnley, which has been closed for some weeks owing to extensive alterations, has been reopened. An electric installation, consisting of 120 lights, has been supplied, and a 3-manual organ with 43 stops and 2,032 pipes, for which the organ-loft has been much extended, has been erected. The alterations are estimated to have cost upwards of 1,300/.

ON the 10th inst the president (Mr. Butler Wilson, F.R.I.B.A.) and Council of the Leeds and Yorkshire Architectural Society entertained the members of the Library

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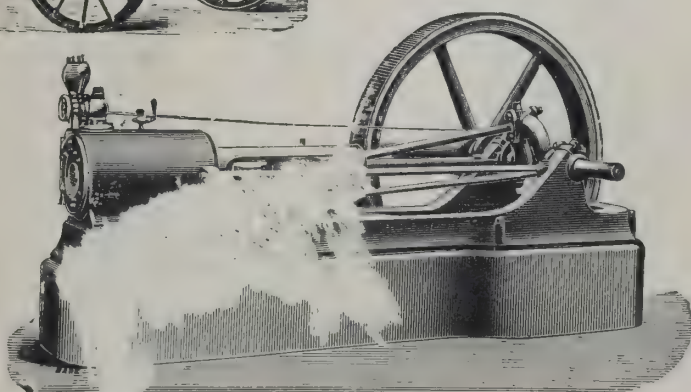
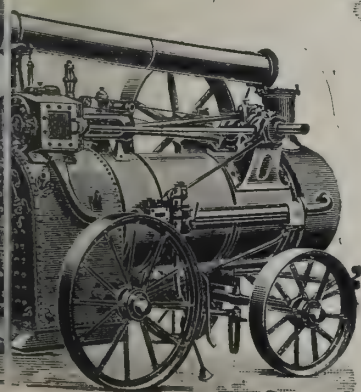
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Association, who are holding their annual conference in Leeds, to a smoking concert at the Queen's Hotel, to meet the members of the Leeds Savage Club. Among those supporting Mr. Butler Wilson in the chair were the Lord Mayor of Leeds (Mr. John Ward), Professor Macneile Dixon (president of the Library Association), the vicar of Leeds (Dr. Gibson), Sir W. H. Bailey, Lieut.-Col. Robinson, Mr. Edmund Bogg (chief of the Leeds Savage Club), the Rev. N. Egerton Leigh, Dr. Coleman, Mr. F. H. Barr and Councillor S. A. Hirst.

THE new Roman Catholic church of the Holy Ghost, at Basingstoke, which has been designed, built and adorned entirely at his own cost by the Very Rev. A. J. C. Scoles, rector of the Roman Catholic mission at Basingstoke, in celebration of his silver jubilee as a priest, was opened on Tuesday. The site of the church adjoins the ruins of the famous Chapel of the Holy Ghost, which was demolished by Cromwell's army in the days of the Commonwealth at the time of the siege of Basing House. The new church is in the Early English style and the interior is elaborately decorated. The altar is of onyx, the pillars of marble and the tabernacle of pure gold.

THE new church at the Cottridge, Worcestershire, was dedicated on the 10th inst. It is designed to seat 700, and has been built at a cost of 10,000/. Messrs. Cossins, Peacock & Bewlay are the architects, and the architecture is a modern adaptation of the style which prevailed at the close of the fourteenth century. The principal materials used are red Leicester bricks, with external dressings in terra-cotta, and internal details in green Quarella stone. The chancel, with flatly canted apsidal end, is 35 feet long, 27 feet 6 inches wide and 32 feet high at the wall plate. The organ chamber opens on the north side of the chancel, and in the south side is a chapel for week-day services. The nave and aisles are 95 feet 6 inches long, have open timber roofs at a flat pitch, covered with green slates. The church is admirably lighted, the clerestory having two windows and two lights in each bay, whilst there are coupled windows in each bay of the aisles. The chancel window has five lights, and the west window, of nine lights, is notable for its fine tracery. The contract was placed in the hands of Mr. W. Harvey Gibbs, of King's Heath.

ST. EDMUND'S CHURCH, Hunstanton, was consecrated on the 5th inst. The church, situate on rising ground within sight of the sea, is a well-proportioned structure of flint and stone, with Carstone dressings, in the Decorated style of archi-

ture, and consists of nave, chancel, north and south and western porch, but has no tower. It has seating accommodation for over 650. The commencement of the erection of the building dates back to 1864, when the work was begun by the Rev. W. M. Church, vicar of Hunstanton from 1864 to 1871. The chancel was opened in 1865, but the building was partially destroyed by a storm in 1870. Following the vicar of the Rev. W. M. Church came that of the Rev. Augustus Walker, and shortly after his advent to the parish he renewed the effort to erect a suitable place of worship in what is known as New Hunstanton. With only 200/ in hand a contract was signed for the erection of a church, consisting of the nave, chancel, nave and south aisle, at the cost of 2,700/. The church was opened and dedicated by the Bishop of Rochester on July 29, 1872. Other additions have been made to the building, viz. the north aisle and a western porch. The total cost of erection has been about 4,000/. The internal additions include a richly-carved pulpit, formerly in the choir of the borough Cathedral.

IMPORTANT sewerage works have just been completed at Ashton-under-Lyne, and were formally inaugurated on Wednesday last. They are situated on land about 43 acres in extent on Plantation Farm, in the borough of Dukinfield. They were begun in 1899, and the bacteria system was adopted. There are bacteria beds are fifty-six in number, and each is about one-twelfth of an acre in area, with a working depth of about 3 feet. For dealing with storm water there is a set of nine filter beds with a total area of about 1½ acre and a working depth of about 3 feet. The roughing and precipitation tanks are intended to be worked continuously, and are capable of containing 1½ of the daily dry-weather flow, which is estimated at 1,237,000 gallons. The filtering medium in the bacteria beds is composed of rough clinkers, brickbats and fine clinkers, the coarsest layer being at the bottom and the finest at the top. It is intended to work these beds in cycles of eight hours a day, and under this system they will be capable of dealing with about 2,700,000 gallons every twenty-four hours, or six times more than 2½ times the daily dry-weather flow. The works include commodious administrative buildings. The estimated cost of the whole undertaking is 88,000/, for which borrowing powers have been obtained.

THE authorities at the St. Louis Exhibition 'say the *Chronicle*, true to the national ideal of "licking creation," are about to erect a tower which will be the highest in the world.

TONKS, LTD. GENERAL, ART, and ECCLESIASTICAL METAL WORKERS.

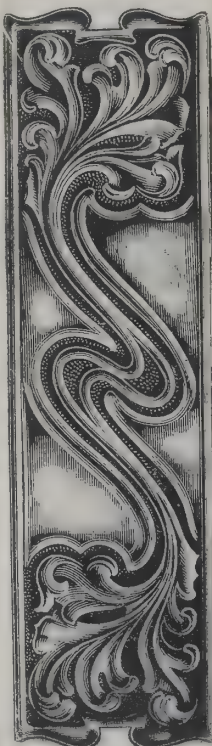
(Telegrams, "BRASS, BIRMINGHAM.")

Works & Showrooms: MOSELEY STREET, BIRMINGHAM.

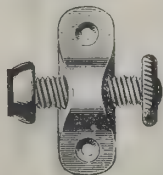
FINGER PLATE.

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FINGER PLATE.

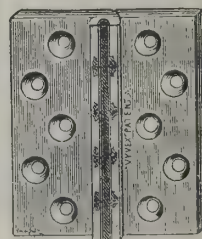


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Made in over 30 sizes and strengths.

TONKS' PATENT IMPROVED KEYED FURNITURE,

Unequalled for Strength, Durability, Facility in Fixing, and Exactness of Adjustment.

With strong raised fronts.

T2741.

2½" 2½"
3.1 3.4

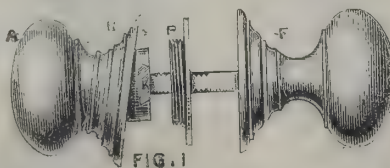


FIG. 1

Heavy, all Cast.
5000.

2½" 2½"
5/- 5.9

T2736 1/6 each.
Door Furniture to match.
T2602 4/3 set.

FENDER SUITES IN ALL STYLES.

T2734 1/6 each.
Door Furniture to match.
T2613 4/3 set.



to be a pharos, or round column, constructed entirely of iron, 350 yards high. Round the outside walls a railway will be fixed in corkscrew fashion, up which an enormous carriage will convey over 800 passengers at once to the top, while inside the tower immense lifts will be continually going up and down for those who prefer that mode of travelling. The cupola at the top will hold 7,000 people, and will be surmounted by the greatest mast in the world, from which will float the largest flag in the world. The inside of the tower is to be set from top to bottom with crystals, over which rays of different colours will be sent, so that the passengers will have the impression of looking through an enormous diamond. Round the foot will be an immense lake, whose waters, agitated by powerful machines, will rise in waves which, of course, will also be the biggest in the world. The Eiffel Tower and all other structures in the effete Old World are, indeed, to be hopelessly outmoded, and once more we get a concrete example of the African tall story.

DURING the summer (says the Scotsman) alterations have been in progress at Balmoral Castle, not of any structural importance, but having to do more with the internal economy and efficient working of the domestic side of the establishment. This year certain antiquated kitchen arrangements were dealt with, and a new installation of hot-water pipes to the bath-rooms, &c., was introduced. This year what was done was to remodel and extend the accommodation for servants by the addition of a new wing. The external features of the new wing are of a pleasing character. The work is in grey granite, and its architectural features consist of dormer windows and five chimney heads. In the pediment of each dormer is an ornamental sculptured design. That in the centre is the royal monogram "E.R.," and the date 1903; another is the Scottish lion enclosed in a treasure; a third a crown surmounted by the rose, the thistle and shamrock around it. An internal reduction into the castle of a luggage and coal lift, which it has not possessed. Nothing has been done to the royal apartments or to the guest chambers, which in 1840 as they were in the time of the late Queen, but the entrance-hall has internally been considerably improved in appearance. Formerly the walls were of plain wood; now they have been panelled with the native Scottish pine grown in the Royal forest. The panelling extends to the top of the walls, and the space between it and the cornice has been left blank for the heads. Fronting the entrance is a large niche, where

for many years stood a statue of Malcolm Canmore. This has been removed to the ball-room, and in its stead has been placed upon a suitable pedestal an early bust in white marble of Her late Majesty, which formerly stood on a simple bracket on one of the side walls. On an ornamental panel below the pedestal has been carved "Victoria, 1819-1901," and on a similar panel over it appears the Royal monogram "E.R.," with the date 1903. An overmantel of beautiful design, executed in Scots pine, has been constructed over the fireplace, and in the centre is a square panel, on which has been carved a fine representation of the Royal arms, copied from the Great Seal of Scotland, with the Scottish lion in the first and fourth quarter. Sir Rowland Anderson, Edinburgh, was entrusted by His Majesty with the work at the Castle.

INTERNATIONAL FIRE EXHIBITION,
EARL'S COURT.

THE awards have just been made by the jury in connection with the above exhibition, and it is not surprising to find that Messrs. Merryweather & Sons and Messrs. Shand, Mason & Co. have secured so many medals for their fire-extinguishing appliances. The Columbian Company have secured two gold medals for fireproof construction. We notice also the Expanded Metal Company, for metal lathing, St. Pancras Iron Company and Ratner & Co., for building equipment, have secured gold medals. The following list of awards will doubtless be of interest to our readers:—

I.—COMMERCIAL EXHIBITS.
LIST OF SPECIAL AWARDS.

	Award Diploma or Medal.
<i>For the Application of Expansion Gear to Steam Fire Engines.</i>	
Shand, Mason & Co.	Gold
<i>For Automatic Fire Alarm Systems.</i>	
Pearson Fire Alarm, Ltd.	Gold
Siemens Electrical Appliances Co., Ltd.	Gold
Hensel & Co., P.	Silver
May-Oatway Fire Appliances, Ltd.	Silver
Schoppe, Oscar, Berlin	Silver
<i>For Fire-resisting Doors.</i>	
Grimsley, T. G. (for Curfew Armoured Fire Door Co.)	Silver
<i>For Fire-resisting Glass.</i>	
Pilkington Bros., Ltd.	Silver

THE "CIL-REST" CASEMENT

the ONLY REVERSIBLE Casement in the Market which enables the Outside of the Casement and adjoining Casements to be cleaned from the Inside with Perfect Safety. CAN BE SUPPLIED IN ANY METAL AND OF ANY SECTION.



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Works: Kaleyards,
CHESTER.

WILLIAMS BROS. & CO.
CASEMENTS, SASHES, STAINED GLASS, LEADED LIGHTS.

<i>For Fire-resisting Windows.</i>	
Hayes, Geo., New York	Silver
<i>For Fire-resisting Roofs.</i>	
Columbian Fireproofing Co., Ltd.	Gold
<i>For Horsed Escapes.</i>	
Shand, Mason & Co.	Silver
<i>For Horsed Combined Chemical Engines with Fire Escapes.</i>	
Merryweather & Sons, Ltd.	Silver
<i>For Motor Steam Fire Engines.</i>	
Merryweather & Sons, Ltd.	Gold
<i>For Metal Lathing.</i>	
New Expanded Metal Co., Ltd., The	Gold
<i>For Thermostats generally.</i>	
Hensel & Co., P., London	Gold

AWARDS FOR GENERAL EXCELLENCE AND UTILITY.

GROUP 1.—FIRE PREVENTION.

Class 1.—Building Construction.

British Uralite Co., Ltd.	Award for— Medal.
Brown, A. E.	Silver
Columbian Fireproofing Co., Ltd.	Bronze
Dashwood, F.	Gold
Homan & Rodgers	Bronze
King & Co., J. A.	Silver
Millars' Karri and Jarrah Forests, Ltd.	Silver
Patent Impervious Stone Co., Ltd.	Gold
Roxby, R. B.	Silver
Stoffert, Rud. A., Glasgow	Bronze
Stuart's Granolithic Stone Co.	Bronze
Thompson, Jabez	Silver

Class 2.—Building Equipment.

Clayton Fire Extinguishing Ventilating Co., Ltd., The	Silver
Ratner Safe Co.	Gold
Shannon, Ltd., The	Gold
St. Pancras Iron Works	Gold

Class 3.—Electrical Safeguards.

Simplex Steel Conduit Co.	Gold
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GROUP 2.—FIRE FIGHTING.

<i>Classes 1 and 2.—Fire-extinguishing and Life-saving Appliances.</i>	
Merryweather & Sons, Ltd.	Gold
Shand, Mason & Co.	Gold

Class 2.—Life-saving Appliances.

Bailey's, Ltd.	Go
Dinger, A.	Br
Fries & Sons, J. S., Frankfort	Sil
Hönig, Aug. G. M. B. H., Cologne	Sil
Magirus, C. D., Ulm	Go
Perta, Cav., Paola, Milan	Sil
Smith & Co., John	Br
Waddington & Co.	Br

GROUP 3.—FIRE CALLS.

Classes 1 and 2.—Fire Alarms, Telephones and Telegraphs.

Bergmann Electrical Works	Br
Brown, A. C.	Br
Forns, J., Vila, Spain	Br
General Electric Co. (1900), Ltd.	Go
National Telephone Co., Ltd.	Go
Stuart & Moore	Sil
Siemens Electrical Appliances Co., Ltd.	Go
Siemens & Halske, Berlin	Go
Vester, Max, Leipzig	Br

GROUP 5.—AMBULANCE SERVICE.

Class 2.—Ambulance Equipments.

Carters	Go
Hartmann, Paul, Berlin	Br
Wilson & Stockall	Go

GROUP 12.—GENERAL EXHIBITS.

Drew-Bear Perks & Co., Ltd.	Go
Heathman & Co., J. H.	Sil
Marmorite	Br
Synchronome Co., The	Sil

THE MIDLAND HOTEL, MANCHESTER.

MESSRS. W. HÜFLER, of Soho Square, inform us that they supplied a large portion of the decoration and furniture of the new hotel. For the popular restaurant and luncheonette they produced the whole of the wood panelling, tiling and strip flooring, as well as the whole of the wood panelling, and counter fittings, stencilled canvas, frieze, fireplace mantels and ottomans in the basement bar smoke-room. Messrs. Hüfler tiled and panelled the circular staircase leading to the basement billiard-room, and supplied the furniture to basement bar smoke-room and a large number of bedroom suites, together with a quantity of other smaller details in and about the building.



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ORIGINAL COUNTER-CURRENT SECTIONAL BOILERS

For Low-Pressure Steam and Hot-Water Heating, as well as for all other Purposes for which Hot-Water or Low-Pressure Steam are required.

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OVER 10,000 IN USE. PERFECT SAFETY.

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THE CITY BRIDGES.

Annual statement of the produce and expenditure of the House Estates of the City shows that last year, ending a balance from 1901 of 3886*l.*, the receipts were 3*l.*, of which 117,368*l.* was produced by rents and quit rents, 3,322*l.* by interest on securities, and 9,456*l.* realised by the sale of a piece of land on the southern approach to the Tower Bridge. The expenditure amounted to 117,452*l.* The expenditure of the estates and the collection of rents cost 1,848*l.*; the lighting, cleaning and repairing of London Bridge, 2,805*l.*; Southwark Bridge, 1,120*l.*; and the Tower Bridge, 18,961*l.*; the City Fund, for watching the bridges, 2,000*l.*; interest on Bridge loans, 32,925*l.*; and loans repaid, 34,424*l.* There is thus a balance to the good on the year of 19,981*l.* Loans remaining on the Tower Bridge amount to 32,000*l.*, of which 35,600*l.* will be paid off during the present year. A loan of 32,000*l.* has been raised for the widening of London Bridge, which is now in progress.

HUNGERFORD DRAINAGE SCHEME.

Hungerford Rural District Council having applied to the Government Board for their sanction to borrow 8,500*l.* for the purposes of carrying out works for sewerage and sewage disposal for the parish of Hungerford, Colonel A. G. Durnford, Local Government Board Inspector, attended at the Council, Hungerford, on the 11th inst., to hold an inquiry into the application.

Considerable interest had been aroused by the proposed sewerage and drainage schemes, and there was a representation of residents in the district. Others also present were:—Mr. R. O. B. Lane (counsel for the Hungerford Rural Council, instructed by Mr. H. D'o. Astley, clerk), Mr. Humphries, consulting engineer (a member of the engineering firm of Trant, Brown & Humphries, of Westminster), Mr. Durnford and Mr. Murphy (representing the Great Western Railway Company), Mr. Drummond and Mr. Barnett (representing the Thames Conservancy), Mr. H. D'o. W. Astley (representing the Rural Council), Mr. Earle (Feoffee), Mr. Hawkins

(assistant overseer), Mr. Powell (surveyor, Hungerford Rural Council), Mr. C. R. Hopkins (vice-chairman, Parish Council), Dr. Major, Mr. Harding and Mr. Mapson (Hungerford Rural Council), Messrs. Beard, E. Lowe and Phelps (Hungerford Parish Council), and Messrs. Platt, E. Barnard, Fowler, Parfitt, Adnams, Cundell, J. Dredge, A. E. Allright, &c.

Mr. Lane, in opening the case for the Hungerford Rural Council, drew attention to the fact that that body had made application for sanction to borrow the sum of 8,500*l.* in respect to the drainage of Hungerford. There had been several previous schemes under the consideration of the Council, but great difficulty had been experienced in the matter of getting the land. He thought he should that day be able to show that the land now suggested was practically the only suitable piece which the Council were able to get. In one of the previous applications, the Local Government Board were willing to grant the application, and gave their sanction on condition that the land was raised 2 feet, but it was found that the expense would be too great. That day Mr. Humphries would tell them as to the suitability of the present land.

Mr. Humphries, who said he was engaged upon the preparation of schemes for sewage disposal, then gave details of the scheme, which, he said, was most up to date, and, besides being economical, was eminently fitted for a town the size of Hungerford. Three-eighths of the sewage would be taken to the outfall by means of gravitation, so that they would only have to pump five-eighths, which would in itself be a considerable saving of expense. There would be three ejectors to lift the sewage, one to be in the High Street, so as to save boring under the canal. The lifting capacity per day would be considerable, raising some 11,000 gallons per day.

Mr. Saunders, representing the Great Western Railway Company, made an objection to the situation of the proposed works, in addition to their being near the Great Western Railway station.

Mr. Humphries assured Mr. Saunders that no nuisance would be caused, as the sewage would not appear in the open until it had left the septic tank.

Mr. Alexander, one of the residents in the neighbourhood where the mains will cross his property, asked if they would receive compensation for any loss sustained.

Mr. Humphries assured Mr. Alexander that ample compensation would be awarded.

This ended the inquiry, and Colonel Durnford and others proceeded to the proposed site to inspect it.

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DUPLICATION BATH VALVES

(For Hot and Cold Water Supply), and
HALF-TURN LEVER WASTE.

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in Public Baths, Asylums, Hospitals, Infirmarys, Hotels,
and Private Houses.

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damage to the Bath, and injury to Bather from scalding.

Supplied to H.M. the King at Windsor Castle, and various
Residences of the Nobility.

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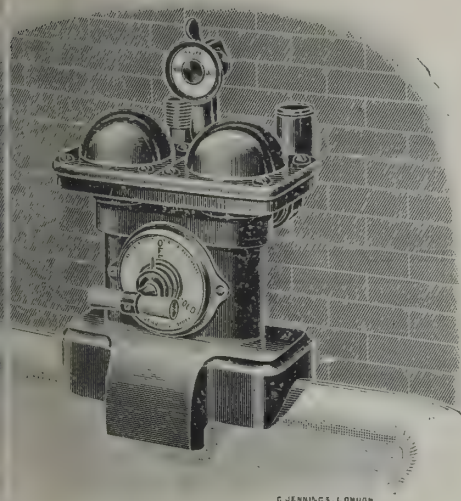
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SILICON AND IRON.

At the meeting of the Iron and Steel Institute Mr. Thomas Baker (Sheffield) read a paper on this subject. Professor Howe, he said, after studying the various theories put forward by different authors, concluded that there was no direct evidence that silicon had any bad effect on the toughness or durability of steel. From particulars of experiments made by Mr. Hadfield, Mr. H. H. Campbell had deduced that silicon cannot be classed among the highly injurious elements. It would therefore, said Mr. Baker, only be reasonable to suppose that small quantities could not exert a very deleterious influence. The chief difficulty in the various experiments appeared to be that of obtaining iron in the molten condition sufficiently pure and ferro-silicon with small amounts of carbon and manganese. Mr. Baker proceeded to report the result of a research conducted by himself, having for its object the preparation of a series of alloys of silicon and iron, with traces only of other elements. Silicon, he said, seemed to confer upon iron the property of passing very quickly from the liquid to the solid condition, resembling in this respect the effect of phosphorus on copper and tin. With regard to the effect of silicon on the mechanical properties of iron, Mr. Baker stated that although the addition of silicon to iron increased the elastic limit and tenacity of iron, such increase was only obtained by loss of ductility, which loss, provided the material had been well annealed, was very small until the silicon reached 3 per cent., after which it became very great, the ductility almost becoming zero, with 4 per cent. of silicon. The alloys gradually increased in hardness with the addition of silicon, and after exceeding 5 per cent. silicon required great skill and care in machinery in order to avoid fracture of the bar.

Professor Turner and Mr. Alfred Campion (Carnegie gold medallist) bore testimony to the value of the work of Mr. Baker, and this concluded the papers.

A SANITARY CRUSADE ROUND THE WORLD.

MR. ROBERT BOYLE, of Robert Boyle & Son, the well-known ventilating engineers of London and Glasgow, has recently returned from what constitutes his eighth sanitary crusade round the world, he having circled the globe that number of times, preaching the gospel of pure air, and advocating the

adoption of hygienic measures that would tend to secure better health and consequent welfare of the peoples of many countries he has visited from "China to Peru," Boyle having on one of his crusades travelled through to its most remote boundaries, and last year the West Indies and South America. Mr. Boyle is a practical as well as a scientific exponent of the laws of health, having devoted his whole life to the cause, and among the many benefits conferred on humanity as a pioneer in sanitary reform may be mentioned the 100,000l. gift he made last year on the occasion of His Majesty's Coronation, for the purpose of promoting teaching of hygiene in the schools and colleges of the empire, and inculcating the benefits to be derived from breathing pure air, and so make a strong and healthy people and a strong and healthy empire.

OIL FUEL.

THE increasing interest and steady progress in the employment of oil as fuel for various purposes suggests the compilation of a paper submitted by Mr. A. M. Bell to the British Association.

Oil fuel has been a favourite field for the ingenuity of inventors for many years. The first applications appear to have been made in France, but numerous experimental stations have followed, and in Russia its general employment may be said to have commenced about 1870, when the development of the enormous oil supplies of the Apcheron peninsula became an accomplished fact and the first oil-fuel station appeared on the Caspian Sea.

In the United States, where the crude oil of the Pennsylvania field contains a larger percentage of light oil, the use of liquid fuel until recently has been on a less extended scale. Now, however, the discoveries in California and Texas have provided enormous supplies of crude oil, practically only suitable for this service, and great advances have consequently been made in its use.

In this country many attempts have been made, but owing to the absence of regular supplies progress has not been so rapid as in the cases mentioned above. The manufacture of oil gas and carburetted water gas has, however, thrown on the market products of a character only suitable for a limited scale.

The different methods of burning oil fuel may be summarised as follows:

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NEWALL'S CONDUCTORS

Are the most reliable, most effective, and cheapest offered to the public.

Sole Manufacturers of Vyle's Patent (Easily Tested) Lightning Conductors.

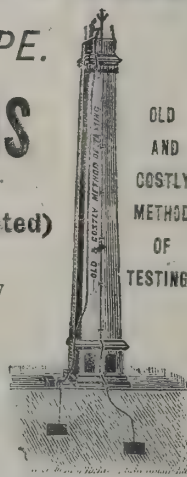
Fixed complete by experienced workmen, and their efficiency tested by competent electricians.

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AND

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Iron or Steel

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ROOF LIGHT CASEMENT

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GLOBE ENGINEERING WORKS

CARDIFF.

For Index of Advertisers, see page x.

allows:—(1) Those wherein it is burned in bulk form; (2) in a sprayed or atomised condition; and (3) consumed as gas. The first mentioned procedure has received little application in Russia, whereas the last has enlisted most attention in the United States owing to the lighter character of the oils available. Generally, however, the second or spraying system may be looked upon as the favourite, most readily adopted, and probably the most successful; hence the attempts at improvement appear to have been devoted to the most effective device is doubtless that requiring the least quantity of the atomising agent (steam or compressed air) for operation, and until recently the attention of workers in this direction has been centred on the burner employed, the construction of the furnace, which is of as much importance for good result, being somewhat neglected. Further, a due consideration of the admittance, distribution and temperature of the air for combustion is absolutely essential to success. The latest developments of spraying apparatus point to the employment of oil fuel under pressure, heated to a high temperature, sprayed with dry steam, and the fire fed with heated air for combustion.

For steamers the use of oil fuel possesses advantages over an excess of those which can be urged in its favour when employed on land: reduced storage space, less number of men required, an increased steaming capacity from a given supply of fuel, are points of the greatest value from the marine aspect of the question.

For locomotives the assistance of oil fuel is valuable on the runs without stopping, now becoming common, the difficulties of firing and the trouble from dirty fires being no longer so great. The application in this direction has been much improved and simplified during the past few years with a view to ensuring the reliability of the apparatus under all conditions of service, and the method devised by Mr. Holden, of the Eastern Railway, of arranging the apparatus has been recently adopted owing to the opportunities it affords for the use of solid or liquid fuel, or both, at will or as circumstances may make most desirable.

In Russia and the United States some hundreds of locomotives are regularly running, using oil as fuel; and numerous examples are to be found in this and other countries where coal has become an expensive commodity.

For furnace work oil fuel offers unique advantages, and interesting applications have been made to meet the requirements of annealing, tempering, metal melting,

brazing, &c. In glass-making and enamelling oil fuel has met with considerable adoption, and portable furnaces of all kinds are successfully operated with it; in bridgework, shipbuilding, &c., oil-fired rivet furnaces are to be preferred to any form of solid fuel-heating device.

In storage oil fuel has many favourable features. It occupies a minimum of space, does not deteriorate by exposure, and is easier of transportation and distribution.

In the Far East and many Oriental countries the importation of oil fuel has now become a regular undertaking, and supplies are guaranteed in many cases where wood has become scarce and imported coal an almost prohibitive article.

BRITTLINESS OF STEEL.

THE ability of materials in general and steel in particular to withstand shock is a subject of great importance to all engineers, and a paper by Mr. E. G. Izod was read before the British Association on the pendulum apparatus for testing steel as regards brittleness, giving an outline of the systems generally in use for carrying out brittleness tests, with remarks on each; and further explaining the use of the pendulum apparatus, as used by Messrs. Willans & Robinson, with the reasons that led to its adoption.

Tests by shock or tests for brittleness have from the earliest times been used by engineers, especially on the Continent; and Swedenborg, in 1734, gives some interesting particulars of the rule-of-thumb tests carried out by purchasers of iron in those days; and in nearly every case an impact or brittleness test was used, which though only empirical was no doubt all that was required, and gave a deal of useful information.

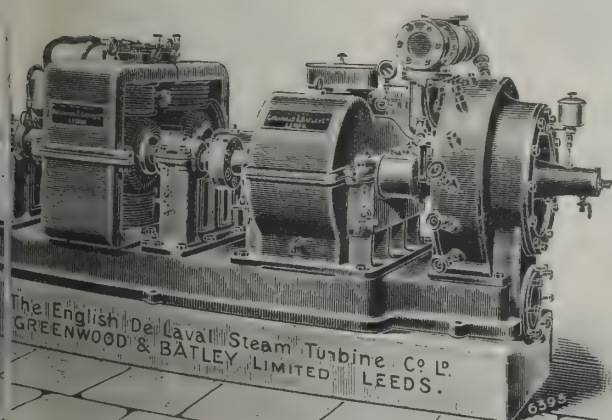
At the present time, probably owing to the state of perfection to which the testing machine has been brought, there is too much inclination to neglect other properties of material which the usual tests do not detect, but which are quite as important as the usual standard physical tests; and that this is so is shown by M. Fremont's paper, published by the Société d'Encouragement pour l'Industrie Nationale, September 1901, in which he throws an extraordinary light on the brittleness question, and gives several instances where serious fractures in structural and other steel were not accounted for by any of the ordinary testing methods, but were readily explained when tested for brittleness by an impact machine.

At Messrs. Willans & Robinson's, Rugby, it has long been

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felt that a method of testing such as used by M. Fremont and others was wanted to detect the reason for certain fractures which were inexplicable by the ordinary methods used; and an experimental pendulum impact machine was made, and the tests carried out with it gave promise of such good results that a standard machine was made and is in use at the present time, giving results which gain in importance with every series of experiments carried out on it.

Many types of impact machines are used, but the pendulum form of apparatus seems to give most satisfactory results; it can be calibrated to give direct readings for energy absorbed, and lends itself to very quick working even by an inexperienced operator.

The idea of the arrangement is as follows:—A weight is suspended pendulum-wise on a stiff rod, which swings from a centre designed to be as frictionless as possible. This weight or tup is then moved out of the vertical and allowed to fall on to the free end of a test-piece gripped by the other end in a vice, the specimen being notched to locate the break, the height of fall being always made sufficient to cause fracture with one blow. A suitable measuring arrangement is used to record the energy remaining in the weight after fracture of test-piece has occurred; and this subtracted from the calculated energy in the tup before fracture gives the energy required to break the specimen. Measurements are taken of the test-piece, and results are transferred to equivalent energy absorbed on specimen 1 inch square.

WHITWORTH SCHOLARSHIPS AND EXHIBITIONS.

THE following candidates have been successful in the competition for the Whitworth Scholarships and Exhibitions, 1903:—

ELECTED TO SCHOLARSHIPS OF 125% A YEAR EACH, TENABLE FOR THREE YEARS.

Name.	Age.	Occupation.	Address.
J. S. Nicholson .	23	Demonstrator of Engineering	Alford, Aberdeen-shire, N.B.
L. Southern .	25	Engineering student .	Retford, Notts
A. J. Simpson .	22	Engineering student .	Edinburgh
A. Gray .	21	Engineer .	Edinburgh

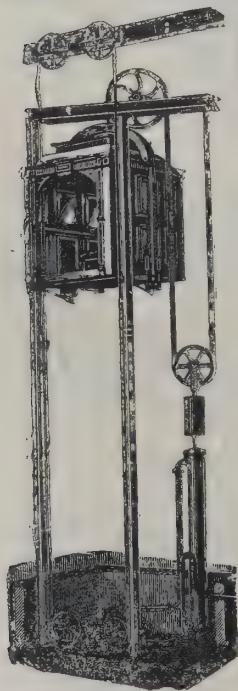
ELECTED TO EXHIBITIONS OF 50% A YEAR EACH, TENABLE FOR ONE YEAR.

F. G. Turner .	19	Fitter's apprentice	Southsea
J. Cunningham .	19	Draughtsman .	Banbury
W. Welch .	20	Fitter's apprentice	London
E. W. Spalding .	21	Draughtsman .	Lincoln
W. E. Hogg .	22	Civil engineer .	London
A. R. Stamford .	21	Draughtsman .	Plumstead, E.
J. Lloyd .	20	Fitter's apprentice	Pembroke T.
J. A. Davenport .	25	Engineer .	Liverpool
S. S. Spears .	19	Fitter's apprentice	Sheerness-
J. Lees .	19	Fitter's apprentice	Southsea
W. H. Powell .	24	Science teacher (late engineer's apprentice)	London
E. C. Trew .	20	Fitter's apprentice	Landport, mouth
F. W. B. Sellers .	22	Student (late engineer)	Sutton, Surrey
J. E. Lister .	22	Draughtsman .	Doncaster
R. W. Bailey .	18	Fitter's apprentice	Manor Park
L. H. Pomeroy .	20	Fitter's apprentice	London
C. J. Lees .	19	Student (late mechanic)	London
F. Newell .	25	Fitter .	Plumstead, E.
E. G. Nicholls .	21	Student (late engineer's apprentice)	Swansea
M. K. Pedlar .	18	Fitter's apprentice	East Stone- Devon
G. F. Sutherland .	20	Engineer .	Aberdeen, N.B.
C. I. Sutton .	20	Engineer .	Plumstead, E.
R. H. Barr .	23	Draughtsman .	Barrow-in-
W. H. Hemer .	20	Student (late engineer's apprentice)	Devonport
J. Nicol .	24	Draughtsman .	Barrhead, N.B.
F. E. Pollard .	22	Student (late mechanic)	Eastwood, N.B.
A. Sykes .	22	Mechanic .	Huddersfield
W. C. Kimber .	24	Engineer .	London
H. F. Elliott .	22	Draughtsman .	Plumstead, E.
D. Richardson .	22	Student (late engineer's apprentice)	Crewe

ALUMINIUM AS AN ELECTRICAL CONDUCTOR.

A PAPER was read at Southport by Mr. J. B. C. Kershaw, made tests in order to ascertain the resistance to conduction offered by commercial aluminium rod and wire under conditions obtaining, with exposed bare overhead wires.

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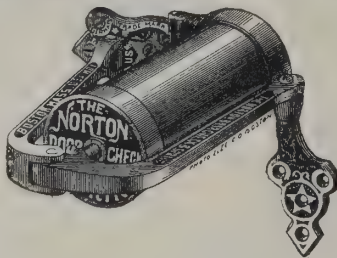
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...ples of galvanised iron wire and of copper and tinned
er wire were also submitted to atmospheric exposure. It
ared that all the samples of aluminium gained in weight
g exposure, and that all were pitted and corroded,
ially on the under side where the water drops had
cted and dried. The rods appeared to have suffered
r less than the wires, and it was therefore probable that,
e course of drawing down, aluminium wire underwent
ical change. The author claimed to have proved that
of the aluminium rod and wire which was being manu-
red and sold in England for electrical purposes in the
1899 and 1901 was not able to stand atmospheric
sure on the coast of Lancashire without corrosion. It was
a fair deduction from these exposure tests to assert that
inium manufacturers had yet to prove the metal a satis-
y and durable substitute for copper in bare overhead
mission lines, or for electrical work which involved
sure to climates near the sea coast.

Mr. B. Hopkinson gave instances in which aluminium
ed with 1·12 per cent. of iron to give it hardness had been
for electrical conductors, and had to be discontinued
y to its high co-efficient of expansion, which led to its
ng in hot weather.

Professor Wilson pointed out that the test wires were ex-
i to sea air, and so did not have an average test, but he
ot think, even on the figures shown, that it came out very

Mr. Ernest Wilson read a paper on the electrical con-
vity of certain aluminium alloys as affected by exposure to
on atmosphere. Two series of tests had been made. A
er aluminium alloy had not diminished in conductivity to a
er extent than copper, but further exposure had a detri-
cal effect. The author concluded that copper alone should
e used in comparatively large quantity for exposed light
inium alloys.

BUILDING SOCIETIES.

...is address to the Economic Science and Statistics Section
e British Association Mr. E. W. Brabrook said:—
has been observed that the co-operative societies are
ly undertaking the work of providing houses for their
bers, and to that it may be added that the friendly
ties are more and more tending to adopt the practice of
ng money to members on mortgage as one of the most

remunerative forms of investment open to them. The building societies, which were established for that purpose only, are still carrying on the same work, and the combined operation of all three ought to produce a material effect on the prosperity and well-being of the industrial population. Building societies alone advance as much as 9,000,000*l.* a year on mortgage.

Building societies have passed through a crisis. The incorporated societies reached their highest point of prosperity in 1887, when their capital amounted to fifty-four millions; by 1894 it had fallen to below forty-three millions. The Building Societies Act, 1894, required of societies a fuller disclosure of the real state of their affairs than had previously been called for. The result was to show that, apart from the special scandal caused by the fraudulent proceedings of the Liberator Society, there were hitherto undisclosed elements of weakness in the management of building societies that justified the withdrawal of the public confidence that had been reposed in them. The properties in possession before the passing of the Act of 1894 were not less than 7,500,000*l.*; they are now less than 3,000,000*l.* This points to the fact that the early prosperity of building societies had led to the establishment of more societies than the public demand called for, with the consequences that societies competed against each other, and that in the stress of competition and the anxiety to do business they accepted unsatisfactory securities, which must lead to loss upon realisation. From this point of view the effect of the Act of 1894 has been wholly salutary. Year after year the societies have reduced their properties in possession. The evils which they dreaded from the disclosure of the facts have not arisen. At this day it may be said that the societies as a whole have regained the position they held in public confidence, for the members now know the worst. They know, too, that where the blight of properties in possession still infests the business the managers are resolutely endeavouring to diminish its effect.

I need hardly repeat what has so often been said of the economic value of a sound building society. The man who by its means gets a stake in the country mounts many steps on the social ladder. When he has paid off the mortgage on his own dwelling-house, and so liberated himself from the obligation to pay principal and interest, either in the form of repayment annuity or of rent, what is to prevent him from buying in the same manner as an investment another house with the income thus set free, and so on?

There are still sixty-eight building societies which remain under the operation of the Act of 1836, having been established

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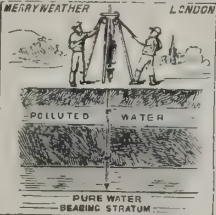
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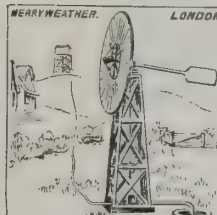
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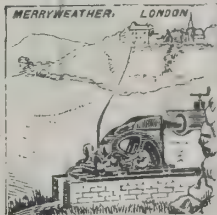
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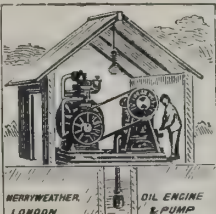
Boring for Water.



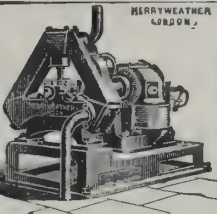
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before 1856, and not having availed themselves of the option of taking upon themselves the responsibilities and the privileges of the Acts of 1874 and subsequent years. One Society (the Birkbeck) stands by itself, as, although its business as a building society is considerable—the new advances granted on mortgage last year having been for 120,000*l.*—its main operations are those of a deposit bank, and it keeps the far greater part of its funds in investments on liquid securities. The other societies are pursuing the even tenor of their way, just as they have done for the last fifty years, and show on the average an increase of business from year to year. But the great body of building societies are those which are incorporated under the Acts of 1874 to 1894, exceeding 2,000 in number. They have so far recovered from the effects of the depression that their assets are now 48 millions, being midway between the low-water mark of 1894 and the high-water mark of 1887. That and the fact that they have in about seven years reduced their properties in possession by about 60 per cent. leads to the inference that they are now, speaking generally, in a fairly healthy condition, and that many years of usefulness are still to be expected for them.

ELECTRICAL PROPULSION.

A PAPER was read by Mr. James N. Shoolbred, C.E., at the meeting of the British Association, in which he said that the tendency of the last few years has been, in England and elsewhere, to introduce electric-tractive power—on tramways, on railways, on road carriages, on canals, in automobiles and in other ways. But these various groups have each been acting independently of the others—isolated, and in some cases actuated thereto by motives of jealousy or of hostility due to the dread of conflicting commercial interests. Besides the above proposed applications for electrical traction there have sprung up in various directions what may be termed "universal providers of electricity," under the head of electrical power schemes, &c., to acquire a right, nay, even a practical monopoly, over very large areas, to provide a supply of electricity for, within certain limits, all purposes, whether for locomotion or for stationary purposes. It is only reasonable to suppose that if, instead of a number of conflicting interests, the various parties could be made to combine and fuse together the several portions of their common work, so as to avoid a repetition, and antagonistic, in some cases, of some

portions thereof, there might then arise mutual benefit as well as economy, not merely to the operators themselves, but to the community at large. One difficulty lies in the conflicting interests and in the jealousy amongst the various classes of operators. But another danger to the public, more especially in the monopoly which virtually might thereby be afforded to the operators. An attempt has been recently made by the Liverpool Corporation, the Mersey Docks and Harbour Board and the South Lancashire Electric Tramways to give expression to this tendency for co-operation among the various workers, and there are indications in Yorkshire and elsewhere of similar tendencies coming into operation. Although the result so far of the attempt above referred to has been rather accentuated than otherwise the difficulties which beset an undertaking of such a character, yet the benefits which will ultimately accrue to the public (say in cheapening the cost of transportation by a more comprehensive and united action among the workers) fully warrants their being discussed.

NEW NURSES' HOME, BIRKENHEAD.

THE nurses' home, which has been erected in connection with the Birkenhead borough hospital, is now completed, and the opening ceremony takes place on the 26th inst.

The home has been erected on land adjacent to the hospital, which was purchased a year or two ago from the Corporation of Birkenhead. The building, which fronts Livingstone Street, is L-shaped in plan, and consists of ground and first floors. It contains on the ground floor entrance porch and vestibule, with lavatory and w.c. off same, dining room, nurses' day-room, head nurse's room and nine bedrooms for nurses, access to these being obtained from a spacious well-lighted corridor, at one end of which is placed the sanitary tower, containing bath-room, housemaids' sink, &c. At the back of the dining-hall are the usual administrative offices including still-room, store-room and pantry. Access to the first floor is obtained by means of the staircase, which is external in pitch pine. The accommodation on the first floor consists of a nurses' sitting-room and ten bedrooms for nurses and a large bedroom for servants, the sanitary tower being duplicated above that on ground floor and similarly fitted up. A provision is also made on this floor for stores and linen, and a large box-room has been placed in the roof above the staircase landing.

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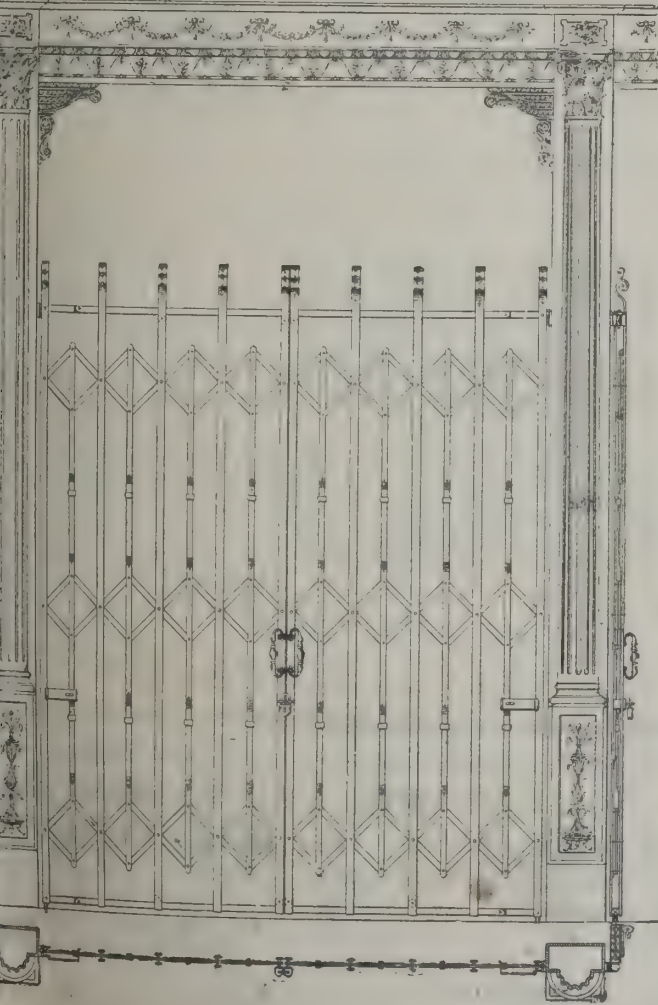
SANITARY PIPES.

GLAZED BRICK

means of an external doorway at the end of the first-floor corridor, which leads on to an iron fire-escape staircase. A similar doorway fitted with special bolts is also provided at the end of the ground-floor corridor. Efficient ventilation of all rooms has been obtained by means of Tobin tube inlets and flap extract ventilators, the vitiated air being carried away through funnels, formed above the ceilings of both ground and first-floor corridors, and connected to an air exhaust ventilator fixed on the ridge of the main roof. In addition to this each room (including nurses' bedrooms) is provided with a fireplace having a special exhaust ventilating flue built in the chimney-breast. The dining-hall and day-room on the ground floor are comfortable, if required, into one room by means of a patent folding partition, which has been executed in oak. These two rooms being dedicated to the memory of the late Mr. Wm. Laird, special attention has been given to their decoration, the wall-pieces, overmantels and chair rail being executed in oak designs prepared by the architect, and an ornamental and gilded dado in "Tynecastle" is carried around the room, the rest of the wood being enamelled white and the walls painted a light tint. A feature of the overmantel in the dining-hall is a well-executed portrait of the late Mr. William Laird, and cold water services are laid on to the various bathrooms, lavatories, sinks, &c, the former being obtained from an independent boiler fixed in the basement, and by means of circulating pipes a constant supply of hot water is obtained. The building is lighted throughout by electricity, and special attention has been given to the sanitary fittings, drainage and ventilation. Externally the buildings are faced with grey bricks relieved by Ruabon moulded brick strings and bands, the windows being segmental-headed filled in with double-hung sashes, and decorated externally with red bull-nosed quoined jambs, sills and eaves, the eaves and gable cornices and chimney caps also being executed with red bricks and the roofs covered with slate. The site on the Livingstone Street frontage is enclosed by a low brick wall, surmounted by ornamental iron palisading to match those in front of the existing hospital buildings, and the folding gates in same hung to ornamental stone piers. The contract for the building has been entrusted to Mr. Peter Bell, of Birkenhead, and that for the oakwork in connection with the dining-hall and day-room to Messrs. Waring & Low, of Liverpool, the whole being carried out from the designs prepared by, and under the superintendence of, Mr. J. and Kirby, F.R.I.B.A., of Liverpool.

WOLVERHAMPTON TOWN HALL.

THE municipal buildings of Wolverhampton, which have long been inadequate to the constantly growing demands upon them, have now been enlarged and embellished at a cost approaching 20,000*l*. In the town clerk's department, to the right of the main entrance, the several clerks' offices have been thrown into one large well-lighted apartment, arranged with glass screens to form an inquiry office and waiting-room, and, by the removal of the old staircase at this end of the corridor, an additional private office has been provided for the assistant town clerk, while in the basement an extensive room has been made in which to store electoral papers and other documents. At the rear of the main building on the ground floor additional office accommodation has been provided for the vestry clerk and his staff, and has been fitted with teak desks and counters, and arranged for the greater convenience of the public as well as the officials. In the corresponding block on the north side a large office has been provided for the borough accountant and for the receipt of rates under his control—an alteration which will doubtless be much appreciated by the public using the department, which has hitherto been much too small for the purpose. New storeys have been erected over these two wings and over the police barracks. These are approached from the vestibule by means of a handsome new staircase constructed of Hopton Wood stone, partly polished, the walls being faced with polished Pavonazza marble, lined out in panelling with Ogwell marble, and producing an extremely rich effect. In a niche on the first landing of the staircase, and immediately facing the principal entrance, has been placed the marble statue of the late Mr. G. B. Thorneycroft. The staircase on either side gives access to the main corridor of the upper storey, where are provided on the south side new and extensive apartments for the borough surveyor, and on the north side is the borough accountant's office. The whole of this portion of the new buildings has been carried out in a plain and substantial manner, the floors being of fireproof material covered with wood blocks. A new staircase has been placed at the Blossomfold entrance to the hall to replace that taken away from the north end of the main corridor, and the front portion of the first floor is also approached from the main staircase by a corridor which has been carried across the upper portion of the sessions court. An additional committee-room has been provided where the



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vestry clerk's office and the staircase formerly stood, and what was the mayor's parlour over the main entrance to the hall has been converted into a retiring-room for the aldermen and councillors. Several desirable sanitary improvements and additions have been included in the scheme of alterations, including properly-fitted lavatories for each department. In the basement of the hall additional muniment-rooms have been provided for the several departments, the cooking arrangements have been remodelled and placed in a more convenient situation, and the walls of the kitchens have been lined with glazed tiles and the whole fitted with modern appliances. The lighting throughout the building is excellent. A new feature in the vestibule is the provision of a balcony, and this will be used by the musicians during the holding of the mayoral and other banquets.

The appearance of the council chamber has been almost entirely changed. The temporary canvas ceiling has been removed with all its dirt and dust, and a new plaster ceiling, 6 or 7 feet lower than the original, has been constructed and finished. The lighting of the chamber has also been improved by the insertion of a new three-light window in the north wall, which, together with the two old windows, has been glazed with leaded lights containing in the centre light in the principal window the new borough arms, while the minor lights have each a shield from the old borough arms. In the old windows are represented the arms of the Thorneycroft and Wrottesley families. On the south side of the chamber a public gallery has been erected, supported on massive oak columns with carved capitals and cantilevers, and having a handsome carved strap-work front, in the central panel of which is introduced the new clock presented by Alderman Joseph Jones. The clock-face, which is of very handsome and artistic design, has been executed in cast bronze, and in front is a winged figure carrying the "circle of the hours" and supporting an enamelled dial, on which the hours of the day are inscribed in Roman numerals. On either side of the figure is a symbolical representation of "Industry" and "The Flight of Time," and below these are inscribed the name of the donor and the date of the gift. The work has been designed and excellently executed by the Bromsgrove Art Guild. Below the moulded cornice the walls of the council chamber have been lined with moulded oak panelling, and there is a splendid canopy over the mayor's chair. Above the panelling the wall space has been coloured a rich deep crimson, with panels of old gold tint; the pilasters and arches are

picked out in ivory white, with the ceiling and cornices same colour. New oak doors have been hung on the east and west sides, the old doors have been made to match the new work, and the floor has been laid with oak blocks on concrete foundations. Under the supervision of the borough engineer (Mr. C. E. C. Shawfield) the old electroliters have been renovated and refixed, and for ventilation an electric fan has been fixed in the space above the ceiling and connected to the new ventilating shaft in the roof.

Approached from the corridor to the left of the main entrance of the town hall, in the space previously occupied by the borough accountant, apartments have been arranged comprising the mayor's parlour and reception-rooms. These are handsomely finished with moulded mahogany panelling, chimneypieces, heavy wrought-iron dog-grates, with tiled and Pavonazza marble margins and curbs, while the mayor's parlour is an exceptionally fine specimen of cast bronze. The whole of the metalwork, as also an elaborate and effective electroliter in silvered bronze, and the door furniture and other fittings have been executed by the Bromsgrove Art Guild. The rooms are handsomely furnished.

The old fire-brigade station having become wholly inadequate now that the borough possesses two steamers and a manual engine, a new station has been erected in Redd Street, with stabling, workshop and lamp-room attached, the whole fitted with the most up-to-date appliances. The station has been provided with offices for the medical officer of health for the borough and the other officers of the fire department, while the rooms formerly occupied by the office of this department have been converted into a residence for the chief superintendent of police, who formerly lived at a considerable distance from the fire-station.

Notwithstanding the difficulties under which the alterations have been carried out in consequence of many of the old and police courts being used during the operations, the work of the contract has been completed in about two months less than the contract time. By the carrying out of these alterations and additions the office accommodation has been increased from an area of about 8,800 superficial feet to 9,400 feet. Convenience of access both for the general public and the officials has been kept in view, and the utility of the buildings for the transaction of business has been enhanced. The work has been carried out according to the plans and specifications prepared by and under the supervision of Mr. Fred. T. Beck, architect, Wolverhampton.



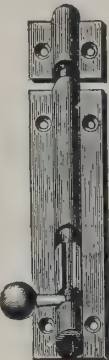
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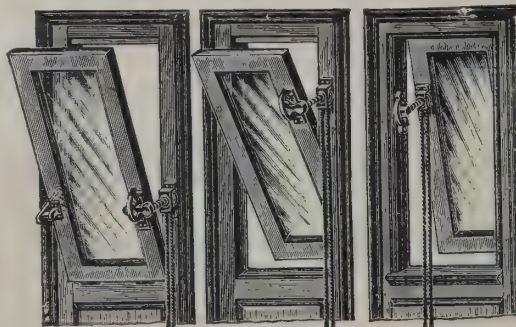
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The Architect.

THE WEEK.

It is satisfactory to learn from an official return how large a proportion of the cases arising under the Workmen's Compensation Acts are arranged without law suits. The litigated cases were not even one per cent. of the claims. No doubt it is an agreeable intellectual exercise for judges and lawyers to discuss whether a board laid in one way forms a scaffold and in another remains a board, what is the meaning of a height of 30 feet and similar abstrusities. But meanwhile employers, workmen or their representatives and insurance companies suffer by the delay. A genuine point of law rarely arises, for cases turn on technicalities which are fully known only to employers and employed, architects and engineers. Unbought equity is adapted for them. The official return says of last year:—"As compared with 1901, there has been a falling off both in the number of cases taken into the Courts and in the number of appeals to the Court of Appeal. As in previous years, the great majority of claims were settled by agreement, and only a small percentage were made the subject of formal litigation. In cases of death, where the claims are for comparatively large sums, we should expect to find that a good many are disputed." Whatever officials may think, it would, however, be preferable if the outlay which the cury of litigation always imposes were employed in increasing the sum to be paid to the family of the deceased workman. During the year the sum of 44,353*l.* was awarded for deaths, the average being 168*l.* *os.* 1*d.* In 1901 the average was 188*l.* 7*s.* 6*d.*, in 1900 it was 13*l.* 8*s.* 9*d.* and in 1899 it was 173*l.* 1*s.* 7*d.*

THE Building Exhibition at the Brighton Aquarium opened on Wednesday. But, as is often the case, the management had not allowed sufficient margin of time to permit of everything being put in thorough working order. It has resulted in the absence of any official catalogue. The exhibition has been moulded on the lines of the displays at the Agricultural Hall, and has similarly a collection of architectural drawings which represent structures erected in Brighton, or designs by local architects. The number of drawings is not very numerous, but it would have been wise if they had been numbered to simplify reference to the printed list. As a concession to the unprofessional visitors some architectural photographic studies have been hung by the side of the drawings. In close proximity the students attending the Municipal School of Science and Technology may be seen engaged in various branches of the building trade. The exhibition includes many of the leading British manufacturers and are sometimes represented through agents at Brighton. Local or county firms have also taken part in the exhibition, which is of an interesting description. A prominent feature is the introduction of working exhibits, in which are shown the method of printing wall-papers, the manufacture of pottery, the composition of coloured glass panels, the staining of wood-panelling, &c. By this means it is hoped to attract the attention of visitors, who would otherwise have but little pleasure from a technical exhibition. The Arts Department of the Brighton Town Council have reserved a space for the display of their activity. Blocks of step cement, kerbing, channel stone, &c., are shown which are composed out of the refuse of the dust destructor of the stalls are connected with the adornment of the street when finished, and comprise fittings of many descriptions.

MANCHESTER has been taught a lesson about the public advantages of technology which will be more effectual than any speeches or essays. In equipping the Municipal Laboratory of the system adopted in Bradford of providing a series of different kinds to exemplify testing processes proposed to be followed. The city already possesses a laboratory which belongs to the Chamber of Commerce, but deals only with the chemical and mechanical testing of iron and cloth. The Chamber will co-operate with the

Corporation for the establishment of a municipal testing-house which will be available for students of the School of Technology as well as people who are willing to pay for information. Already various applications have been made and a variety of tests—chemical, metallurgical, electrical and mechanical—some for various departments of the Corporation and others for the public, have been undertaken, whilst other cases were declined. It is intended that the tests are not to be confined to materials for textiles, but to comprise the testing of building materials by mechanical means at high pressures, tests requiring hydraulic or electrical power, tests involving the use of considerable continuous or alternating electrical currents under different conditions on specially delicate instruments and appliances. As the plant has been provided for the school it would be injudicious to avoid making it as generally useful to the public as circumstances dictate.

It is not uncommon for archæological societies to explore distant regions, and to neglect interesting spots which are close to headquarters. The Royal Society of Antiquaries of Ireland will, on October 6, set a good example by visiting St. Patrick's, which is the older of the two cathedrals in Dublin. They will be received by the Dean. The recent alterations and additions, with the cross lately discovered, will be explained by the cathedral architect, Sir THOMAS DREW. Afterwards the adjoining Marsh's Library will be visited. The locked recesses for readers and many of the interesting books will be shown, including some annotated by Dean SWIFT. After lunch members will proceed to the Royal Hospital, Kilmalnam, erected from the design of Sir CHRISTOPHER WREN. The beautiful ceiling of the chapel, reconstructed under the direction of Mr. ROBERT COCHRANE, the honorary secretary, will be seen. There will be a quarterly meeting in the evening.

THE interest which is taken in the competition of façades in Paris is evident when we learn that no less than 105 new buildings are entered for this year. The promenades of the jurors are now in progress. The position of the buildings is suggestive of the tendency of people to move westwards. The arrondissements of Batignolles and Passy supply as many as thirty-four, or a third of the whole. Not many years have elapsed since both districts were considered to be outside Paris, and the fact that not only buildings, but imposing buildings, are now being erected suggests that to find sites it has been necessary to demolish premises which were recently built. Montmartre, which was remarkable for its shanties, is so changed, it can uphold its love of costly architecture by eleven examples. Indeed, the outlying parts of the city are most disposed to assert themselves in the competition. There is a temptation to claim notice by excess of ornament or eccentric disposition of parts, but in such a contest the respectable commonplace cannot expect to gain premiums.

ONE of the guide-posts of the history of painting is the great altar-piece which the brothers HUBERT and JOHN VAN EYCK completed for JUDOCUS VYDT in 1432. The principal part, or two central divisions, known as the *Adoration of the Lamb*, is in St. Bavo's, Ghent, and is jealously guarded, as it is found that visitors from all parts of the civilised world are willing to pay for a glimpse of it. Figures of ADAM and EVE, which originally belonged to the work, are in the gallery of Brussels. There are other wings in the Berlin Gallery. A copy was made in 1559, which occupied two years. Many efforts were made of late to produce photographs of the various sections on an uniform scale. There was little difficulty in arranging with the authorities in Berlin and Brussels. But in Ghent there was opposition. The difficulties are at last surmounted, for the concession is given to a company, and towards the close of the present year it is expected that a photographic copy about three-tenths of the size of the original work can be obtained.

WILKINS ON GOVERNMENT PATRONAGE

THE demand of Sir NORMAN LOCKYER for 24,000,000*l.* sterling in order to obtain provision for the teaching of applied science has appalled many people who believe they are already overburdened by taxation. The amount, large as it is, does not appear to be in excess of the necessities, nor would it involve national bankruptcy. In the same address there is mention of a statement by Sir JOHN BRUNNER to the effect that if 10,000,000*l.* were immediately expended in putting up buildings and endowing professors of science, the money would be repaid a hundredfold within a generation.

It is well, however, to remember that from time to time in the history of universities, which is the history of systematic education, sums have been expended or property assigned which proportionately would correspond with the amount now desired. The Mediæval university of Paris, for instance, possessed about one-half of the island in the Seine which formed the city, the other half being occupied by the inhabitants. As if it were no more than a modern cricket field, the land along the river bank, and which must at least have extended in depth to the present Boulevard Saint Germain, became the university recreation ground. When it was necessary to dispose of the meadows and gardens, it seemed to the authorities of the university the end of their establishment and the world had arrived. In other cities kings and governments were anxious to make liberal provision for the acquisition of knowledge. Nor should it be forgotten that the arts and sciences then taught were not of a kind in which the outlay was to be returned with interest in the course of one or several generations. A Mediæval university was not unlikely to produce men of the type of FRANÇOIS VILLON, who was a master of arts at Paris, and whose lives would never be profitable to themselves or their contemporaries. Instruction was supposed to be one of the duties of the State, and money was not spared on the erection of buildings and the providing of teachers.

In England individuals were, generally speaking, always more influential for such a purpose than any Government. To bishops, nobles and wealthy citizens the highest instruction obtained in Mediæval and succeeding times was due. The history of our universities affords sufficient evidence. In fact, it is only in a comparatively modern time that the English Government considered education as forming part of its responsibilities, and in consequence there is alarm at present about the cost which it will involve. The hesitation of English statesmen to grapple with the difficulty is suggested by the mode of raising funds for technical classes and public libraries. The Technical Instruction Act of 1889 euphoniously is called an "Act for the Distribution and Application of certain Duties of Customs and Excise," which means that part of the money derived from licenses for the sale of beer and spirits can be applied to the teaching of technological subjects. Public libraries cannot as a rule obtain more support than a penny in the pound, and if it were not for the munificence of Mr. CARNEGIE the Act would be a dead letter in the majority of towns.

We have lately noticed the circumstances under which the Royal Academy was founded in the eighteenth century. The Government of the time took no part in the transaction. GEORGE III. offered apartments in his palace of Somerset House for the exhibitions, and promised to meet any deficiencies which at first might arise between the expenses and the income. He was no doubt surprised when asked to pay 5,000*l.*, but one of the consequences was the appointment of a treasurer and a command that the accounts should be annually submitted to the officials of the Privy Purse. Although CHAMBERS was one of the agents in the promotion of the project, it could not be said that much was done for architecture in the early days of the Academy. The indifference to the art is suggested by the position it occupies among the discourses of REYNOLDS. The first was delivered in 1769. It was not until the close of 1786 that we find any reference to architecture, and then it was combined with poetry, painting, acting and gardening as examples of a departure from nature. In the succeeding years there was no less indifference, and WILLIAM WILKINS, one of the members, the architect of the National Gallery, was therefore justified when in 1831 he inveighed

against the English Government for the peculiar manner in which the arts were patronised, and more especially that he practised. What he wrote seventy years ago is still applicable. But as his letter, which was addressed to GODERICH—"Prosperity ROBINSON"—was only privately printed, acquaintance with it is necessarily limited.

It may be premised that WILKINS was impelled to write by personal pique and disappointment. He was not as successful in architecture as he desired. He was a Cambridge wrangler. As a travelling bachelor he was enabled to produce the folio with the sounding title "Antiquities of Magna Græcia." At the beginning of the nineteenth century there was a desire to commemorate British heroes. WILKINS might be considered fortunate that he obtained commissions for the Nelson columns in Dover and Yarmouth. The House of Commons voted 300,000*l.* for the erection of two monuments of the victories at Waterloo and at Trafalgar. A committee was appointed and artists were invited to send in designs. Then when the time was approaching for receiving them it was officially announced that the committee considered a tower would be the most appropriate form for a Waterloo monument. This signified a waste of labour for many. WILKINS had entered into the competition along with JOHN PETER DEERING, better known as GANDY, who was a member of Parliament and a high sheriff. They designed a tower 280 feet high and rather extravagant in style. It had, however, taken more than twelve months to complete, and the expenditure on models and drawings was upwards of 500*l.* In spite of defects the design was adopted, and the authorities expected to have it carried out under their direction in the usual way. The committee's report was for an unexplained reason withdrawn, and, as WILKINS said, "The nation's gratitude cooled with the indifference shown by the Administration, and those who had spared their life-blood in the attainment of a victory were saved all Europe were forgotten." It was recognised at the time that the architects would be insufficiently rewarded by the payment of the premium, but there was a influential member of the committee, a Mr. HENRY BAKER, who maintained that, as there was no pledge on the part of the Government to do more than pay the premium, wrong could be done nor judgment dreaded in carrying out the arrangement. As there always is in this country a belief that architects are created to do nothing, WILKINS and DEERING had to put up with the insignificant reward.

Another case followed. On the death of the Duke of YORK, who had been Commander-in-Chief, it was decided to erect a memorial of the Prince. A committee of subscribers was constituted, with the Duke of WELLINGTON as chairman. The first step was to obtain a competition. There was to be a very select competition, for it was confined to the architects attached to the Board of Admiralty, the Academicians and Associates of the Royal Academy, and with BENJAMIN WYATT, the architect employed by the Admiralty, as chairman. WELLINGTON probably believed that the memorial of Waterloo collapsed because too much money was spent in deliberations. Accordingly he insisted on having all the designs prepared within a month. No reason was assigned for so much haste, which, however, increased the expense, for it was necessary to employ additional draughtsmen, and, unlike the present time, there was only a limited supply of them. There was no lack of faith in WELLINGTON'S good taste. But as Sir THOMAS LAWRENCE, P.R.A., and some well-known amateur members of the committee, it was supposed he would have absolute power. In those days it was customary to suggest the kind of structure desired, and a column which would resemble that of TRAJAN in Rome, if not in decoration, was mentioned. While the designs were in progress it was announced that GEORGE IV. considered a triumphal arch at the entrance to the Horse Guards, where his late brother had officiated, would be preferable. New designs, therefore, became necessary, but as the Duke of WELLINGTON stubbornly held to his project of a column the competitors were left in perplexity. Inquiries on the subject led to inactivity. Then the Duke of the KING brought the column again into favour, and before long a model of TRAJAN'S column was sent in. How the decision was arrived at was concealed. WELLINGTON

ON was not present, but he was represented by members who had always acquiesced in his views. The successful competitor was BENJAMIN WYATT, who had wisely restricted himself to the Roman column, the duplicate of which in the Place Vendôme, Paris, had been much admired by the Duke. BENJAMIN WYATT was the son of JAMES WYATT, whose restorations of some of the cathedrals has not found approval. He was an Oxford man and had served as private secretary to the Duke in the days when he was engaged in Ireland and India. He had just completed Plesley House. Not until six weeks had elapsed was the decision made known to the other competitors, and then it was by an official note which, as WILKINS said, might have been sent to a few shoemakers who had submitted samples for trial and were desired to take them back. Here is a copy:—"General MAITLAND begs to inform Mr. WILKINS at the committee for erecting a monument to the memory of His late Royal Highness the Duke of YORK having made their selection, the drawings of Mr. WILKINS will be returned to him whenever he may send for them."

The two cases just mentioned were enough to inflame the mind of a competitor like WILKINS, who believed he was able to use his pen with effect. It was said at the time that architecture had received special favour from GEORGE IV., and WILKINS therefore resolved to demonstrate that not only was the art in common with the others regarded by His Majesty, but, moreover, that the art had neither been fostered nor cultivated, and that the formation of a school of architecture had yet to be accomplished. With that object he went back some sixty years to the time of the formation of the Royal Academy. From the Academy he said architecture derived nothing in the form of encouragement or support. The only aid obtained was from a private society, for "The Society of Dilettanti" had done more towards the acquisition of architectural knowledge by the promulgation of publications on the antiquities of Greece and Asia Minor, and by other aids accorded to the professors of architecture, than all the governments and societies of England united." The Society endeavoured to have a new bridge erected across the Thames as a private speculation, and it is believed that its project led to the construction of Westminster Bridge in 1736. They purchased a plot of ground on the south side of Cavendish Square in order to erect a repository for works of art, especially of the most celebrated ancient sculpture. The building was to be a copy of the temple at Pola. A large quantity of stone of Portland was obtained for the erection. If the project was abandoned, it was owing to an apprehension of interference with the Royal Academy. The Society of STUART and REVETT on their explorations, and expended 4,000*l.*, the interest of which should be applied in founding a travelling bourse to enable two students of the Royal Academy to study in Italy and Greece for three years. Dr. CANDLER's first mission in search of Ionian antiquities cost the Society between 2,000*l.* and 3,000*l.*, another mission with the same object cost between 600*l.* and 8,000*l.*

The Society of Dilettanti sought mainly to popularise the study of Greek architecture, and to some extent the arts also gained by the exertions of the members. The purchase of paintings and of the Elgin Marbles were due to the training of painters and sculptors, but there was no such assistance forthcoming for architects. They were to be trained at their own or their relatives' expense, when they had acquired knowledge and experience. The Government were slow in recognising them. Official architects in our time are rarely prized by their brethren, they have to depend on private practice with all its uncertainties. When WILKINS wrote his epistle to Lord ERIC in 1831 there was a different feeling. An official appointment was supposed to put a seal on a man's rank and to gain respect for him as the successor of WREN and JONES. A change which was then arranged became WILKINS's eyes a slight to English architects in general, and was lamented by him in a manner which now appears exaggerated:—

In consolidating the Board of Works with the department of Woods and Forests, the Government has abolished the appointment of three attached architects. These were the situations under Government to which architects looked

forward as the reward of a successful career in the profession. Whilst these existed there was always a stimulus to the honourable and arduous pursuit of the art, and they added considerably to the respectability of the profession. They could only be held by a few, but like the seats of the Bar, they had a very extensive influence on the character and conduct of the candidates for public employment. They might be improperly filled; so may the seats on the bench or at the bar; but to be beneficial to the nation and to the profession it was only necessary that the selection of persons should be directed by discernment and judgment. According to the plan intended to be pursued in future, the patronage of the Government will be more widely spread; the generality of the members of the profession will not object to the change, but the profession itself must necessarily be lowered in public estimation. Its effects, indeed, will be somewhat similar to those which would result from the abolition of the judges, leaving the business of the courts to be carried on by an increase of the magistracy.

It may seem to be unworthy of a noble profession, and especially in a country like England, to find a Royal Academician lamenting the reconstruction of a Government department because it involved the loss of a few appointments for architects. It should be remembered, as an excuse for WILKINS, that at the time municipal authorities were not disposed to undertake the erection of town-halls, while the war had interfered with the construction of private buildings. At the time of writing he had not constructed the National Gallery, nor St. George's Hospital, nor the Haileybury College, and he could not have anticipated that in a couple of years the Houses of Parliament would be destroyed, and that he was to be an unsuccessful and discontented competitor. Perhaps one of the reasons which made him desire the continuance of official appointments was the social rank which accompanied them. The members of the Government, he says, should set the example of paying homage to science and art by occasionally associating themselves with those who have distinguished themselves in their vocations. As to the general interest of the profession, WILKINS could have no ambitious projects. Although a university man and engaged in the enlargement of colleges, he could not imagine any necessity for a professorship of architecture in Cambridge and Oxford. The utmost he had the courage to suggest was a small pecuniary grant in order to provide models of the most approved specimens of ancient architecture, and apartments for the study and exhibition of works of architecture. Modest, however, as were the claims, it cannot be said that the Government has supplied either models or rooms.

The suggestion, although it failed to lead to the creation of an architectural museum, was advantageous to WILKINS. When he heard that the site of the king's stables at Charing Cross was to be used for buildings he proposed that it should be employed not only for architectural and academical purposes, but for galleries to exhibit the pictures then acquired to form the nucleus of a national collection. It would be more central than Buckingham Palace, which was suggested. NASH wished to have the ground used for a national gallery alone. COCKERELL would have a range of shops below and public galleries over them. WILKINS's plan was preferred to the others, but it was only partly realised.

The question remains to be asked whether out of all the millions which are likely to be expended in response to the requisitions of the followers of applied science a small fraction will be assigned to the advancement of architecture? It is true the claims for the contemplated outlay are based on the supposition that manufactured exports will be vastly increased in quantity and value. Architecture can hardly be considered as coming within the category of such productions, and is therefore likely to be ignored. It is only partially considered to be a fine art, and is no less dubiously regarded as a science. WILKINS used as an epigraph a sentence from NECKER, the French financier, which he considered applicable to his arguments:—"Learning and science repay the State with usury, the assistance which the State affords to those who profess and cultivate them." If considered broadly the influence of improved architecture, although it may be of an indirect kind on producers of industry, may not be trivial, and some architectural Academician of to-day would do well to imitate the example of WILLIAM WILKINS and to suggest how much more could be done for the art than was imagined by the designer of the National Gallery.

A DISMAL QUEST.

THACKERAY humorously suggested one of the weaknesses of archæology when describing the cathedral of Coire, in Switzerland. The building contains a statue of King LUCIUS, the founder of the church of St. Peter, Cornhill, which stood opposite the shop of Messrs. SMITH & ELDER, who published some of the author's books. The figure, with its "tight red breeches, a Roman habit, a curly brown beard, and a neat little gilt crown and sceptre," was regarded by THACKERAY with more interest than statues of personages who in a hierarchical sense were the British king's superiors. According to STOW, who ought to be an authority, LUCIUS is said by one chronicler to have been buried in London, while another asserts he was buried in Gloucester. "But, oh, these incorrect chroniclers!" exclaims THACKERAY, "when ALBAN BUTLER, and MURRAY's 'Handbook,' and the Sacristan at Coire all say LUCIUS was killed there, and I saw his tomb with my own eyes."

The efforts of archæologists are now directed not only to the revelation of antique remains which have long been concealed, but also to the scrutinising of the evidence accepted by their predecessors on which the authenticity of many objects depends. In numerous cases it is found that things and traditions which were accepted as veracious have no valid proofs to sustain them. At the present time there are apprehensions in great museums that some of the ancient treasures are of modern origin. The fears have extended to the little museum of Stratford-on-Avon that contains relics which SHAKESPEARE was not likely to have seen. But is not SHAKESPEARE himself believed by some sceptics to be only a substitute for the nameless poet who produced so many noble works? The truth is people are not circumspect in all their actions; care is rarely taken to make exact records of events, and when years pass and a new generation has to deal with the questions, then imagination is allowed to have its way and much is taken for granted which may never have existed. A striking example is just now presented in Dublin, and it affords an illustration of what too often passes for archæological and historical evidence.

Last Sunday the streets of Dublin presented one of those remarkable processions which seem to be an anachronism in the twentieth century. Trade societies, athletic clubs and the thousands of aimless people who are glad to participate in what they consider "national events" marched along a great part of the city. They were celebrating in that way the centenary of the execution of ROBERT EMMET. Thanks to the songs of THOMAS MOORE and the pathetic narrative in WASHINGTON IRVING's "Sketch Book," his name has reached the ears of people outside Ireland, and he is, perhaps, the best known of the revolutionaries who wished to co-operate with France against England. In 1798 the rebellion was quickly suppressed. But it was only for a time. The discontent again broke out in 1803. Lord KILWARDEN and a few other men were killed in one of the streets of Dublin, and then the insurgents fled. They were quickly captured, tried and condemned. EMMET made a speech in which he is reported to have declared that his epitaph was not to be written until Ireland became a nation. The next day he was hanged and after death decapitated. Some of the men who were his companions survived for many years, and the incidents of his life for some days before the outbreak were related with the utmost circumstantiality. The execution took place close to St. Catherine's Church, in Thomas Street, because it was near the scene of the murders. It was also said that his body was conveyed from the scaffold to St. Michan's Church, which is on the north side of the river, and was there interred. The ground had a reputation for preserving the bodies of the dead, and it was deemed to be a fitting place for the temporary repose of remains which one day were destined to be honoured. There happened also to be a gravestone without any inscription, and that was held to be conclusive evidence that EMMET's friends had laid it over his corpse as a memorial of his command respecting an unwritten epitaph. Thousands of people had seen the stone with their own eyes, and, like THACKERAY at Coire, were convinced it was the temporary memorial of

EMMET. It was true that MOORE in one of his songs suggested there was no stone:—

Oh! breathe not his name, let it sleep in the shade,
Where cold and unhonoured his relics are laid.
Sad, silent and dark be the tears that we shed,
As the night dew that falls on the grass o'er his head
But the night dew that falls, though in silence it weep,
Shall brighten with verdure the grave where he sleep.
And the tear that we shed, tho' in secret it rolls,
Shall long keep his memory green in our souls.

MOORE should have known all the circumstances. He was patronised and protected by EMMET in Trinity College. He contributed to the journal partly owned by EMMET. He was supposed by the university authorities to be acquainted with the plot of a rebellion. But by a strange coincidence MOORE in 1803 was appointed Registrar to the Court of Admiralty in Bermuda. The Irish people could not believe in his topographical accuracy, and a grass-covered grave was taken to be a poetic fancy.

Some of EMMET's family were implicated in the rebellion and fled to America. There they were respected and gained success as lawyers and physicians. Of their descendants, THOMAS ADDIS EMMET, has recently visited Dublin for the second time in order to discover possible where ROBERT EMMET was really buried. There was no reason why the body should be conveyed to a churchyard devoid of associations with the EMMET family. His father had been interred in the preceding year (1803) in the graveyard of St. Peter's Church, which was close to the residence of the family in Stephen's Green. According to Dr. MADDEN, whose "Lives of the United Irishmen" is supposed to be flawless, "Dr. EMMET was buried in the graveyard of St. Peter's Church, in Aungiers Street, on the right hand of the entrance, close to the wall on the north side." The inscription on the stone covering the tomb vault was also given. Dr. T. A. EMMET in 1880 visited St. Peter's, but could not discover either the vault or the covering. In July of this year, when he again went to the spot, some of the headstones which before had been out of order were ranged in order. But he was again unsuccessful.

On this last occasion there was more general sympathy with his efforts, and all possible facilities were granted for the investigation. The Archbishop of DUBLIN, his legal adviser, who is one of the Irish judges, the rector of St. Peter's and Mr. J. F. FULLER, architect of the representative Church Body, gave their aid, and to this especially Dr. EMMET expresses his gratitude. At first the churchyard was enclosed, and at an early hour the exploration commenced. In the position where the burial-place was assumed to be a vault was discovered containing four coffins. On two were plates, but they bore different surnames. After searching for five days no body was found to recall a member of the EMMET family. Another attempt was made in the vicinity, and it was less a failure. For various reasons the Doctor had been that ROBERT EMMET's body was finally placed with the remains of his father, mother, brother, sister and other relatives in the family burial place at St. Peter's; but the theory had to be abandoned.

It happened that the family of Mr. FULLER was connected to the mother of ROBERT EMMET. Like the majority of people in Dublin, he had come to the conclusion that the insurgent chief was buried in St. Michan's. As a representative of the family he had assumed the care of the supposed grave, which he had enclosed and covered with a slab bearing only the inscription, "September 20th, 1803." In other words, he was substantiating an illusion. Dr. EMMET was obliged to return to America but considered it would be a tribute to Mr. FULLER's confidence in him with the exploration in St. Michan's churchyard. When the time for excavation was arranged, the president of the College of Surgeons, Sir LAURENCE ORMSBY, attended with the intention of examining the remains. He was accompanied by the Professor of Anatomy in the college. A skull and bones were found in the grave which evidently formed part of one. But the body must have been that of an old man over 6 feet high. At the time of execution, EMMET had not reached his twenty-fifth year, according to tradition, he was short in stature. A belief was accepted by hundreds of thousands of intelligent people

during a whole century was thus dispelled in a moment by the knowledge of anatomy possessed by two surgeons.

As it was well to have the investigation completed, attention was next directed to the parish churchyard of Glasnevin, in the suburbs of Dublin, which was one of the sites that had been imagined by a few as EMMET's burial-place, and where there stood also an uninscribed stone which was concluded to have some mystery attached to it. Excavations were carried to the depth of 6 feet without meeting with any remains, and, indeed, the particular stone which was supposed to be a clue had been put in position by a former rector who found it in another place, where it could not have indicated a grave.

Dr. WHATELY, who was at one time Archbishop of Dublin, wrote a sarcastic refutation of HUME's theory about miracles, which he called "Historic Doubts respecting NAPOLEON BONAPARTE." If the certainty with which the grave of ROBERT EMMET in St. Michan's Church was accepted is taken into account and compared with the barren results, would be easy also to say that not only EMMET, but the resurrection of 1803, formed another example of an unlikelihood. History, for once, is correct. The archaeologists, one, and we include among them the multitudes of enthusiasts of a humble class, have been in fault. It was summed by them that the bodies of traitors were allowed to be removed by their friends, and hence there was nothing extraordinary in carrying off EMMET's, either to St. Michan's, or to the family vault, or to Glasnevin, or elsewhere. That the body was buried by the authorities near the scaffold or in some obscure corner where it was not likely to be identified was believed to be improbable.

The whole case becomes therefore a remarkable example of the ease with which theories are adopted, though unsupported by evidence. It is, however, only one of many instances which Ireland affords. The Stone of Destiny, which has become a necessary part of the Coronation Chair, is another case. There are few people in Ireland who accept the round towers as post-Roman structures, and the majority still believe they were erected for sun or fire worship. May we not also add that the gold ornaments lately removed from the British Museum were transferred to Dublin because it was supposed they were of Irish manufacture? But Ireland is not alone in allowing imagination to supersede logic. The people see objects with their own eyes or they hear of them, and straightway theories are constructed which are as unsubstantial as any fairy vision. But Ireland is not alone in the creation of archaeological phantasies. There are few countries in Europe where the same weak practice is not practiced; and as for America, there are more sham antiquities, more works of old masters by modern hands to be seen in the private as in the public collections than are to be found in Europe. Everywhere the love of the past which is inherent in man ministers to delusions.

THE ESSENTIALS OF SCHOOL BUILDINGS.

A REPORT was presented to the British Association on the conditions of health essential to carrying on the work of instruction in schools. The following relates to buildings:—In drawing up the following remarks upon school buildings in relation to health the sub-committee had before them the regulations issued by the Board of Education both for elementary and secondary school buildings. As these are open to all, and give a large amount of detailed instruction as to planning and fitting-up of both classes of schools, it seems better to the sub-committee to confine themselves to some general observations applicable to all classes of school buildings, avoiding as far as possible details applicable to particular classes of schools, which can be readily obtained from the regulations mentioned above.

Generally.—The plan or general scheme of the building should be arranged with a view to providing for the particular system of organisation and routine that is intended to be carried out in the school.

The main points to be kept in view are simplicity and compactness—that is to say, narrow corridors or passages are to be avoided; all parts of the building and playgrounds should be easily overlooked, so that the duties of supervision may be reduced to a minimum. There should be no buttresses or projecting parts of the building to form corners or places screened from observation.

Every part of the inside should be thoroughly well lighted. The staircases should be planned so that there is easy and direct access from every part of the building to the open air,

and so distributed that no part of the building can be cut off by fire; they should be arranged to discharge into open places of sufficient size to prevent jostling or crowding in case of two or more classes being dismissed at the same time. The general scheme must provide for rapid and orderly movements of large numbers and easy accessibility to every part of the building for the principal.

In the case of large boarding schools the residential buildings should be kept separate from the educational block; in this way each boarding-house may be placed so as to have the most favourable aspect, can be more easily isolated in case of sickness, and the air can be allowed free play all round.

The objection to arranging a school in the form of a quadrangle is that there will necessarily be a certain amount of stagnant air, and that only two sides can have a favourable aspect.

Site.—A damp or low-lying ground should be avoided—if possible a position on the top or side of a hill facing south with a gravel, sand or chalk soil, sheltered to the north and east by trees, preferably pines. Ground water should not come within about 10 or 12 feet of the surface. The advantages of a good soil, such as sand or gravel, may be entirely neutralised by an impervious layer of clay a little below the surface.

The erection of a school building upon made ground is very undesirable.

In towns care should be taken to place the school away from main or noisy thoroughfares, the neighbourhood of railways, factories or any industries causing dust and smell. A wide street with the houses on the opposite side low should be chosen, both for light and the avoidance of noise. Otherwise, unless the building can be put at least 60 feet back from the street there will be disturbance to the work. In any case the room where noise is of less importance, such as studios, laboratories, cloak-rooms, staircases, corridors and the assembly hall, should be placed on the street side, aspect having been taken into consideration. Double windows should only be allowed where there is an effective and complete independent system of ventilation. The places that the children may have to pass on the way to school should also be considered when settling the position of a school.

Aspect.—The building must be placed so that the sun has free access to every part that is in constant use. The best aspect is probably south-east; this allows the morning sun to shine into the room, while it is off before the hot part of the day. Rooms facing due west will be very hot in summer, and should if possible be only used in schools where work is not carried on in the afternoon. It is suggested that on a free site the best plan will be to place the side of the hall in which the windows are (in a school on the central hall plan) to the north-west, placing the studio at the north end and grouping the classrooms on the south and east.

Entrances.—In arranging the entrances regard should be had to the prevailing wind in order to provide shelter; there should be covered space for early comers to wait in on wet mornings. They should not open directly into the hall nor be used for cloak-rooms. A strong draught is produced when two entrances open opposite to each other with a straight corridor between. In mixed schools there must be a separate entrance for boys and girls.

Cloak-rooms must be large, airy and well lighted, and placed so that they are under easy observation from outside. They should be easily reached from the main entrances, and the doors so arranged as to allow the various forms of cloak-room drill that are customary in the elementary schools. The stands should be some distance apart with 12 inches between the pegs, of which there should be only one row, so arranged that the clothes can hang clear away from the wall and allow of the proper circulation of air. In the case of boys' schools less space will be required. The best umbrella-holders are the "turnstiles." Cloak-rooms should be warmed and special attention be paid to their ventilation. Lavatory basins should not be placed in the cloak-rooms.

Classrooms—(a) Area. The area of the floor-space to be occupied by the pupils should be not less than 18 square feet per child. (b) Lighting. The main light to be from the left, other windows being subsidiary and for the purpose of ventilation.

The transparent glass surface should be if possible one-quarter of the floor-space to allow for the dark days, and should never, even on the south side, be less than one-sixth. The sill of the window should not be more than 3 feet 6 inches from the floor, but if higher should be bevelled off.

The glass should be carried as near the ceiling as may be constructionally possible. The piers between the windows should be as narrow as possible, and splayed or bevelled off. The back row of desks must not be placed behind the last window. Transoms or heavy mullions should not be allowed even if the requisite amount of glass area is provided, as they cast shadows. The colour of the walls is important with regard to lighting. The light yellows and buffs often found and recommended are not satisfactory, yellow in particular producing fatigue and nervousness in a marked degree as compared with other colours. Some light shade of green or

grey seems on the whole the most satisfactory colour. Black-boards placed at a height within easy reach of the children should run round the walls.

Sleeping-rooms.—The most satisfactory arrangement is probably that of open dormitories containing a moderate number of beds. The cubicle system is less to be recommended, while that of having rooms for two or three should be unhesitatingly condemned. Not less than 65 square feet of floor area should be provided for each occupant.

Playground.—Every school should be provided with sufficient open space immediately round the school building for the purpose of a playground; this should in no case be less than 30 square feet per head. In the case of secondary schools this should be in addition to the playing field for regular games. Boarding schools require considerably more space than day schools.

Ventilation.—The committee while feeling to the full the enormous importance of the subject of proper ventilation in regard to the success of the school, both as to the mental and physical development of the pupils, feels some difficulty in offering any suggestions as to how a satisfactory result can be secured. Many schemes are put forward, both "mechanical" and "natural," each of which claims to secure perfect ventilation, but all of which in actual practice fall far short of their promises. The committee would, however, like to utter a word of warning with regard to certain systems that rely on the introduction of hot air both for the warming and ventilation of the rooms. Such a system may work well enough in the case of one or two large rooms, but in a school with its large number of rooms with an always varying number of occupants, the difficulty of adjusting the pressure becomes very great. The continual movement and opening of doors is also apt to interfere with the proper working of the system; in addition to this there is the breathing of the warmed air. In winter the incoming air must be raised to a considerable temperature to allow for the cooling effect of the windows, walls, &c.; and although somewhat cooled down by the time it reaches the pupils it must, it would seem, lose most of its invigorating qualities, even though it has not been heated sufficiently to burn the organic particles present. Rooms heated by hot air are apt to have an enervating and debilitating effect. In order to warm and ventilate a room by hot air only it is, of course, necessary to introduce the fresh air at the top, extracting the foul air at the bottom. This, again, is open to several objections: those sitting near the outlets are in a continuous stream of all the bad air in the room; the breathed air is brought down again past all the people in the room (as are the products of combustion if artificial light is in use); the windows can never be opened, because if they were the whole working of the system would be upset; finally, in summer, when the incoming air is cooler than that in the room, there is a tendency for the entering air to fall straight down to the outlet below. This system has undoubtedly many strong supporters, but the unsatisfactory state of things existing in many schools where it has been installed has induced the committee to urge that a good deal more experiment and experience of it is required before it can be safely recommended. On the whole, it seems that the solution is likely to be found in some plan by which the fresh air (warmed when the weather is cold so that it can be freely introduced without discomfort and maintained at a temperature of not less than 55 degs.) is brought in at a low level, the foul air being taken off at the highest point (mechanical power being used to make sure of sufficient movement) and the actual warming of the room being done by some form of direct radiation.

Sanitary.—The sanitary conveniences in boys' schools may well be placed outside the main building; but in girls' schools and where there are very young children they must be provided in the main building, but should be cut off by a properly arranged ventilating lobby. This part of the school building should be thoroughly well lighted, so as to insure its being kept properly clean. Deodorants or disinfectants should not be allowed, as they take away one certain and easy means of detecting anything wrong. To prevent unpleasantness reliance should be placed on perfect cleanliness. Frequent inspection by the principal is of the greatest importance, as when these matters are left entirely to the school-keeper it is not uncommon to find in schools otherwise splendidly equipped and managed a very undesirable state of things. In planning a school great care should be exercised as to the position of lavatories, &c. No windows in the main building should overlook the approach to them.

Lighting of Classrooms.—I A. A classroom is considered to be sufficiently lighted by daylight in all parts in which a portion of the sky is visible by the scholar; by artificial light when small type known as brilliant can be read in any part of the room at the distance of 18 inches from the normal eyes. In place of blinds a sliding screen covering only part of the window should be arranged so that sunlight may be prevented falling directly on the scholars, and that with a minimum loss of daylight. Windows should always be carried as near to the

ceiling as possible so as to secure the largest amount of sky. The height of the window-sill from the floor also requires careful consideration. It should never be so low as to cause dazzling of the scholars' eyes. The window glass should be perfectly clear without any muffling or clouding, but only on account of securing the largest amount of light, but to save the check to the eye-nerve of thwarted vision. Windows ought not to be broken up by bars where these are to be avoided, and plate-glass is preferable, where possible, being a good non-conductor. It retains the heat of the fire in the room and also takes the heat out of the sunlight entering the room. Careful attention should be paid to the distance between window area and floor space.

2 A. The correct position for a child, when sitting at a desk to write, is such that his feet may be firmly planted on the floor or foot-rest, the seat of his chair reaching forward to the knee, the back of the seat supporting both middle spine and shoulders. The front of the desk should come well over the knees and be at such a height that both arms can be laid on it easily without raising the shoulders. The slope of the desk should be about 30 degs., and this position will be found to bring the paper at about the distance of from 18 to 20 inches from the eyes of the normally proportioned child. In reading the slope of the book should be 45 deg., and this exercise should for the most part be taken sitting rather than standing in order not to dissipate nervous energy from intelligence and eyesight, and great liberty of movement must be allowed within these requirements, either when standing or sitting, to avoid strain upon the delicate nervous organism. Desks and seats must be so placed that light falls from above (disappearing light causing no shadows) or from the left. Light must be steady and not flickering, and must fall upon the work and not upon the eyes of the worker.

AN AMERICAN GARDEN ARCHITECT

ON August 31 there passed away at Waverly, Mass., a man who, says the *Engineering Record*, was a true benefactor of the people and a model citizen of a type rarely indeed in the bustling life of the present time. Frederick C. Olmsted loved nature in all her manifestations, knew her secrets as it is given to few to know them, and had the earnest habits of thought that come only to those who commune with all the wordless voices of the fields and forests. But unlike Thoreau, White and others of a similar type, he was a man among men when the call came, quick to put in practice the plans his clear intellect produced with astonishing rapidity, inspiring all about him with confidence and with energy, and sacrificing his health if need be for the attainment of a noble aim. He was a great artist, and no Americans realise better the skill that is required to paint on canvas with pigments, but on the natural landscape of trees and shrubs, gardens and lawns, roads and paths, fountains, then his memory will receive some measure of praise his ability deserved.

Mr. Olmsted was born at Hartford, Conn., on April 26, 1822. When fourteen years old his eyesight was injured by poison ivy, and private tutors were engaged for his education. But he spent most of his time in the open air for a number of years, and thus began in his youth that acquaintance with nature which was not only a delight to his sensitive spirit but the secret of his great success as a landscape architect. At 18 he took a long voyage to the East, and came back with his health renewed. He studied engineering at Yale but did not graduate, and then became a farmer at Saybrook, Conn. In 1843, when he was 21, he came to Staten Island, New York. In Andrew J. Downing's garden at Calvert Vaux he found congenial friends, and he made the acquaintance of George William Curtis, Charles A. Dana and other young literary men in New York, who recognised the vigour of the free fields and the charm of the artistic temperament. He travelled a number of times in Europe and on horseback through Europe and in the Southern States examining the works of landscape architecture, and observing with sympathetic clearness the conditions of life of the people in the fields. His accounts of these journeys will doubtless remain among the best examples of American contributions to the literature of travel. "Walks and Talks of an American Farmer in England," which first appeared in 1852, ran through many editions. His letters to the *New York Tribune* from the South had a deep influence on the feeling concerning slavery, and were reprinted in several books—"The Seaboard Slave States," "A Journey Through Texas" and "A Journey to the Black Country." Their historical value as the records kept by a man of true insight and thought is enhanced by the charm of their style.

By this time Mr. Olmsted was about thirty-four years of age. His wide travels, his successful career as a practical farmer and the cultivation of his artistic tastes by observation and study had prepared him for the great responsibility which were thrust upon him suddenly. In 1856 the city of New York bought a great tract of land in the

Manhattan Island for about 5,000,000 dollars, and called plans for its improvement. Thirty-three competitors designs, and from among them that of Olmsted & Vaux was selected. Mr. Andrew H. Green was then the president of the commission in charge of the work, and with energetic backing construction was pushed with great energy. It was a period of great financial depression, and the work gave relief to thousands who would otherwise have been dependent on charity for the bare necessities of life. "The making of even a fairly sightly park of the land acquired by the city seemed a hopeless undertaking to those who knew the district in 1857. It was a region of squatters, desolate, mean, studded with swamps, rocky, altogether unattractive. The splendid achievement of Mr. Olmsted, with the assistance of Calvert Vaux and Mr. Wrey Mould, can only be appreciated properly by people whose recollections go back to that period in the history of New York. A marvellous transformation was brought about by skill and genius in an unpromising region in the course of a very few years. When the Civil War broke out each side expected but a short struggle and inadequate preparations for the years of conflict were made. There was much scraping of lint and ringing of havelock caps and other well-meant but useless efforts. Chaos soon reigned, as can be well understood by those who recall the conditions soon after the outbreak of the relatively insignificant war with Spain. The plight of the volunteer soldiers, unused to the hardships of warfare, became appalling, the National Sanitary Commission was organised to relieve them. The work was of great scope, reaching from practically every home in the North to the long line of camps and hospitals in the South. Mr. Olmsted was interested in it from the start. His clear insight into the needs of the soldiers, his intimate knowledge of Southern conditions and his sound judgment soon made his counsel influential, and his services invaluable. He became the executive officer of the commission, throwing every particle of available energy into the great work, and by 1863 was able to hand over to his associates the management of a practically perfect relief organisation of a kind never equalled before or since. But the perfection of his details had wrecked his health, and he went to the Pacific Coast to recuperate. Even during this period of recuperation he found work to do for which Americans must always remain his debtors, for he established the system of forestry for the Yosemite and Mariposa reservations. In 1865 he returned to New York and resumed practice in landscape architecture in a partnership with Mr. Vaux and Mr. Wither. Withers which lasted for eight years. He very soon undertook a work which some competent critics considered by even greater genius than Central Park, namely, Prospect Park in Brooklyn, a demonstration of the possibility of a complete duplication of the most beautiful aspects of the growth in the heart of a great city. The formal gardens and small parks, the arrangement of little breathing-spaces for the people in the congested districts of large cities, the improvement of country estates, which make up the greater part of the work of a landscape architect, often offer problems which require the exercise of the highest grade of practical knowledge, but Prospect Park represents something higher—a deep acquaintance with nature's own art and a creative spirit which could not only reproduce but improve without one false stroke. From the close of the Prospect Park work until his retirement from active practice in 1895, Mr. Olmsted's career is practically the story of the advancement of his art or profession in his country. His personality was so strong as to make him a man in whatever enterprise he undertook, resembling his friend the late Richard M. Hunt in this respect. Indeed, he is gracefully shown in one of the most noble creations of his time, the Biltmore estate near Asheville. There, in a conspicuous place on the walls of his château, Mr. Vanderbilt hung their portraits as an acknowledgment that, as he has expressed the sentiment, these buildings and parks are theirs as much as his. Other noted works which he planned are many in the parks in and about Boston, the grounds about the hotel at Washington, including the marble terrace and the stairway, the park at Niagara Falls, the State House at Hartford and the grounds of the Columbian Exposition. A complete list of his works need not be given. Suffice it to say that it covers every part of the continent and shows a catholic taste and the broadest range of æsthetic, artistic technique. It is probable that the final judgment of his work, when rendered after time has completed its pictures—his mind conceived and an accurate estimate of his achievements can be safely drawn, will show that his best work was achieved in the largest undertakings, where the scope of his knowledge and skill found an opportunity to assign a system or style of treatment just those parts of the total scheme they were most adapted to develop. About 1878 Mr. Olmsted moved to Boston, and later to New York, and there established the offices which his sons have managed since his retirement. There he drew about him

the same class of young men who gathered about H. H. Richardson. Art for art's sake was taught in a business-like manner, if such an expression may be used, and landscape architecture had a training school unequalled anywhere because of the ability and experience of its director. In a criticism of his work which appeared in the *Century* about ten years ago, Mrs. van Rensselaer stated this very clearly as follows:—"It should not be forgotten that he had to teach himself how to do such work as this (Central Park). I do not think there are any large parks in Europe which offer such varied facilities for the refreshment and recreation of the great mass of the people as do the best of ours; and, moreover, most of the European parks which at all resemble ours are, at least in their present state, younger than Central Park. Catholicity is another distinguishing mark of Mr. Olmsted's art. Despite his preponderant love for the naturalistic style in its broadest, simplest developments, he is quick to see when the formal architectural style puts in a valid claim, and he realises that even the most naturalistic landscape work should not strive to appear actually natural, and should even incorporate distinctly formal elements when they are required for use or for the right explanation of art as art."

CROSRAGUEL ABBEY.

FOLLOWING upon the principal works which were several years ago carried out for the preservation of the ruins of the Scottish Crosraguel Abbey, situated midway between Maybole and Kirkoswald, a number of further minor works, with the same object in view, and which have been going on for some time, have now been completed. The principal preservative works comprised the roofing in of that part of the buildings which contained the dormitories above and the sacristy and chapter-house, with their fine ornamental arched ceilings below and the roofing in of the gate tower, these being the best preserved of the abbey buildings. These principal works were carried out with money supplied by Viscount Dalrymple from the surplus funds of the Ayrshire and Galloway Archaeological Association, and the supplementary works have been continued as far as the funds admitted. The work of preservation is not complete, and until funds are forthcoming from some other source it will remain incomplete. A good deal has been done in this supplementary way, however, and what has been done will serve to greatly prolong the existence of those buildings that are roofless and exposed to the weather. These additional works, as also the principal portion, have been carried out by Messrs. Milligan, builders, Ayr, under the direction of Mr. J. A. Morris, architect, F.S.A., Scot. Ayr. The abbots' tower at the south-east corner of the abbey, through which runs the small rivulet, giving the water-power for the driving of the abbey mill, a building of curiously complicated internal arrangements, is in a very dilapidated condition, and parts of the existing walls are very frail, particularly the western wall, which is like a sieve from the effects of the weather. It is a moot point how the burn came to have its course through the building, but whether it was brought there intentionally, or came there by accident, there can be little doubt that to its agency is to be attributed the disappearance of the whole of the east wall, and the greater part of the north wall. So far as possible the depredations of the burn when in flood on the foundations of the remaining walls have been counteracted. Recent excavations at the west gable of the nave outside have revealed a very fine Gothic arch filled in with masonry, in which there is a square or rectangular niche. This arch was a doorway, but why it had been filled up cannot now even be conjectured. The arch was buried deep in an accumulation of débris. The complete fragment of arch left standing over the parlour next the chapter-house has been secured against further deterioration. There is room for further preservation work, however, and if the funds were forthcoming no doubt the operations would be completed.

BOMBAY IMPROVEMENT TRUST.

THE majority of the trustees for the improvement of the city of Bombay, who at a special meeting appointed Mr. J. F. Watson, a candidate from England, as assistant engineer on 400 rs per mensem, are to be congratulated, says *Indian Engineering*, on their good sense. The opposition championed the cause of another applicant, who was presumed to possess the qualifications of an architect, and by raising the pay of his post to 600 rs. thought to obviate the necessity of sanctioning the appointment of an architect as such. Mr. Rebsch, the president, however, soon disposed of this absurdity. At present the board have under construction buildings of their own of the value of 12 lacs of rupees, and their lessees are constructing others of the total value of 30 lacs. To prevent a recurrence of accidents of the nature of that for which the builder has been committed to the sessions, the appointment of a qualified architect is imperative. The majority accepted this view, and endorsed the President's selection of Mr. Watson to be assistant engineer and nothing more.

NOTES AND COMMENTS.

A FEW years ago Sir HENRY IRVING in conjunction with Mr. DARBISHIRE, of Manchester, prepared a plan of a safe theatre, of which we gave a description. But the project of M. COQUELIN, the French comedian, goes infinitely further. He believes he has been inspired with an idea by which a theatre can be constructed which will be absolutely unflam- mable. What is more, he has consulted M. BINET, archi- tect, on the subject, who is also confident about the result. Both have brought their courage, not to the sticking-place as was advised by Lady MACBETH, but to the burning-place, for a theatre is about to be constructed at Pont-aux-Dames into which M. COQUELIN and M. BINET will enter. It will be set on fire, and the worthy pair expect to make their exit when they please as fresh and sprightly as when they entered. The details M. COQUELIN declines to explain until he has obtained his patent. He does not profess to aim at making money by his inspiration, but it is only right he should have the magic house protected. The actor is no *fumist*. He has erected a refuge for his fellow players at Pont-aux-Dames which was declared to be impossible, and who knows whether he may not have invented fire- proofing of a novel kind?

THE present town of Argos exemplifies beyond most other places the thoroughness of the destruction of which Greece was the victim. From the old descriptions it must have contained some of the noblest works of architecture outside Athens. It was also a school of sculpture, and POLYCLETES belonged to Argos. Travellers have often testified to the absence of ancient work with the exception of parts of Roman walls. On that account much interest is attached to the efforts of members of the Dutch Com- mission under the direction of Dr. VOLLGRAFF, who are at work in Argos. Some steps were lately revealed which were cut out of the rock and have a width of over 30 feet. At the foot was a large altar of stone, and it is concluded there was formerly a large building in the vicinity. The director is sanguine enough to believe that traces of the ancient Kriterion of Argos may reward the labourers.

IT is devoutly to be wished that the allegation about the modernity of the silver plate which Baron EDMOND DE ROTHSCHILD presented to the Louvre as samples of Roman work of the first century is groundless. The so-called tiara of SAITAPHARNES was in excellent condition when first presented for sale, but the vessels from Bosco Reale were in a dilapidated condition. It would be necessary to believe that a modern artist first produced them in a perfect form and, then battered them out of recognition. We cannot imagine any speculator would waste skilled labour to that extent. Nor is it likely that the credulity of amateurs, and more especially one like Baron EDMOND DE ROTHSCHILD, would be more easily imposed on by so absurd a manipulation.

THE British Consul-General reports that for years the condition of the German Portland cement industry has been most unsatisfactory, owing to the prevailing disproportion between supply and demand. The inland consump- tion is estimated at 14,500,000 casks per annum, whereas the works can produce close on 29,000,000 casks. This enormous disproportion is due to the numerous extensions and new works erected in 1895 and the following years, partly on account of the activity in the building trade, but chiefly in the expectation that the Great Midland Canal would be built. Repeated attempts to form a German cement syndicate, and to regulate the prices and the production, have proved unsuccessful. The numerous local organisations compete severely against one another. Under these circumstances very few other than the old- established works, whose brands are well known, are re- munerative. The South African war and the influence it exercised on the Transvaal gold-mining industry has also severely affected the trade, as very large consignments of cement were formerly sent to that country. German cement is practically excluded from the principal European markets by reason of prohibitive duties, and while it is exempt from

duty in Germany the import duties, including clearing expenses, per 10 tons amount to 8*l.* 10*s.* in Russia, 5*l.* 5*s.* in Austria-Hungary, 6*l.* 10*s.* in Roumania, 5*l.* in Italy, 3*l.* in Switzerland and Sweden, and 1*l.* 5*s.* in Norway. Thus only the transatlantic markets are available for the expan- sion of German cement.

IN Scotland excellent building can be executed. There are peculiarities of construction and planning, partly owing to the nearly general employment of masonry and partly to differences in social arrangements. It seems extraordinary that Scottish students in technical and other schools should have to depend on manuals prepared for English use. A thin folio entitled "Elementary Building Construction and Drawing for Scottish Students," by Mr. CHARLES GOURLAY, B.Sc., the professor of architecture and building construction in the Glasgow and West of Scotland Technical College, has been published by Messrs. BLACKIE & SON, LTD. A preference is given to Scottish customs. For instance, Glasgow bricks are about 9 inches long, about 4½ inches broad, and the width may vary from 3 to 3½ inches. In laying them it is expected to be careful in "keeping the perpends," or having vertical joints in right lines. Scottish bond is laid more quickly than English, and is cheaper. Mr. GOURLAY'S pages will be found interesting reading in English offices. The plates are produced in the style of working drawings, and there is no doubt the colouring will make the details more easily comprehended by novelists. The publishers have long since gained a reputation for printing, which this latest example supports.

ILLUSTRATIONS.

THE ROYAL VILLA AND GOLF PAVILION AT LE COQ-SUR-MER, OSTEND.

RESIDENTIAL FLATS, TUFNELL PARK.

THESE flats are built upon made ground, and consequently they were constructed upon steel girders resting on concrete piers which were carried down about 15 feet until a good foundation was found. The blocks each containing eight flats, cost about 3,500*l.* per block, not including the cost of the land. There are eight blocks. The contractors were Messrs. JOHNSON & Co., of Wandsworth Common. The original drawing was exhibited at this year's Royal Academy.

HOUSE AT WIMLEEDON.

THIS house is situate in the Raymond Road, and is built of red bricks with hanging tiles on the roof floor. The contractors were Messrs. J. & C. BOWYER, Upper Norwood. The drawing appeared in the Exhibition at the Royal Academy this year.

PROPOSED RESIDENCE, HAMPSHIRE.

THIS building was intended for a shooting-box in Hampshire. This design was also exhibited at the Royal Academy this year.

CATHEDRAL SERIES.—EXETER: WEST END OF LADY CHAPEL.

THE monument seen on the left of St. Gate's Chapel, which opens out of the lady chapel, is the tomb of WALTER BRONSCOMB, who was Bishop of Exeter from 1257-58 until 1280. He was a native of the city and of humble parentage. There was expedition in his appointment, for, according to a manuscript in the Lambeth Library, "within the short space of fifteen days he was elected bishop, admitted by the king, confirmed by the archbishop and consecrated bishop; circumstances both that period unheard of in this country." He had either reconstructed the chapel for a place of sepulture, or annual commemorative services at which fifty poor people were to be fed. He appropriated the lands of Buckerey for the purpose. The corresponding chapel of St. Mary Magdalene was also his work. The beautiful tomb was believed to belong to a later period, especially since the inscription mentions BRONSCOMB as the first bishop of the name of WALTER, and there was another WALTER who presided over the see from 1307 to 1326, with which period the character of the work would correspond.

EXETER CATHEDRAL.

By E. W. GODWIN, F.S.A.

THE late Edward Godwin had often and closely studied Exeter Cathedral while he lived in Bristol. The following exhaustive article on the building, which he contributed to an early number of *The Architect*, is likely to have more interest now in connection with the series of plates of the cathedral which are in course of publication in the present issue.

In the early days of the Gothic revival, when men roused themselves to declare war against "old fageyism," when zeal itself heard and overcame for a time the calculating, tempering, cold-blooded spirit which has ever been the bane of architecture, there was necessarily much said that we may now wish to see unsaid, much done that we would like to see blotted out.

It is the misfortune of all zeal that it tends to feverishness and excitement, and thus to a condition in which anything like inquiry is exceedingly difficult and sometimes altogether hopeless.

It was the chief misfortune that befell that particular zeal which gave life to the Gothic revival. It followed its natural unchecked, unbridled; that which should have been the strength of virtue became the weakness of vice, and instead of fighting we had excitement tyrannising.

The result of that excitement was a natural reaction, so that self is now looked upon as a doubtful good. The cause was once worth battling for with something like organisation still exists. There is still plenty of "old fageyism," though much of it is disguised in the latest fashions; but men weary: some turn the battle of life into sorry jokes, some go over to the enemy; all are ready to compromise anything and everything "for a quiet life."

Another result of the feverishness brought about by the blind zeal of the revival was the blind, unreasoning and unbounded praise lavished on all Mediæval work. Foreign objects of this wild, indiscriminating worship were our English minsters. The critic who objected to certain varieties in them, and want of rhythm, was scorned as a man, blind to the picturesque; and it is quite possible that yet in the rooky close of Cloisterham anyone who should attempt to dissect the local lion—to distinguish between good and bad—to separate the art-wheat from the art-chaff, would be taken up as a "very dreadful person."

Now my object in writing this article is undoubtedly iconoclastic; but inasmuch as I believe a true estimate of the value of the mighty works as our cathedrals can only be ascertained by selection and comparison, and that to seek for a true estimate of them (if haply it may be found) is the best reverence to pay to those who built them, and the best service we render to those who study them, I shall take my chance of all the hand-lifting and nose-upturning of a world of rhaps. Before, however, we begin to criticise, it may be well to inquire somewhat concerning the history of the cathedral of our criticism. A.D. 1050 is the first date we can start with. The actual removal of the see from Crediton to Exeter took place in that year. Like most changes it had been contemplated for some time. Leofric had made application to the king and had moreover given to the church of Exeter, about the year 1046, certain vestments and vessels, amongst which were silver chalices and "one silfrene pipe," that is, a pipe used in early times to draw the wine from the chalice, so that none of the sacred element might be accidentally spilled, a custom now, I believe, only observed by the Benedictines. Then, again, Leofric is described as a great builder of churches, and as, in his official capacity of chancellor, he was among the busy ones of his day, he would doubtless be acquainted with all the building fashions of the time. It is quite possible therefore—may we not say probable?—that he had directed a church, or at least the eastern part of one, to be prepared for him before moving to Exeter. From the evidence of the present building, I have very little doubt as to the nature of the lower portions, or foundations at least, belonging to Leofric's church, and that the towers mark the site of small churches in the Saxon church, for in the ground-plan of this cathedral one of the most important features to be noticed is the position of the towers. These are practically free of the Norman influence, and whilst we know that the Saxons built them in this manner (opposed to the Saxons in most things) opposed them in particular, and built their towers within the walls, overhanging or over the ends of the aisles. Again, in the charter of the year 1286 the sum of 2s. 3d. is charged, "in ostendendo sub archam in turre Sti. Johannis." Now, as it seems to me, is only capable of one interpretation, that before 1286 the aisles of the church flanked the altar, and that in order to open the latter and join them to the body of the building, so as to form transepts, it was

necessary to remove the walls under the Norman vaults in the towers. This necessarily implies a separation of the latter from the aisles, so that if this interpretation be right, it is clear that the towers could never have been originally designed as Norman transepts. We have, therefore, a basilican plan to start with, flanked by towers, placed similarly to those which Edmer the Singer describes as having seen at Canterbury:—"Dein sub medio longitudinis aula ipsius duæ turræ erant, prominentes ultra ecclesiæ alas." Moreover, this basilican plan is clearly traceable in the existing structure, in despite of all the mighty changes which have been made; and not alone in the mother church, but strangely preserved in almost every parish church in the diocese, we mark the tradition of this early Christian arrangement in the absence of a constructional chancel, the continuous roof, and the simple unbroken ground plan. Of Leofric's church nothing remains, unless we except the walls of the towers up to the first arcade. One may be disposed to make this exception, first, on account of the plan; and second, on account of design, which appears to change at this point. I am not inclined to regard the masonry in this case as any great criterion, for we may be sure that such a man as Leofric would take care to adopt the latest and best method of construction; besides which the walls may have been refaced. The upper stages of the towers—which, by the way, are not alike—are built chiefly in Late Norman work, with all those elongated proportions and slighter detail which were introduced during the second quarter of the twelfth century. We may, therefore, safely ascribe the general design of these towers to William Warelwast (1107-37), and refer the difference which exists to the interruption of the works caused by Stephen's siege in 1136, and the reparation and continuation of the works by Bishop Chichester, who succeeded Warelwast in 1137. Warelwast is regarded as one of the founders of the church, but his plan seems only to have been completed during the episcopate of Marshall, between 1191 and 1206 (the delay arising doubtless from the troublesome times of Stephen and the fires of 1136 and 1161). This completed plan can mean, I take it, nothing else than a nave and aisles, with the greater part of the present towers; that is to say, it was the completion westward of Leofric's church. Of this completion, the door to cloisters and the consecration crosses on the south wall of nave are probably the only remnants. Following this we have the fine tomb of Bishop Marshall, who died in 1206, and that of Bishop Simon, who died in 1224, together with some most interesting misereres, all executed within the first quarter of the thirteenth century. The lower part of the chapter-house shows a continuation of the same style, but later in detail; it evidently belongs to the second quarter of the thirteenth century, and may probably have been left unfinished by Bishop Briere at his death in 1244.

We have now arrived at what is called the Decorated style. The chapter-house at Westminster was commenced in 1250; that at Salisbury a little later. I need scarcely say that these buildings exhibit well-developed simple Geometrical tracery. In 1277, according to the bursar's account, the high altar of Merton College chapel was dedicated, and there we find the windows varying in design, exhibiting compound Geometrical tracery; that is to say, spherical triangles and other forms are used as well as circles. If we keep this in mind, and occasionally refresh our memories with the fabric rolls, the ground plan will, I think, soon convince us that the Decorated work of this cathedral—which, at first sight, seems of one style and date—is, indeed, nothing of the kind. The fabric rolls begin in 1279. Bishop Bronescomb died in 1281, and although his successor, Bishop Quivil, is generally regarded as the author of the first or earliest Decorated work, yet I cannot help thinking that the evidence is in favour of Bronescomb, and that to him we owe the idea of the present cathedral. Thus, from all we know of Bronescomb, he appears to have been a building bishop. Most Mediæval bishops worth anything had a hobby of some sort; one indulged in the chase, another in war; there were baron bishops and saint bishops, king bishops and people bishops. Bronescomb, like Poore of Salisbury, was unquestionably an architect bishop. He began by building a college; this was followed by a palace; and, finally, he turned his thoughts to his own church. The fabric rolls date from two years before his death, and begin rather abruptly, in September 1279, with an entry concerning three windows in St. James's Chapel. From this alone we might fairly argue that Bronescomb had begun to interfere with the old work before 1279; that then, having housed himself in a new palace, he provided a new field for his hobby of no less an extent than a new cathedral; and that, foreseeing the large amount of money which from time to time would be expended on the undertaking, he began to keep accounts of the same.

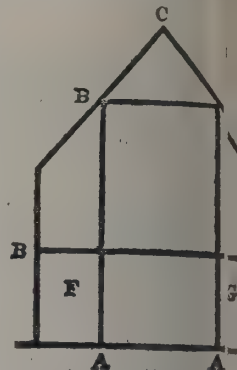
Now let us look at the ground plan. The first thing which ought to be noticed is the general similarity to Salisbury Cathedral, which we know was consecrated in 1258, or the very year of Bronescomb's election to the see of Exeter. Again, the side walls of the lady chapel, instead of being in line with the arcades of the main building, are considerably within

them, and the lady chapel is separated from the *via processionum*, or retro-choir, by arches having large wall-piers between them, and thus the difference of width between lady chapel and presbytery is unobservable. This alone would have led me to conclude that a plan for a new church had been prepared, and the lady chapel commenced before what I may call the Saxo-Norman church had been taken down, and that in the new plan the width of the central division of Leofric's church was retained. We have, however, corroborative evidence in the windows of the lady chapel, for it is to be noted that the simpler Geometrical forms are used in the tracery, circles and spherical triangles being there more abundant than in the other windows; and anyone who takes the trouble to look closely will also discover a change in the jointing of the masonry, a bolder expression in the sectional forms of the mouldings, &c., and in the subordination of the tracery bars; but above all is visible a strange pulsation, so to speak, of thought through Bronescomb's work, hardly to be described, but especially noticeable in the sedilia and its conventional trefoiled leaves.

All these things indicate an earlier and better description of work. It will be seen, on examination of the building, that the Decorated windows of the tower are somewhat more elaborated than the windows we have been considering. These are dated 1285, and are amongst the first works of Bishop Quivil. In 1286 the interior of the towers were metamorphosed to their present shape, and Quivil may safely be regarded as the destroyer of the rest of Leofric's work. Eastward of the towers the building shows us three distinct works:—(1) Bronescomb's work, as far as the middle of the eastern bay of the choir, where the masonry changes. This was finished at a later period by Quivil. (2) Stapledon's work, consisting of four bays of the presbytery to the middle of the third bay from the crossing, after which there is an increase in the circumference of the piers of 2 feet, narrowing the aisles 9 inches. Changes are visible in the level of the bases, the base-moulding and the vaulting of the aisles, whilst the triforium is also altered both in detail and depth of recess. Grandison was probably the author of these changes, and to him we may attribute the three bays of the choir from B westward, and, indeed, the greater part of the church westward of the towers. Leaving the Decorated work, we have very little to detain us. The east window of the presbytery is a dated example, and was put up in 1390. The upper part of the chapter-house was finished some time in the second half of the fifteenth century, although surveyed as early as 1412 and commenced in 1439. The east window "was made" by Bishop Neville, and the roof by his successor. There are one or two trivial repairs and a chantry, which are of still later date; but these are of very little consequence, either historically or architecturally.

Turning now to the architectural design, the first thing to be observed in this cathedral is the effect of conservatism. The retention of Warelwast's Norman towers has evidently exercised considerable influence on the Decorated rebuilding of the great church which stands between them—an influence which has resulted in a series of grand monotonies; whilst the Decorated building has, in its turn, produced an enormous effect upon the towers by sinking beneath the ridge of the crossing two of the most important of the tower stages, which were formerly altogether free of the church. Yet even now there is a grandeur about these towers which English towers rarely possess; much more grand must they have looked flanking the shorter and lower building, unencumbered by any of the high roofs which now butt against them. I shall not detain my readers by any criticism of the Norman towers, for they have been far too much tampered with by Quivil to enable us to give them a fair judgment. Turning from the Norman work, the first thing which arrests attention is the main roof, with its continuous ridge of more than 300 feet in length, suggestive of railway sheds and Great Exhibition buildings. It gives undue emphasis to the length of the building, and undue emphasis is always vulgar. Another great defect of the exterior is the composition of the west front. It is true that the outlines of the western façades of most of our English cathedrals are clumsily designed; in fact, they appear to have been the great stumbling-blocks of the Mediæval architects. The west end of Salisbury is nothing but a square screen and a gigantic sham. That at Wells, with its unfinished towers, is not much better; but to Bishop Grandison was reserved the unenviable distinction of being regarded as the founder of a façade second to none in sheer ugliness of form and proportion. This ugliness was produced chiefly by continuing the gable proper over the aisles, so as to hide the flying buttresses and give a vulgar, because this also gives undue emphasis to the roof line. The beauty of the tracery in the circle of the great window is certainly one redeeming feature, so far as it goes; and if we can be satisfied with hand-labour only, the elaborate portal-screen may also tend to abate censure by virtue of its lavishness. For myself, however, I am bound to acknowledge that I find very little to admire in this much bepraised façade. The composition of the masses is singularly feeble. It has no more design in it than the simplest barn-end, and consists of nothing

more than one huge gable of a breadth nearly equal to the total height, divided into three parts horizontally and vertically. (See diagram.) The vertical lines AA are formed by buttresses and pinnacles. The horizontal



lines BB are marked by cornices and battlemented parapets, the middle and upper divisions being set back a few feet within their respective parapets. One result of this is that in foreshortened front views the gable BCD drops behind the parapet BD, and the whole façade consequently becomes heavier and more dumpty in its proportions than I have shown. If we examine further, we shall see the same poverty of mind displayed in the relations of solids to voids. The three portals are quite unworthy the name; they are more like ways to chantries than the western portals to a cathedral. Their jambs and architraves are so miserably cramped that they may be said to have no constructional existence, an applies also to the whole framework of the screen, the texture of which seems to have been handed over to the mercy of some sculptor's assistant, who has made an patch of the niches and a confectionary of the battlements. This last is particularly marked in the side portions FCW, where little figures are introduced looking through the embrasures of diminutive two-storeyed merlons. There is no visible reason for one can scarcely apply such a term to the chamfer which takes its place. Indeed, the whole of the lower part of this front—in other words, the whole of the western front (commonly called the screen)—is an instance of the capriciousness of the sculptor at the expense of the architect, a capriciousness which might have been excused, only that this was not worth glorifying at any expense; those figures are not dead and lumpy being afflicted with an energy too enormous to describe.

The windows of the side aisles are altogether lost in this extravagant display, and even the great west window is far covered as to present little more than tracery, whilst the upper part of the west window is a heavy mass of almost pure masonry. It is needless to say that the contrast between the lower and middle divisions is consequently violent. The circle of the west window is in itself admirable. It is composed of an inner circle containing five spherical triangles arranged upon the intersection of two isosceles triangles. Beyond this exquisitely beautiful central figure is a ring of tracery, composed of six cusped quatrefoils and six cinque-foliate arches alternating. The design of the rest of the tracery is crushed by the upper part, and the spacing of the mullions below is crippled. The jamb and arch mouldings are almost as deficient as those of the doorways; some of the designed flowing tracery occupies the roof gable, and the toy-like on the hood moulding a figure in a pinnacle-niche gives a perpendicular line just where it is not wanted. The sins of omission are almost as grievous as those of commission; thus, had the dividing buttresses been carried up to the pinnacles above the upper parapet, and some placed on each side of the arch of the great window, these slight additions would have given some dignity to the raw and imperfect design.

In the side elevations the absurdity of the clerestory is manifest to anyone who will give two thoughts about the boldness of the buttresses and the varied tracery of the windows are well worth studying; the latter not only for their intrinsic merit, but for the suggestions which they may give, because, although in much the same style as those of the College chapel, they are mostly far from attaining their purpose, and very far from fulfilling the great problem of the tracery, viz. equality of space in the openings, and in the examples this is rendered more glaring by the lack of elevation, all the tracery bars of many of the windows being in the same plane. Before leaving the windows for which the cathedral is so celebrated, it should be noted that there are forty varieties of tracery, and of these the windows of the chapel and towers are exceptionally good.

On entering the west door the critic is silenced for a moment by one vast and almost overpowering impression of space. There are three things which above all others contribute to this impression, viz. the colour, the long vista and the proportions. These latter constitute the most important elements in designing cathedral interiors, and I shall not refer at some length to them. And first of all, I think that the great characteristic of a cathedral or minster, as distinguished from an ordinary parish church, is the division of the height into—first, the main arcade; second, the triforium; and third, the clerestory. There are all

churches which partake strongly of this character and each very nearly to the minster form, as in the case of St. Redcliffe. There are also minsters in the ecclesiastical or ritual sense which, in their architectural design, are strongly of the ordinary parish church, such as the churches of Sherborne and Wimborne, but these are buildings of the twelfth century. Of this, however, we may be sure, that the cathedral character follows in proportion to the development of the division. This appears to me the main consideration, though it must not be forgotten that the element of size and comparison of the bays by vaulting shafts have considerable influence in the minster effect of a design, but they do not seem to be absolutely essential. Now the question arises, is the degree of development which the building before us exhibits in its triple division? To answer this question it is necessary to ascertain the limits of the proportions met with in the best works of Mediæval art. To narrow the inquiry, I shall pass by all Norman buildings with the exception that, as a rule, the triforium was rarely less, and more, than one-half the height of the main arcade. With the introduction of the Pointed system, and the general tendency to increased height which it encouraged, the great vault was raised at the expense of the triforium: thus, in the choir of St. Albans and the presbytery of Worcester, the height is between 2 and $3\frac{1}{2}$ feet less than a half; at Salisbury and Lincoln choir it is reduced nearly to a third; at Westminster it is almost an exact third, and at Tintern and Chartres less than a third. From the evidence of these widely-known examples we may conclude that the proper development of the triforium is bounded by a proportion of not much more than a third, and not more than a half, the height of the main arcade. Here at Exeter the triforium space is less than half, even including the parapet of quatrefoils in front of the clerestory windows; without this, the proportion is reduced to less than a sixth. Those who are accustomed to visit the cathedrals will easily discover in this example that the character of a triforium as an architectural feature distinct and independent in itself, because uniting and reconciling the single arch below to the lighter work above, is sacrificed. I may call the big-window scheme. It is not therefore the relative proportions of these vertical divisions—main arcade, triforium and clerestory—that we must look for the use of the grand effect attained in the interior of a cathedral. We come now to another important point, and I use the word without any hesitation. At Exeter where the triforium is nearly half the height of the main arcade, and at Salisbury, where it assumes a more developed character, the vaulting shaft is reduced to a corbel, and the horizontal idea is followed—to an excess, perhaps, but an excess which is redeemed by the proportions and character of the triforium, although we lose the independent vertical divisions. Here, however, although the vaulting shafts are carried down to corbels immediately above the capitals of the great piers, there is even a greater lack of vertical effect, because of the flatness of the shafts themselves and the greater proportional breadth of the building everywhere arrests the eye. That this breadth is conducive to some grandeur is quite possible, but the result would not be seen in every respect greater had the vaulting shafts been carried down to the floor. Now if we turn to the transverse section of a cathedral we find it founded on a double square of the height of the piers being just more than half the height of the arches are wider than usual; these proportions no doubt conduce mainly to the grandeur of expression and undeniably belongs to this interior—an expression also enhanced by the large size of the clustered shafts, the grey colour of the stone and the jointing of the

work. I only call attention to the vaulting in order to obtain a fair admiring. The student will not fail to note the simplicity of its construction, the broad regularity of the ribs, the elegance of curve and boldness of detail of the ribs, and especially the opposing severity of the longitudinal and transverse ribs, and the almost equal spaced ribs of the bosses on these ribs. Before concluding, I direct attention to a few minor but interesting features: the exquisite altar tomb of Bishop Marshall, the ritual accessories to the effigy of Simon de Apulia, and the carving in the miserere. Less powerful in design and execution, but yet of considerable interest, are the bishop's pure fourteenth-century work, but said to be of the fifteenth century, the minstrels' gallery and the galleries. I have no space to treat as they deserve examples of those three great decorative arts, tile pavement, glass and mural painting, which are preserved in Exeter Cathedral. There can be no doubt that floor, roof, and wall once served as fields for colour decoration. Architects of our old cathedrals lived in the self-same way, but it was not enough for them merely to disfigure the relation of solid to solid, or to rest satisfied with the multitude of form to be eliminated from square, circle or

triangle; the triumphs of proportion and construction, and all the wealth of carving and sculpture, only made them feel more and more their deficiencies and shortcomings, and so taking courage in the very thought of their unworthiness—in the confession of their weakness—they expressed in their works all the delight they felt in the works of Him who has spread His mosaic of flowers on the earth, and has recorded His promise in endless arches of never-dying colour.

A PREHISTORIC SETTLEMENT.

A REPORT was presented at the meeting of the Cambrian Archaeological Association describing the investigation by the Rev. S. Baring-Gould and Mr. Burnard at Tre'r Ceiri. On June 29 they visited the place along with the Rev. J. Fisher and Mr. Harold Hughes, and there sketched out a plan of procedure. According to their commission, they confined their attention to the cytiau and left the fortifications to be investigated on a later occasion. The number of cytiau within the inner walls—an area of about five acres—could hardly be determined with certainty, but probably the huts numbered considerably over a hundred. The highest point of the site within this area was east, where the ground rose to 1,591 feet above sea-level and fell somewhat abruptly to a lower terrace, and then sloped gradually to the western limit of the inner wall. The highest point had a cairn-like appearance, but they believed it to be mainly natural. The extreme summit was evidently artificial. The cytiau were situated in groups on the terrace and on the slope, and also under the inner face of the walls. In the latter case each hut had a wall built against the rampart with, in some instances, a narrow intervening space. The forms and sizes of the huts were varied; some were circular or pear-shaped, and others again were oblong and rectangular. In a few instances the doors of the cytiau opened out of a small space or hall entered through a common doorway. The entrances faced various points of the compass. Occasionally the huts were double, one chamber leading into another. In a few instances an outer curved wall protected the entrance. The entrances varied in width from a little over 2 feet to 4 feet. The walls of the huts, which were very rudely built, were usually 4 feet wide, and varied in height from 3 feet to 6 feet. The subsoil of the site was a mild clay, and resting on this was a crust of peaty earth of varying depth, carrying on its surface a luxuriant growth of heather and whinberry plants. This peaty earth carried a certain amount of water which it retained, and in this it was assisted by the clay subsoil. This rendered the hut sites damp, for wherever a hole was sunk into the subsoil water accumulated in small quantities. To minimise this disadvantage the builders of the huts excavated the greater portion of the interior down to and into the subsoil, and then filled the pit with rubble and roughly paved the floor with flat stones. Sometimes the excavated portion of the hut was filled with flat stones placed vertically, and in one case regularly built drain-like cavities acted as catch-pits under the paved floor. There was no drain to carry the accumulated water out of this hut. So long as the floor was raised sufficiently above the drainage water-level, the occupants must have been satisfied. The roofs of the huts were probably of thatch, made with rushes or heather; they were certainly not of stone, for the accumulation of this material in the interiors represented wall ruin only, while the shape of the greater portion of the huts would have made a stone roof impossible. Where practicable all the huts examined were explored right down to the subsoil so as to make sure that domestic objects had not found their way between the rude paving stones down to and beyond the stone packing. It was not practicable to do this in all cases, owing to the ruined condition of the walls. Having referred to the injury done to some of the cytiau as the result of an old woman's dream, that a copper cauldron full of gold was buried in Tre'r Ceiri, Mr. Baring-Gould gave a detailed account of the thirty-two cytiau examined and of the finds made therein. In No. 1 coal only was found; in No. 3 a dozen pieces of dark pottery, some pebbles and a small fragment of pointed iron were found; in No. 4, some charcoal, two spindle whorls (one broken) and pebbles, both large and small; in No. 5 a spindle whorl, pieces of ox tooth and some charcoal; in No. 6, a combined adze and hammer of much corroded iron, a part of an iron blade, some small fragments of bone and ox teeth; in No. 7 a spindle whorl, two iron objects—one about 3 inches long, the other a crescent-shaped piece, both much corroded—and some small fragments of bone; in No. 8 a bronze triskele and a large ribbed melon-shaped broken bead of blue-glazed porcellaneous paste; in No. 10 a bronze fibula plated with gold, highly ornamented, a much-corroded iron ring, with a diameter of 2 inches, and another ribbed melon-shaped bead of blue-glazed porcellaneous paste; and in the others pieces of charcoal, fragments of red and black pottery, lumps of corroded iron, a bone comb, a few sling stones, pebbles and bits of bone. Continuing, the report

stated that the exploration lasted ten working days. Of the thirty-two huts examined twenty-three yielded charcoal or objects indicative of human occupancy, and the remaining nine were blank. The pottery found was wheel-made and late Celtic in character, excepting the tiny fragments of thin red pottery found in two of the huts. These were undoubtedly Roman. Continuing, Mr. Baring-Gould said they had come to the following conclusions:—“(1) That the fortifications were erected and occupied by that people to whom the finds appertained. There was no evidence of any further occupation, not a trace of flint tools or weapons, not a fragment of pottery of the Bronze Age, nor were there any indications, with a possible exception of the bone-comb, of a later occupation. (2) That Tre'r Ceiri was only temporarily, and that for a short time, occupied in the summer season alone; as the amount of charcoal found was remarkably small, and some of the cytiau seem not to have been occupied at all. The exposed position of Tre'r Ceiri and the excessive dampness of the site would render it impossible of occupation during winter. (3) That the race which erected the walls and constructed the huts was Celtic, probably British, and that the period to which they belonged was the first or second century of the Christian era. Our reasons for coming to this conclusion are as follows:—(a) The pottery is wheel-turned and distinctly Celtic, but along with this was found a small amount of what is certainly Roman pottery; (b) the amount of iron found proves that the tenants belonged to the Iron Age, but there was nothing in the character of the tools and weapons found to determine the precise period in that age; (c) however, the fibula is unmistakably Celtic, and resembles one found at Esica on the Roman wall; (d) the two porcelain beads are of Egyptian manufacture—one of them is the finest that had been found and recorded in the United Kingdom, and by its shape, paste and glaze reveals its origin as either Alexandria or the basin of the Nile (these must have been imported probably during, or even slightly preceding, the Roman occupation); (e) the distinguishing Celtic ornament of the fibula practically ceased or became degraded after the second century in Britain. During the first 200 years of the Roman occupation the originality and elegance of Celtic ornament influenced decoration in Britain and even in Rome, being so totally different from the stiff and conventional character of Roman ornamentation. (4) The extraordinary rudeness and clumsiness of construction of the walls and huts seemed to show that the builders had not been influenced by the Roman art of wall building, and this, in their own opinion, pointed to the erection of the fortress at an early period of the first century.” Concluding, Mr. Baring-Gould and Mr. Burnard offered some suggestions for continuing the investigations and making a thorough exploration of the fortress. They also recommended Mr. Wood, the owner of Tre'r Ceiri, to decide on some public museum, under the charge of a competent curator, where the relics found or to be found might be carefully preserved for the sake of their great importance as a contribution to the knowledge of the arts of the British at the dawn of the history of our island.

MUNICIPAL ENTERPRISE.

THERE are few municipalities in England in which the debt has not been vastly increased during recent years. It can be admitted that in many cases advantages to the inhabitants have resulted. But grave doubts have arisen about the wisdom of expenditure which must impose an onerous burden on ratepayers. One aspect of the case was suggested by a paper on “Depreciation and Sinking Funds in Municipal Undertakings,” by Mr. Stanley Horsfall Turner, M.A., which was read at the meeting of the British Association. According to him, as all municipal undertakings are started with borrowed capital which must be repaid within statutory periods, it is important to understand how this initial burden should be distributed as between the present and the future. No decisive answer has at any time been given to the question whether depreciation funds should be kept, with the result that municipalities differ very widely in their methods. A few have adequate depreciation funds, others have either inadequate ones or none at all. According to the latest returns the annual average depreciation fund for municipal tramways in England and Wales is only just over one-half of 1 per cent. on the capital borrowed, and tramways show the largest percentage of any municipal industry. It is urged by those municipalities which have no depreciation fund that the sinking fund, being based upon the life of the subject, is the depreciation fund, and that if the loan is entirely repaid when the plant is worn out or obsolete the present has done all that is necessary. Their successors must borrow to reinstate the works. The only alternative, as the law now stands, is to have a depreciation fund in addition; and if this were a true depreciation fund it would be too great a burden upon the first generation, since the life of the subject is taken into account twice over. Those

municipalities which voluntarily lay aside a full depreciation fund urge that once an undertaking is started its value should be maintained, as in a private company working an undertaking, and that the sinking fund is an extra requirement enforced by Parliament because it is deemed undesirable to allow any permanent local debt. While this second recommendation is the sounder finance for representative undertakings, there are serious objections to it so long as the sinking fund is fixed on the present principles. The first generation is burdened twice as much as the second and succeeding generations. It not only repays the whole cost but also builds up an equal capital for future generations which have no sinking fund to pay because their capital is not borrowed. The difficulty arises because the statutory provisions, which contemplated none of the recent extensions of municipal activity, are not suited to some of the present undertakings, and in these cases a depreciation fund should be obligatory, while the sinking fund should be entirely dispensed from the life of the subject.

A GERMAN TOWNS EXHIBITION AT DRESDEN.

LITTLE notice has been taken in England, by our correspondent of the *Manchester Guardian*, of the German Towns Exhibition which has been open in Dresden during the summer. The Germans take the development of their towns seriously. As in England, though to a lesser degree, the population is more and more concentrating in the towns, creating problems of administration, of health, of education which demand the attention of the best talent available. In Germany the service of the town is regarded in the highest degree honourable. There is a highly professional class who fill the higher posts, in municipalities, elected to the position, but giving their whole time to the work and receiving salaries. There are, in addition, unpaid councillors, as in England, among whom are to be found prominent business and professional men.

The object of the Dresden exhibition is to show the development of German towns at the beginning of the twentieth century to give those interested an opportunity of comparing the development of the various municipal services. The organiser was the Oberbürgermeister of Dresden, Herr Bentler, assisted by a committee which includes the chief German towns. Each department of the exhibition is under the control of a special committee of experts in that department. Invitations to exhibit were sent to all the towns, and exhibits have been sent by 128, of varying importance. Firms and companies which contract for municipal services or supplies were also offered space for exhibits and they are well represented in a special pavilion for separate buildings in the grounds. The main exhibition is divided into eight sections:—(1) Town Engineering (street construction, bridges, harbours, waterways, &c.); (2) Town Extension, Building Regulations and Housing; (3) Public Art; (4) Health, Police; (5) School Organisation, including exhibits for those beyond school age; (6) Poor Relief, Care of the Sick, Charitable Institutions; (7) Finance and Administration, including savings banks; (8) Registration and Official Papers and Appliances, Statistics and Literature. There are, in addition, three separate exhibitions—the trades exhibition (already mentioned), a gas and waterworks exhibition, and an electrical undertakings exhibition.

One cannot in a brief article deal with all the exhibits which deserve attention. I may, however, refer particularly to the sections dealing with streets and with town extension and housing. The continental mind, perhaps from the influence of military influence, seems more awake to the need for well-made streets in towns, both from considerations of safety and of public health than the English mind. From the time when Baron Haussmann drove straight lines of communication through Paris there has been an evident tendency to regard the modern need of rapid transit in a similar way. But the necessity of the street is not everything, by any means. It must be wide enough for its traffic, and possibly different widths of traffic will have to be provided for in one street. If the traffic of the town is to be preserved or increased trees must be planted, and advantage should be taken of natural slopes and perspectives. The surface should not only be able to stand the traffic, but should be capable of rapid and effective cleansing. Finally, it is along the street lines that the drainage, gas and electric-supply system run, and a well-organised municipality will arrange these so that access can be had to them without disturbing the street. Such are some of the matters which a street engineer has to consider. There are here many diagrams showing streets in plan and section, often with photographs and models. In the exhibition grounds one finds by side every possible variety of paving material, and also actual street sections to show the arrangement of the ground works. Apparently wide streets are to be the

towns. Judging from the exhibits, the whole tendency is in this direction. Separate tracks for slow traffic and for traffic, for foot passengers, for cyclists and for riders are constructed in several towns.

Other than "Haussmannising" is to foresee the growth of towns and to make provision beforehand for the streets that will be required. Perhaps nothing in the exhibition is more striking than the plans (many of which are large-scale relief maps) of the German towns, showing the streets and roads that are not yet made. The officials of the chief towns have learned from their past difficulties, and now insist that their towns shall grow on scientific principles.

The housing question is often acute in German towns. In many cases the municipalities are themselves building dwellings for the working classes, although co-operative building societies and private firms, with the assistance of public funds and under the supervision of the town councils, are the main agents in providing for the needs of the community. The building regulations are conceived in a statesmanlike way to meet different circumstances. The town areas are mapped into zones, within each of which different building by-laws apply. Thus in London there are five zones and as many sets of regulations. The zone nearest the centre of the town four-storey blocks are permitted, and these may be continuous, and in certain circumstances the whole of the plot may be covered by buildings. In the second zone the buildings may be grouped, but the plot may have more than 60 metres frontage. The number of houses allowed is three, and not more than half of the plot may be built on. In the third zone the houses must be no more than one and a half storeys; they may have three storeys, but only one-third of the plot may be built on. In the fourth zone a wider space between houses is necessary, and only one-fourth of the plot may be built on. Houses in the fifth zone must be still further apart, only one-fifth of the plot may be built on. The zones are concentric; apparently allowance has been made for the lines of growth of the town. But it will be seen that the regulations of this sort, which provide for a thinly populated "city" zone on the outskirts of the town, where land is abundant and where there is every inducement to the builder to use every available inch of his ground with buildings, do not insure the pleasantness and healthiness of the town. The principle, at least, might well receive the attention of municipal reformers.

The wide-spread interest in the exhibition, which, be it said, is practically without popular attractions, speaks well for the strength of civic feeling in Germany. The exhibition committees do what is possible to increase the interest of the towns by arranging lectures by experts in the various subjects. To-day an engineer is describing gas and water supply and a medical officer the treatment of consumptives in the exhibition-rooms this forenoon there were at least a dozen classes from the high schools, under their teachers, studying the organisation and working of the town services. Germany prepares to face the problems of town life in the twentieth century.

NATIONAL ART COLLECTIONS FUND.

It is proposed to found a Society analogous to those already existing in Paris and Berlin with the object of presenting to the nation and other works of art to the national collections. Such an organisation is needed in this country to meet the increasing competition of private collectors and institutions, both in Europe and America. A provisional committee has been formed to promote this object in the United Kingdom. A meeting will be held during the autumn, when proposals will be made, and supporters of the movement will be invited to nominate a Council and an executive committee. The scheme has received sympathetic encouragement from the heads of the national collections. Broadly speaking, the proposal is to enrol as many members as possible in an annual subscription of one guinea will be paid. Anticipated, however, that members may be willing to make donations in proportion to their interest and means, and will be from these sums that the bulk of purchases will be made. Such donations may be allocated to any of three funds:—(1) For ancient pictures and drawings, (2) for modern works of art, (3) for modern works of art. The committee will appoint purchasing committees, in whom a discretion will be vested. From time to time it may be necessary to issue appeals, inviting contributions to the acquisition of objects of unusual importance. It is hoped that the fund may become a further channel for the gifts, bequests and memorial presentations made to the national collections. The difficulties and obstacles caused through large committees having to sanction the purchase of any single work of art—which, of course, may be sold at short notice and in some foreign country—have been who are responsible for this scheme to provide that the purchasing committees shall appoint honorary buyers, to whom

the maximum of discretion will be delegated. Among those who have already expressed interest in and sympathy with the movement are the Marquis of Lansdowne, the Marquis of Londonderry, the Earl of Crawford, Viscount Peel (chairman of the trustees of the National Portrait Gallery), Viscount Knutsford (trustee of the National Portrait Gallery), Lord Windsor (First Commissioner of Works), Lord Avebury, Lord Aldenham, the Bishop of Rochester, Lord Balcarras, M.P., Sir E. J. Poynter, P.R.A., Sir J. Stirling-Maxwell, M.P., Sir L. Alma-Tadema, R.A., Sir W. B. Richmond, R.A., the Speaker of the House of Commons, Sir A. Henderson, M.P., Mr. J. Morley, M.P. (trustee of the British Museum), Mr. Bryce, M.P., Sir F. Mowatt, Sir Hubert Parry, Mr. E. W. Beckett, M.P. (treasurer *pro tem.*), Sir C. Purdon Clarke (director of the Art Museum, Victoria and Albert Museum), Mr. Lionel Cust (director of the National Portrait Gallery), Sir J. Evans (trustee of the British Museum), Lord E. Fitzmaurice, M.P. (trustee of the National Portrait Gallery), Mr. W. E. H. Lecky, Sir W. H. Tate, Sir E. Maunde Thompson, Sir E. A. Waterlow, R.A., Mr. Humphry Ward, and Mr. Isidore Spielman and Mr. R. C. Witt (hon. secretaries *pro tem.*).

SARSEN STONES.

ACCORDING to a paper read by Mr. Horace Woollaston Monckton at the British Association, the blocks of sandstone or quartzite, known as Sarsen stones, are found in many parts of the South of England. They occur at or near the surface of the ground as well as in or at the bottom of the gravels. They are usually believed to be derived from the Bagshot or Reading beds, but there does not seem to be definite evidence of the discovery of a Sarsen stone *in situ* in these or in any other formation.

Sarsens are very abundant in the neighbourhood of Bagshot. They have been observed by the author firstly, and most frequently, at the bottom of or close to the bottom of beds of gravel; secondly, and rather less often, at or near the surface of the ground where there is no gravel; and, thirdly, but only seldom, in gravel some height above the bottom of the gravel. The author has never seen a Sarsen stone *in situ*, for though he has seen many partially uncovered stones, they have in every case shown signs of wear by either water or weather. At the same time, he has noticed that the corners are frequently angular, and many of the stones have been very slightly worn and certainly not rolled by water currents or streams. The country around Bagshot is formed of the Bagshot beds, largely of Upper Bagshot beds, which are shown by their fossils to be of Lower Barton age, and the author suggests that soon after their deposition this part of England rose somewhat above sea-level, and remained as a wide, fairly level and low-lying flat covered with marsh and vegetation for a very long period. The Sarsen stones are, he believes, indurated portions of this old land surface. If this is correct it accounts for all the above-mentioned facts and also for the presence of numerous rootlet tubes in the stones, and for the absence of marine shells or of casts thereof. If after a long period of repose an elevation of the land took place, the streams would rapidly cut channels in the sandy soil and leave the indurated fragments of the old surface scattered about at various levels, and many of these would become buried in the beds of gravel, thus accounting for the presence of the Sarsen stones in the gravels. It was suggested long ago by Mr. Hudleston that the concretionary action which formed the Sarsens was due to the decomposition of vegetable matter, and a somewhat similar opinion has been expressed by the Rev. Dr. Irving.

THE PALÆOKASTRO SANCTUARY.

A PAPER on "A Pre-Mycenæan Sanctuary with Votive Terra-Cottas at Palæokastro in Eastern Crete," was read by Mr. John L. Myres, M.A., F.S.A., at the meeting of the British Association. This sanctuary, he said, stands on the summit of the hill called Petsofa, which bounds the bay of Palæokastro southward, and was excavated in April 1903. A massive retaining wall of large rudely shaped blocks encloses to south and west a roughly rectangular space, the northern face of which is bounded by a precipitous descent, and the eastern face by low ridges of natural rock. Within the enclosure were found (from the bottom upwards) (1) a layer of undisturbed soil resting on the southward shelving rock surface; (2) a layer of blackened ashy earth, apparently the remains of a large hearth or bonfire, full of whole and broken terra-cotta figurines, with painting of the Minoan (pre-Mycenæan) technique; (3) a layer of disturbed soil obliterating the ashy layer and containing fragments of its figurines; (4) over all a rubble building of early Mycenæan date, like those of the settlement site at Palæokastro, one room of which still retained its plastered and whitewashed floor, with a plastered bench round three sides, and the remains of a door. A column base from an earlier

building was found built into its foundations. The terra-cottas include figures of men and women in characteristic pre-Mycenæan costumes, analogous to that shown on the frescoes at Knossos, and completed in the case of the women by gigantic and very stylish hats, a quite new feature. Other terra-cottas represented miniature oxen, rams, goats, pigs, dogs, weasels, hedgehogs, birds, chairs, miniature vases and other objects of daily use, together with the horns and legs of a larger series of oxen the bodies of which appear to have been completely cleared away from the ash-heap from time to time. A very large number of quite plain clay balls of about the size of a marble seem to be votive like the other offerings, but are not so easily explained. They may, however, represent occasions of prayer or thanksgiving which defied the ingenuity of the modeller.

STONE CROSSES.

A PAPER on "Some Points about Crosses, chiefly Celtic," was read by Miss A. A. Bulley at the meeting of the British Association. It dealt with certain details only, and had nothing to do with the general question of origin. In considering the form of the crosses, however, regard is had to the feeling underlying the treatment, so far as this can be gathered from a general survey of the examples. Argument from form alone is necessarily imperfect, and may be fallacious, though it may suggest lines of investigation. In default of historic data, however, it is the only method possible.

1. *Celtic Crosses*.—From a survey of examples from Cornwall, Wales, the Isle of Man, Scotland and Ireland the author infers that in Celtic crosses (i.) the circle (whatever its meaning and however related eventually to the ends of the arms) is not a mere adjunct (such as a glory or a support for the arms) but is of at least equal importance with the cross. The persistence of such a form without meaning points to an earlier period when the form represented an idea of primary importance. The circle is therefore inferred to be here a root-idea. (ii.) The long-shafted or Latin type appears to be an independent development from the cross with circle and equal arms. The author does not attempt to decide whether or no this development was influenced by the introduction of the pure Latin cross from outside.

2. *Non-Celtic crosses*, on the other hand, exhibit lesser importance and weaker treatment of the circle, *e.g.*:—(a) Coptic crosses, though often enclosed in a wreath, are often without. Later the ankh symbol is confused with the cross. (b) Roman (catacomb) crosses in their earliest form are equal-armed, but the circle is optional. The long-shafted or Latin form is later, and possibly developed (in Italy) from processional use. The treatment also of these early crosses is not realistic but symbolic, whereas the course of development is never from symbolic to realistic, but the reverse. (c) Syrian crosses resemble catacomb crosses, but are even more decorative in treatment. The extant examples, however, are chiefly architectural ornaments, which may account for this. The circle is optional.

RIBCHESTER, OR BREMETTENACUM.

RIBCHESTER, on the Ribble Valley, has long been known. Roman remains, some of them exceptional in character, have been found there since the beginning of archaeological record. One object in particular, a bronze ornamental helmet, the head probably of a deity, now preserved in the British Museum, is specially noteworthy. The fame of this Roman station has been increased by an old tradition of buried treasure, which seems to have been based actually upon an event of post-Roman date, and has been shown recently by a distinguished numismatist to have probable reference to the Cuerdale hoard of Saxon coins.

Excavations made in 1898-99 have now shown, says Mr. John Garstang, that the station at Ribchester conformed with the general scheme of frontier defences of the Roman empire. It was one of a series of such fortresses in methodical arrangement which with the wall of Hadrian formed the northern frontier defences of Roman Britain against the hill tribes of the north. It is analogous in plan and constructive details with other forts of the same system and period. It is to be distinguished primarily from the camps of a moving army the disposition of which is well known from literary sources, just as the name *castellum* is different from the word *castra*. Latin historians were careful of this distinction, and it behoves English archaeologists to be equally on their guard. The Roman fort is hardly treated in contemporary literature, but its character and military organisation are now clearly defined by the results of archaeological research. This fort is to be distinguished secondarily with the class of which it is an example from the later type of Roman fortress, familiar from ruins on the south-eastern coast line, built in the fourth century to oppose the dangers which threatened the Saxon shore. These

later strongholds have external buttresses and towers generally larger and with higher walls, and exhibit types of some of the Mediæval details of fortification.

But the class of fortress to which Ribchester belongs is entirely of the earlier character, severe rectangular shielded by internal buttresses and mural towers, magnificent arched gates, a stout wall not very high, with parapet guard chambers upon its length. In large examples of this class, of which Ribchester is one, the interior was filled with stone-built barrack-rooms and stables, arranged in regular rows and streets. In the centre was the large pile which constituted the headquarters of the commander of the division who constituted the garrison. On one side was commonly a storehouse or granary, and at Ribchester (quite exceptionally) there seems to have been a temple within the walls. A sub-class of this period is found to be of smaller area, about 3 acres only—with the outer walls and *prætorium* of stone.

The inception of the idea of a series of frontier fortresses in the north was due to Agricola, but the scheme elaborated and perfected with Hadrian, and much activity in building evidenced from the inscriptions under the Antonines.

It was about this period probably that Bremetennacum was finally built. There is no definite evidence of its earliest date, but it is known that a detachment of the Sixth Legion (York) completed some building work under Calpurnius, in the middle of the second century. It was garrisoned one time by a wing of Sarmatian cavalry (auxiliaries) was connected in the military scheme by roads into the stations at Manchester (*Mancunium*) and at Wigan (to the south, with Overborough (*Galacum*) and *Ilkley* (? *Rigodunum*) to the north, and directly with the headquarters at York (*Eboracum*) by the road over the hills through Ilkley (? *Olicana*).

A GILBERTIAN PROJECT.

ACCORDING to the *Morning Post* Mr. Alfred R.A., has now completed his arrangements for an establishment at Bruges of a school for the study of the branch of the fine arts on entirely practical lines. Several reasons for choosing Bruges as the site of the school, or rather art colony, for Mr. Gilbert's scheme, wider and more comprehensive than the word "school" suggests. An ancient city of noble traditions, beautiful and with its peacefulness undisturbed by the rush and modern life, Bruges impressed Mr. Gilbert from the first as an ideal place for study. Again, it is one of the cheapest in Europe to live in, a great recommendation to the student, who is almost invariably poor, and its centrality makes it within comparatively easy reach of England, some of the chief art centres of the Continent. The school will be divided into three sections:—The elementary rudimentary drawing and modelling and still-life painting to be taught; the middle, where, besides drawing, painting and modelling from the life, the students will be called on to do daily exercises in composition, and learn the arts of etching and chasing and the making and tempering of tools; and the advanced, where they will be engaged in carrying out individually or in collaboration, some specific design. In the advanced class Mr. Gilbert proposes to obtain the assistance he may need in the execution of his own work, which will be carried on in the presence of the whole. Both male and female students will be received and will live in houses managed by the nominees of Mr. Gilbert, who himself supervise their arrangements.

Some idea of the great scale of Mr. Gilbert's plan is gathered from the fact that the group of buildings thus acquired at Bruges cover an area of 3 acres. One-third has been portioned off for the school studios, one-third for a great number of private studios, which will be at the disposal of the students on very moderate terms, and the third for the laundry, dairy, &c., of the colony of artists. Houses for the male students will be part of the town, and Mr. Gilbert can arrange for the accommodation of two hundred, who will sleep in cubicles unless they prefer a different arrangement. All will be lodged and boarded on inclusive terms, and there will be a club for the men managed by themselves on the principle of a naval mess, which will supply all additional wants. Every encouragement will be given to social as well as to the art side of the colony's life, and there will be in each common room, and it is hoped that a musical society will soon be formed among the students. There is yet another interesting feature. A permanent exhibition in a large gallery will be attached to the school, this exhibition artists of all nationalities will be invited to contribute. The whole will be, or at least Mr. Gilbert hopes to be, a self-contained colony of artists, in which the means of studying all that appertains to the

ment of a craftsman. Mr. Gilbert will have the good of all English artists in his venture, and his pupils have the privilege of working with a man who is not only the first masters in the world of his own chosen craft, but has besides an extraordinary gift of sympathy, which enables him to understand as few can how hard is the task that confronts every sincere student. Mr. George is the secretary of the new school.

TESSERÆ.

Fitzwilliam Collection, Cambridge.

The Fitzwilliam collection of paintings was bequeathed to the University of Cambridge by Richard, the seventh Earl Fitzwilliam, of the kingdom of Ireland, who died on May 4, 1816, in the seventy-first year of his age, having been born in August, 1745. There are few instances on record of amateurs so devoted to the pleasures to be derived from the study of art as Lord Fitzwilliam. This taste he seems to have inherited, with the nucleus of his collection, from his maternal grandfather, Sir M. Decker, Bart. The two gems by Peter Paul Rubens, the "Schoolmaster and Scholars" and "Portrait of a Woman," were, with the Vandervelde and several others, formerly in the possession of Sir M. Decker, whose lordship he inherited, and upon which he latterly also resided at Richmond. For the last twenty years of his life he lived in almost complete seclusion, not seeing even his most intimate friends, and absorbed in the pursuits of study and learning. His collection of engravings was unrivalled, and his library was of a princely character. His latest horror was to see a fine collection dispersed, and he lamented to those who had access to him that there was no public depository for works of art to which amateurs could bequeath their treasures. He therefore determined to leave such an one at the University of Cambridge, of which he had formerly been a member. This he accordingly carried out, bequeathing the paintings and drawings he had collected, nearly 200 in number, and, with a few exceptions, of extraordinary excellence. When the Orleans collection was offered for sale, he offered £35,000 for the whole, but three speculators, having joined in bidding £40,000, the pictures were sold to them without any intimation being given to Lord Fitzwilliam. His lordship's anger at this is described to have been beyond all bounds, he declaring he would rather have sold the collection for £25,000 than have lost the collection; nor was his vexation diminished by observing the paintings divided between three parties in the spirit of trade, while a boast was made that the division of what was conceived the best, the remainder would be sold for more than the original cost of the whole. Of the pictures offered for sale, Lord Fitzwilliam did not hesitate to select for himself, and some of the choicest of his paintings will probably be observed to have been selected from that collection. The dispersion of which seems to have still more strengthened his determination to found a gallery where choice works of art might be gathered and preserved inviolate. He accordingly made the bequest before mentioned, and added to it £100,000 South Sea annuities, the interest of which (£10,000 per annum) was to accumulate for the purpose of erecting an appropriate building.

Cyclopean Builders.

Cyclopeans are rescued by Strabo from the pages of history and placed in those of history. He gives them, in connection with the Lestrygonians, the regions of Mount Etna, in Sicily. The walls of Tirythos, in Greece, were built of Cyclopean work. Pausanias describes these walls as equally admirable with the pyramids of Egypt. All barbarous and uncultivated nations gave magnificence to their cities from their great solidity. We find it in the works of the Cyclopeans and in the Peruvian walls at the town of Tusco. Strabo gives them the epithet of "well surrounded with walls." Pausanias finds in Apollodorus that the Cyclopeans inhabited Sicily and says they lived in Greece under the reign of Jobas. Jobas is a contemporary of Bellerophon, who lived in the third century before the Trojan war. Prætus, for whom the Cyclopeans built these walls, was turned out of Argos by his enemies and went into Lybia, where he formed an alliance with Jobas, and was by him restored to his country. On his return he occupied Tirythos, and when he had fortified this city by the means of the Cyclopeans he agreed with Acrisius to reign there. The Cyclopeans whom Prætus is said to have brought from Lycia for the purpose of building the walls were seven in number. There are three species of Cyclopeans distinguished by ancient grammarians: those who built the walls of Mycenæ, those whom Homer mentions, and those spoken of by Hesiod in his "Theogonia." It is said that the Romans were very near adopting a similar system of building, and it might almost be imagined that they derived from them the idea which they acted upon to construct their roads. The irregular polygonal shape of the stones

which form the cyclopean wall prevents any perpendicular motion of the great masses, and acts, although perhaps in a less degree, in the Roman roads by preventing their being moved horizontally out of their proper place; stones of the common parallelogrammic form would be much more easily deranged. The force of the shock and the action of the stones on one another while any heavy vehicle passes over them is diminished by the number of angles which act in different directions, and these polygonal stones are still more firmly kept together by large blocks which are placed edgewise on each side, and extend throughout the whole length of the roads.

Georgian Churches.

In the period which followed Waterloo more attention was given to the condition of England and the dearth of churches was quickly realised; grants were made by Parliament for the erection of new buildings. Wordsworth described the zeal of the time in a few words, "The time is conscious of her want; through England's bounds, in rival haste, the wished for temples rise." A great many of the buildings could hardly be considered as temples or as fitting for solemnities. The defects were owing to the lax system of the Church Building Commissioners. All regard to propriety and unity of design was disregarded by them. Their sole object appears to have been directed to vary the means of acquiring a certain quantum of accommodation for the smallest sum. The surveyor-general was added to the Council, and had he been an architect by profession instead of a field-officer, might have guided the taste of the Commissioners; but he seems to have been placed there for the sole purpose of releasing the Commissioners from all responsibility on points of taste. Indeed, the appointment of that officer to the situation was a matter of some surprise, for although a committee of the House of Commons recommended that the surveyor-general should not be an architect, there could be no impropriety in the appointment of a person who had been one. The recommendation of the committee seems to have arisen from the inconvenience of appointing an architect in full practice, which was experienced in the case of James Wyatt, whose dilatory habits and extensive engagements rendered his appointment objectionable. The Commissioners limited their inquiries to the practical details of the buildings, and to this object only the attention of the architects in the surveyor-general's department was directed. The result of these measures was really most unfortunate. The selection of architects being left to local committees and country vestries gave rise to a system of cabal and jobbing that disgusted the more experienced professors of the art, who left the field open to young and unpractised competitors. It had, too, the effect of creating a number of architects who were left without employment when the casual demand for their services ceased, and it was no uncommon occurrence to find them applying to established architects for employment as drawing clerks. There were some very creditable exceptions from the general run of designs, but in the great majority the architectural characters of every age and no age at all were combined.

Early Painting.

The principles of painting comprehend those of all the other arts of design, and, indeed, of everything in which the imagination or the passions are immediately addressed through the organs of sight. In this art (the simplest in its means, and the most powerful in its effect), by the mere application of lines and colours, a flat surface is made to recede or project at the will of the artist; he fills it with the most agreeable appearances of nature, and sets before our eyes the images we hold most dear. The empire of the art extends over all space and time. It brings into view the heroes, sages and beauties of the earliest periods, the inhabitants of the most distant regions, and fixes and perpetuates the forms of those of the present day. It presents to us the heroic deeds, the remarkable events and the interesting examples of piety, patriotism and humanity of all ages; and, according to the nature of the action depicted, it fills us with innocent pleasure, excites our abhorrence of crimes, moves us to pity, or inspires us with elevated sentiments. Nor are its powers limited by actual or bodily existence; the world of imagination is all its own. It ascends the brightest heaven of invention, and selects and combines at pleasure whatever may suit its purpose. All that poets yet have feigned, or fear conceived, of uncreate or unembodied being, is subject to its grasp; and most truly may it be said to "give to airy nothing a local habitation and a name." Painting, we are told, consisted in its infancy of mere outlines, and probably for a long time very little exceeded what we now see scrawled in a nursery by children who have never been taught to draw. The next step of the art was to monochrome, or the addition of some parts within the contour; from thence it advanced to the monochrome, or paintings of one colour; and to this quickly succeeded the polychrome, or the application of various colours, performed by covering the different parts of the picture with different hues, and beyond this the art has never advanced among some nations of the East.

German Exports of Iron.

The development of the German export trade in iron and iron goods between 1900 and 1902 is especially noteworthy. During the boom the inland manufacturers were not able to satisfy the demand of the home market, and at the same time to maintain their position on the world's market. Imports rose rapidly and exports receded in proportion. With the turn of the tide the exporting industries again became anxious to export, the inland consumption having proved insufficient. The figures for German trade abroad clearly illustrate this. Imports receded step by step, as the home market no longer needed them. It is very remarkable, however, how quickly the German manufacturers succeeded in regaining their former position on the world's market, which they had abandoned of their own free-will. They were assisted, it is true, by favourable circumstances, more especially by the heavy demands from the United States. Important articles of German manufacture went to the United States in considerable quantities. The syndicates, too, came to the rescue of the iron industry; under cover of the protectionist duties the syndicates were enabled to keep up prices at home, in spite of the limited demand, whereby the several works were placed in a position to reduce their prices for the world's market and were enabled more easily to compete. The difference of prices, however, fixed by the same works for sales at home and sales abroad became so great that it produced very strong comments even in the Diet. Among all the syndicates those controlling raw material and half-finished goods proved themselves the most powerful and the hardest masters. They sold raw material and half-finished goods abroad at low prices, so that the home industries which worked off such raw materials, &c., were severely handicapped.

GENERAL.

The Newcastle-on-Tyne City Council have adopted a scheme for the improvement and extension of the river quay at a cost of 559,000*l.*, of which 246,000*l.* is for the improvement of the existing quay and 313,000*l.* for extensions. The water at the existing quay is to be deepened and the extension is to be carried out for 1,050 feet. It will provide three berths for vessels.

The Stratford-on-Avon Town Council accepted last week the tender of a local builder for the erection of a public library in Henley Street. This building, it will be remembered, has been a fruitful source of controversy in literary circles during the present year. Mr. Carnegie has made a payment on account of 1,000*l.*

The First Commissioner of H.M. Works and Public Buildings has appointed Dr. Louis Parkes to succeed the late Professor Corfield as consulting sanitary adviser to the department.

Mr. G. F. Watts, R.A., has presented to the National Portrait Gallery a portrait of the late Lord Salisbury, painted in 1884. In the case of the portraits painted by Mr. Watts for the nation the Trustees had on a previous occasion agreed to suspend their usual rule as to the expiration of ten years from the date of decease.

The Annual Valuation of the city of Glasgow for the current year is 5,423,448*l.* The estimated rental of ordinary heritages is 483,972*l.*, an increase of 130,725*l.* Railways, tramways, gas and water undertakings show an increase of over 177,000*l.* The total estimated increase of all subjects is 308,542*l.*

The Dutch Government, it is stated, is about to invite an international competition for plans for the new Palace of Peace, in connection with The Hague Tribunal, which is to be erected out of funds granted by Mr. Carnegie.

Several Members of the Royal Commission on London Traffic, including Sir David Barbour and Lord Ribblesdale, have left for America to make certain inquiries as to street railways and tramways in Boston and New York. Sir Francis Hopwood, who was to have accompanied them, is detained by pressure of official business.

The Following Appointments have been made to the position of diocesan surveyors for the diocese of Bath and Wells, in accordance with the provisions of the Ecclesiastical Dilapidations Act, 1871, for the ensuing five years:—Mr. C. R. Wainwright, of Shepton Mallet; Mr. E. M. Hippisley, of Wells, and Mr. A. B. Cottam, of Bridgwater. Messrs. Wainwright and Hippisley have held the office for many years, and Mr. Cottam succeeds Mr. Samson, who has resigned the office after holding it for twenty years.

The Court of Common Council adopted last week a design for reconstructing and lowering Southwark Bridge between 7 feet and 8 feet, and raising the level of Upper Thames Street, at the intersection with Queen Street, to a height not exceeding 3 feet (and the neighbouring streets and lanes proportionately), at an estimated cost of 350,000*l.*

Mr. Albert Toft, the sculptor, is to be invited with the Nottingham Queen Victoria Memorial concerning the kind of statue most suitable. The total of the fund available is 1,830*l.*

Messrs. Hayward & Maynard inform us that they are changing their offices from 47 Museum Street, W.C., to 122 Strand, Adelphi, W.C., thus combining the Adelphi estate (hitherto carried on at 7 John Street) with the Strand. They are, however, retaining a small office at 47 John Street for the present, where they can see clients by appointment.

The Foundation-stone of the new science building in connection with the King Edward VI. Grammar School, Louth, which are being erected in the lodge field, is laid. The total cost of the building, of which the contract is secured by Messrs. Mawer Bros., of Louth and Lincoln, is 1,500*l.* The architect is Mr. E. E. Bentley, of Luton and Grimsby.

Mr. F. W. Pomeroy, the sculptor, has been commissioned by the Scottish Associations of New South Wales to erect a bronze statue of Robert Burns for erection in this domain on a site to be given by the State Government. The statue will be mounted on a pedestal of granite and on the sides will be depicted scenes from the poet's works. It is expected that the monument will be finished and set up before the end of next year.

The Sites and Schools building committee of the Louth City Council have submitted a return of new school buildings and alterations to existing municipal schools, which are the result of schemes approved by the late School Board. The schemes are in various stages of progress, although in four cases has building commenced. The total estimated cost is 192,350*l.*

A New Methodist church was opened last week at Louth. The estimated cost is 3,600*l.* The edifice is of brick with stone dressings, and a large carved stone pediment surmounts the front gable. The accommodation is for 1,000 worshippers, 311 on the ground floor and 270 in the gallery, which occupies three sides of the building. In addition to the church, there are vestries for the choir and minister, and a large band-room under the organ recess. The cost of the work was Messrs. W. J. Morley & Son, of Braintree.

M. Emile Troncy, the French painter, has been commissioned by the Municipal Council to undertake the decoration of the new theatre in Cette, of which town he is a native. Some of his paintings have been purchased by the Government.

A Prehistoric Cemetery has been discovered at Louth, in Belgium, near the frontiers of Holland. About 100 funeral urns, besides objects in bronze and silex were found in it.

Dr. Hermann Board, architect, has received the appointment of conservator of the collections and libraries of the Academy of Art in Düsseldorf.

The Exhibition of the Sheffield Society of Architects opened on Wednesday and will close on November 20.

An Excursion of members of the Devon and Exeter Architectural Society is arranged for to-morrow. Dartmouth will be visited, and Mr. Aston Webb, R.A., will show the plans of the new Naval College buildings.

The Secretary of State for India is prepared to receive applications (by letter only) for six appointments of engineers for service in India during a period of five years. Applicants must not be under twenty-three or over twenty-eight years of age on October 1, 1903, and must have passed with credit through a three years' course of training in a recognised engineering college, and must have had at least two years' experience in practical work. Forms of application are furnished by the secretary, Public Department, India Office, London, and should be returned with full particulars to training and practical experience not later than October 1, 1903. Selected candidates only are required to submit certificates of age, character and diplomas or degrees.

Arrangements have been made with the directors of the International Fire Exhibition, Earl's Court, for members of the British Fire Prevention Committee to visit the exhibition, also the historical pageant and modern fire service exhibition known as "Fighting the Flames" on the afternoon and evening of Wednesday, October 7.

Two Brothers, Biscayan painters, who went to Spain in order to paint studies after the monuments have been arrested by the police as spies.

M. Alfred Rebouveau, a well-known Parisian, who recently has bequeathed 100,000 francs in his will to the Académie des Beaux-Arts for the purposes of excavation by the French school at the site of the ancient city of Carthage, has bequeathed 10,000 francs to the Society of Painters and Sculptors, and 10,000 francs for the Orphanage of the Arts.

LIBRARY
OF THE
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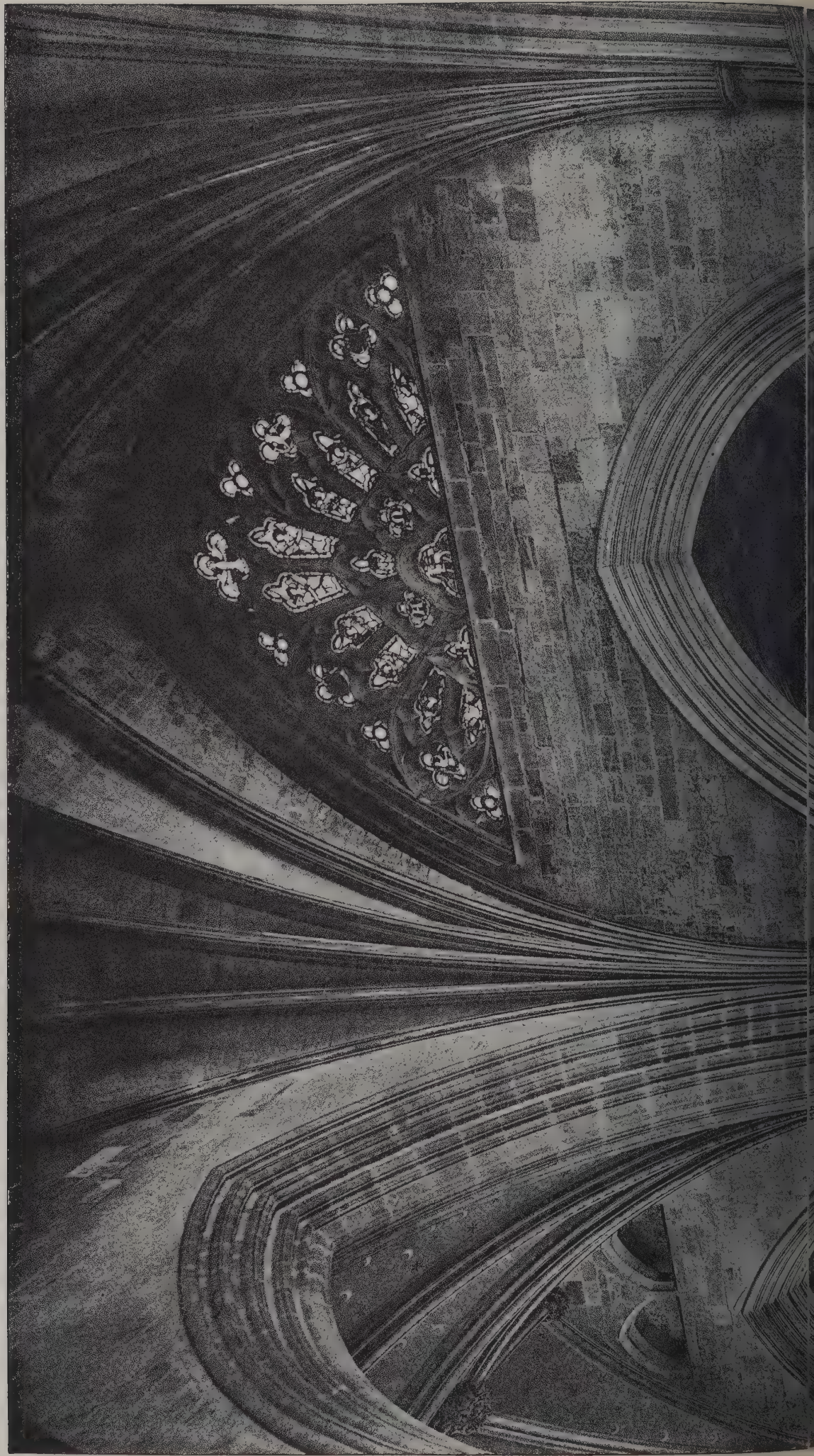


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PROPOSED RESIDENCE, HAMPSHIRE.

SYDNEY PERKS, Architect.

The Architect, Sep 25th 1903.





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CATHEDRAL SERIES, No. 465.—EXETER: WEST END OF LADY CHAPEL.

The Architect, Sep^r 25th 1903.





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RESIDENTIAL FLATS AT TUFNELL PARK.

SYDNEY PERKS, Architect.

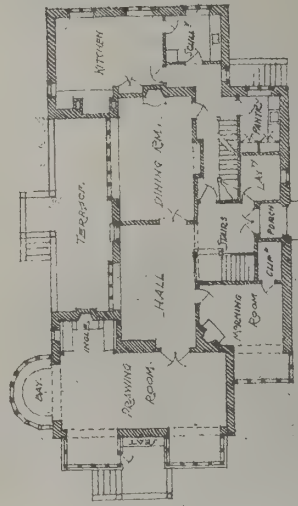
The Architect, Sept 25th 1903.

THE ROYAL VILLA AND GOLF PAVILION AT LE COQ-SUR-MER OSTEND

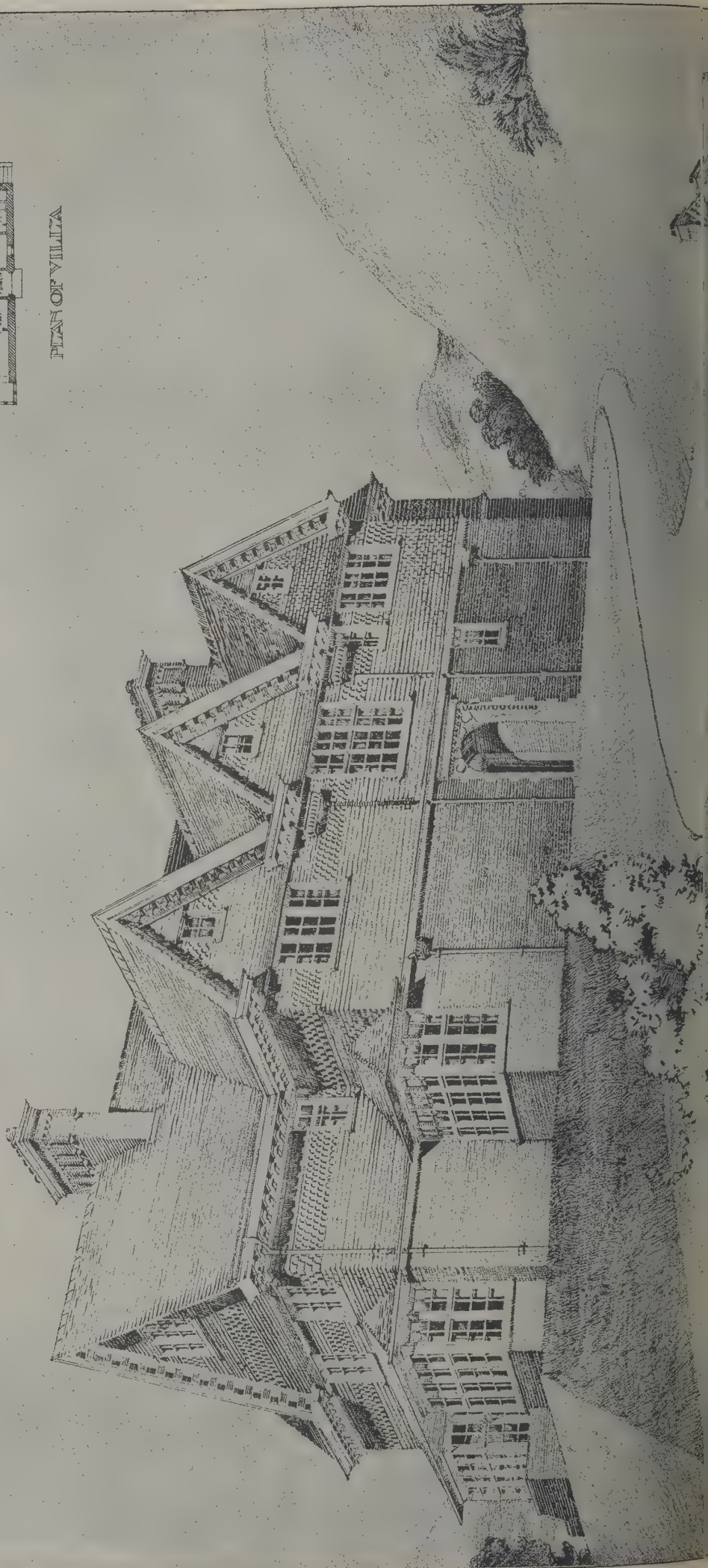
FOR HIS MAJESTY

THE KING OF THE BELGIANS

ARNOULD MITCHELL ARCHT.



PLAN OF VILLA



SEA FRONT
OF VILLA

THE PAVILLION
FROM THE DUNES

THE PAVILLION
FROM THE GOLF COURSE

16 FOG
RETRAIL
1902

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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

authors of signed articles and papers read in public must necessarily be held responsible for their contents.

communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

RIGHTON.—Nov. 9.—Designs are invited for a new school. Premiums of 50l., 30l. and 20l. will be paid to the second and third premiated designs respectively. Particulars up to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. Secy., Brighton and Hove Hospital for Women, 76 West Street, Brighton.

DUBLIN.—Sept. 30.—Designs and specifications wanted for men's cottages, semi-detached or terraces, each cottage to exceed £100. The successful plan to become the property of the company on payment of £20. Mr. Francis B. O'Connell, Great Southern and Western Railway, Kingsbridge Road, Dublin.

FOLKSTONE.—Oct. 7.—For sewage disposal of the village of Folkestone. Report, plan and estimate of probable cost. Premium 30 guineas. Further particulars, Mr. R. Lonergan, Folkestone Place, Folkestone.

CASHEL.—Designs are desired by the subscribers to the Dean Kinane Memorial Fund for an ornamental drinking fountain, to cost about 100l. (with suitable inscription). Plans, &c., will be received by Mr. A. P. Spain, hon. Secy., Town Hall, Cashel.

LONDON.—Oct. 2.—Designs are invited for a public library to be erected in Brunswick Road, Bromley, E. Premium 75l. for design placed first, and one of 25l. for second. Mr. Leonard Potts, town clerk, Council Offices, High Street, Poplar.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for free library, town hall and assembly-room buildings. Premiums of 100l., 50l. and 30l. respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SHEPTON MALLET.—Oct. 15.—For the erection of a hall to be used as drill hall and for musical purposes, cost not to exceed £1,200. Plan of site and copy of conditions on payment of £1 1s., which will be returned, from Mr. H. Charles Budd, 12 Commercial Road, Shepton Mallet.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100l., 50l. and 25l. will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20l., 10l. and 5l. will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

CONTRACTS OPEN.

BIRMINGHAM.—Oct. 5.—For the erection of a police-station in Bloomsbury Street. Mr. John Price, city surveyor, Council House, Birmingham.

BOOTLE.—Sept. 30.—For the extension of present boiler-house at the electric-light station, Pine Grove. Mr. J. Henry Farmer, town clerk, Town Hall, Bootle, Lancs.

BRADFORD.—Oct. 1.—For the erection of office, store, shed, &c., at Gouthwaite Lodge, near Pateley Bridge. Mr. James Watson, Town Hall, Bradford.

BRIDLINGTON.—Oct. 3.—For the erection of a shelter round the bandstand on the Prince's Parade. Mr. E. R. Matthews, borough surveyor, Town Hall, Bridlington.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CLACTON-ON-SEA.—For the erection of detached residence in Clacton-on-Sea. Mr. George Gardiner, architect, 111 Marine Parade, Clacton-on-Sea.

CREWE.—Oct. 3.—For plastering the walls of the mortuary chapels at the Crewe cemetery. Mr. G. Eaton-Shore, borough surveyor, Crewe.

EXETER.—Oct. 2.—For the erection of a pair of cottages at East Woodley farm, Newton St Cyres. Messrs. Ellis, Son & Bowden, surveyors, Bedford Chambers, Exeter.

FULHAM.—Oct. 7.—For the erection of two lodges, with refreshment-rooms, lavatories, &c., attached, situate in the South Park, Fulham. Mr. Francis Wood, engineer, Town Hall, Fulham, S.W.

GOOLE.—Oct. 3.—For the erection of a public library in Carlisle Street, Goole. Mr. H. B. Thorp, architect, Aire Street, Goole.



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GREAT CROSBY.—Oct. 2.—For the erection of a free library in College Road, Great Crosby. Messrs. Anderson & Crawford, architects, 36 Dale Street, Liverpool.

HALIFAX.—For the erection of a pair of semi-detached villas on the Greenroyd estate, Skircoat. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

HALIFAX.—Sept. 29.—For the erection of silversmith's works at Mile Cross, Halifax. Messrs. Walsh & Nicholas, architects, Museum Chambers, Halifax.

HALIFAX.—Oct. 8.—For extensions to the Campbell Gas-Engine Company's works. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

HARRINGTON.—Oct. 6.—For the erection of new vicarage at Harrington. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

HUDDERSFIELD.—Sept. 28.—For the erection of cow-shed and piggeries at Jerusalem, Linthwaite, and additions and alterations to cottages at Winterhill, Linthwaite. Mr. John E. Lunn, architect, Milnsbridge.

HULL.—Oct. 1.—For the erection of the East Riding of Yorkshire Imperial Yeomanry riding school at Hull. Mr. A. Edward Thompson, architect, Manor Street, Hull.

IRELAND.—Sept. 28.—For the construction of a pumping-station, including a dwelling-house and auxiliary works at the west end of the Pigeon House Road, in the city of Dublin. Mr. Spencer Harty, City Hall, Dublin.

IRELAND.—Sept. 29.—For restorations and improvements to 16 South Mall, Cork. Messrs. Robert Walker & Sons, architects, 17 South Mall, Cork.

IRELAND.—Oct. 5.—For the erection of buildings of the Incorporate Belfast Maternity hospital in Townsend Street, Belfast. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

IRELAND.—Oct. 7.—For the erection of sixteen labourers' cottages throughout the rural district, Naas. Mr. D. J. Pursell, clerk, R.D.C., Naas.

IRELAND.—Oct. 10.—For the erection of business premises at Ballinamallard. Mr. T. Elliott, architect, 37 Darling Street, Enniskillen.

IRELAND.—Oct. 13.—For constructing and laying fireproof floors at the new male block (in course of erection) at the asylum, Letterkenny, co. Donegal. Mr. J. P. M'Grath, architect, Commercial Buildings, Foyle Street, Londonderry.

IRELAND.—Oct. 10.—For the erection of seven labourers' cottages at (No. 1) Creevygarra, (2A) Lissowen, (3) Barnamaghery, (5) Ballylucas, (6A) Ballynewport (8) Ballyvaston, and (9A) Lissoid, Downpatrick. Mr. R. L. Morley, clerk, District Council workhouse, Downpatrick.

JOHANNESBURG.—Oct. 19.—For the supply alternative of gas generating plant or steam generating plant, and of gas motors or steam motors, with electric generators and accessories, to the following specifications:—Specification No. 2.—Section A: Gas producer plant, capable of gasifying 7½ tons of Transvaal coal per hour, with coal conveyer, charging and cooling plant and all accessories; sections B, C, D, and E: Four gas-engines, each for driving a 1,350 kw. dynamo (2,000 B. h. p.); one gas-engine for driving a 675 kw. dynamo (1,000 B. h. p.); three gas-engines, each for driving a 675 kw. two-phase alternator (1,000 B. h. p.); two motor generators each consisting of a 250 kw. two-phase alternator and a 150 kw. dynamo; two balancers, each consisting of two 500 kw. dynamos. Specifications, forms of tender, and a plan of the site may be seen on and after September 7. at the office of the Town Clerk, Johannesburg, or at the offices of the Council's consulting engineers, Messrs. Mordey & Dwyer, 82 Victoria Street, Westminster, S.W.

KNARESBOROUGH.—Sept. 30.—For the erection of two dwelling-houses at Scriven, Knareborough. Mr. William Rhodes Nunns, architect, 13 Market Street, Bingley.

LEEDS.—For the erection of Wesleyan Sunday school infants' room and classroom in Cardigan Lane, Leeds. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

LONDON.—Sept. 29.—For the erection of a new school office at Ealing Dean, W. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

LONDON.—Sept. 29.—For alterations and addition to Ealing Telephone Exchange. Mr. J. Wager, H.M. Office of Works, Storey's Gate, S.W.

LONDON.—Sept. 30.—For the erection of tenement stabling, sheds, workshops, &c., at the new dépôt and stable yard at Lympington Road, Finchley Road, Hampstead. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

LONDON.—Oct. 6.—For the construction of an underground convenience at the southern end of St Martin's-le-Grand. The Town Clerk, Public Health Department, Guildhall.

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LONDON.—Oct. 6—For the repairing and repainting of Ley Mills pumping station, Abbey Lane, Stratford. Particulars at the Engineer's Department, L.C.C., County Hall, Long Gardens, S.W.

LONDON.—Oct. 6—For the construction of an underground convenience in Falcon Square. Town Clerk, Public Health Department, Guildhall, E.C.

MARGATE.—Oct. 12—For construction of a toeing wall at base of a cliff at Newgate Gapway, Margate. Mr. Edward Burke, town clerk, 18 Cecil Square, Margate.

NELSON.—Sept. 28.—For the erection of a clock tower on market hall. Mr. J. H. Baldwick, town clerk, Nelson, N.S.

NORTH SHIELDS.—Sept. 29.—For the erection of shops and offices in Savile Street, North Shields. Mr. John F. Heale, borough surveyor, Tynemouth.

PADIHAM.—Oct. 12.—For widening Padiham, Lancs., and red bridge on both sides in two skew brick arches, the piers, pier, wing, retaining and parapet walls being in brick. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgemaster's Office, Preston.

PICKERING.—Oct. 5—For the erection of grammar school building, Yorks. Mr. J. D. Whitehead, clerk to the Mayor, Pickering.

PONTEFRAC.—Oct. 10—For the erection of a free library building, Pontefract. Messrs. Garside & Pennington, Pontefract.

PONTYPOOL.—Sept. 30.—For rebuilding the White Hart at George Street, Pontypool. Messrs. Fisher & Sons, Pontypool.

PONTYPOOL.—For the erection of Presbyterian hall at Pontypool. Messrs. Habershon, Fawckner & Co., architects, High Street, Newport.

PORTSMOUTH.—Oct. 23—For the erection of a school of departments (boys, girls and infants) in place of the old Milton school building (mixed and infants). Messrs. J. Cogswell, architects, Prudential Buildings, Landport.

PRINCES RISEBOROUGH.—Sept. 30—For the erection of a chapel and schoolroom at Longwick, near Princes Risborough. Mr. Fred Taylor, architect, Temple Street, Princes Risborough.

SALFORD.—Oct. 5—For the erection of a brick boundary wall at Wallness electricity station, Frederick Road. Particulars may be obtained from the Borough Engineer, Town Hall, Salford.

SCOTLAND.—Oct. 2.—For the enlargement of Ballingry school, consisting of central hall to accommodate 860 pupils, seven classrooms to accommodate 420 pupils, retiring-rooms, cloak-rooms, latrines, playsheds, drainage, septic tanks, boundary walls, railings and making of playgrounds, and alterations to the present buildings, consisting of new cloak-rooms, lighting, heating and ventilation. Mr. William Birrell, architect, 205 High Street, Kirkcaldy.

SCOTLAND.—Oct. 5—For the erection of a block of shops and houses in Portsoy. Mr. R. D. Pratt, architect, Town and County Bank Buildings, Elgin.

SCILLY ISLES.—Oct. 2.—For the erection of coastguard buildings at Telegraph, St. Mary's, Isles of Scilly, consisting of houses for four men, officer's room, telescope houses, &c. Copies of the drawings and specification can be seen at the Director of Works Department, Admiralty.

SHOREDITCH.—Oct. 6.—For pulling-down and rebuilding 5 Hoxton Square, N., to be used as stores for the electricity department. Mr. H. Mansfield Robinson, town clerk, Town Hall, Old Street, E.C.

SOUTH KIRKBY.—Oct. 7.—For the erection of a caretaker's lodge at the smallpox hospital, near Kirkby Quarry, South Kirkby, Yorks. Mr. Richardson, architect, Hemsworth.

SOUTHWOLD.—For the erection of shop and residence High Street, Southwold. Mr. Arthur Pells, architect, Beccles.

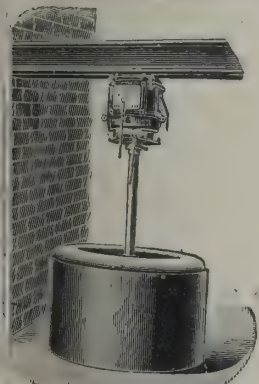
STOCKTON-ON-TEES.—Sept. 28—For the erection of a corrugated iron cow-byre. Mr. Arthur B. Crosby, town clerk, Borough Hall.

SWADLINCOTE.—Oct. 3.—For the erection of a fire-station, dwelling-house, stabling, shedding, &c., in the Darklands Road, Swadlincote. Mr. Thomas Kidd, surveyor, Swadlincote.

WALES.—Sept. 28.—For alterations and additions to the Maesycwmmer Board school, Mon. Mr. J. H. Phillips, architect, Clive Chambers, Windsor Place, Cardiff.

WALES.—For the erection of ten or more houses at Tredegar, Mon. Mr. W. S. Williams, architect, Tredegar.

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WALES.—Sept. 28.—For the erection of ten houses at Fochriw. Mr. Wm. Walters, 5 Dynevor Street, Fochriw.

WALES.—Sept. 28.—For the erection of seventeen houses at Gilfach Bargoed. Mr. Wm. Harris, architect, Gilfach, Pengam.

WALES.—Sept. 29.—For rebuilding Wesleyan Methodist chapel, Landore, Swansea. Mr. W. Beddoe Rees, architect, 37 St. Mary Street, Cardiff.

WALES.—Sept. 30.—For the erection of thirty-five houses on the Cefn Bach estate, Deri, Cardiff. Mr. James Ward, Cascade House, Deri, Cardiff.

WALES.—Sept. 30.—For the erection of a Baptist chapel and schoolroom at Senghenydd. Mr. T. Nicholas, Station House, Senghenydd.

WALES.—Oct. 1.—For the erection of a house in Longacre Road, Carmarthen. Messrs. George Morgan & Son, architects, King Street, Carmarthen.

WALES.—Oct. 2.—For the erection of a central public library, Holton Road, Barry. Messrs. Hutchinson & Payne, architects, 11 John Street, Bedford Row, W.C.

WALES.—Oct. 3.—For erection of three dwelling-houses in Risca, Mon. Mr. Ernest N. Johnson, architect, Risca, Mon.

WALES.—Oct. 5.—For the erection of a mixed Board school to accommodate 270 scholars at the Varteg, near Pontypool. Messrs. Lansdowne & Griggs, architects, Newport, Mon.

WALES.—Oct. 6.—For the erection of a cottage at Legacy, near Ruabon, North Wales, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

WALES.—Oct. 6.—For the erection of a cottage at Raglan Road level crossing, near Llandenny station, Mon, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

WALES.—Oct. 3.—For the erection of a public hall at Cross Hands, Llanelli. Mr. David Jenkins, architect, Llandilo.

WALTON CREEK.—Oct. 9.—For the erection of a coast-guard station, consisting of five houses, watch-room, store-room, &c., at Walton Creek, Essex. Quantities can be obtained on application to the Director of Works Department, Admiralty.

WALTHAMSTOW.—Sept. 29.—For the erection of crated iron sheds. Mr. G. H. Holmes, engineer, Town Hall, Walthamstow.

WEST HARTLEPOOL.—Sept. 30.—For the erection of Primitive Methodist church, Grange Road, West Hartlepool. Mr. Harry Barnes, architect, Bank Chambers, Scarborough Street.

WHITEHAVEN.—Sept. 29.—For the erection of six houses at Wellington Row, Whitehaven. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

WITHYCOMBE RALEIGH.—Oct. 1.—For the erection of stables, drainage and other work at St. John's, Withycombe Raleigh. Messrs. E. H. Harbottle & Son, architects, Church Chambers, Exeter.

LIVERPOOL TO LLANDUDNO.

ACCORDING to the *Liverpool Courier*, it is proposed to construct a light railway from the railway terminus at West in across the Dee to Rhyl, Colwyn and Llandudno, bringing the latter resort within an easy hour's journey of Liverpool and thus reducing the distance from a chronological point of view by more than one-half. The proposal will involve the construction of a span bridge over the Dee between five and six miles in length, and the intention is to carry it straight from the Cheshire side over the Tanskey Rocks or Little Barningham, joining Flintshire between Mostyn and the Point of Amlwch at the South Sluice. The route will then proceed along the side of the road through the centres named, and the locomotion will be by electricity throughout.

The project is by no means in the inception stage. The engineering side of the undertaking is one of no ordinary responsibility or difficulty, but it has been entrusted to C. H. Davison, of London, who has recently been out to Africa to report on engineering matters for the Government. The scheme will, of course, involve a large expenditure, and it is understood that so far as the money is concerned a well-known London financial house has taken the proposal up. The matter of the bridge construction across the Dee, and the Liverpool firm of engineers will probably be asked to make arrangements, and it is to be hoped that powers will be obtained by Parliamentary Bill possibly in the ensuing session.

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J. W. Sutcliffe, Bacup, carpentry and joinery.
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J. Rushton & Sons, Bacup, slating.
Fielding Bros, Bacup, plastering.
W. J. Jackson, Bacup, painting.
F. S. Ross, Rochdale, dado tiling.
Roger L. Lowe, Ltd., Farnworth, wood-block flooring.
Wm. Shepherd, Rochdale, asphaltting.
J. Bedford & Co., Halifax, ventilating.
Isaac Butterworth, Rochdale, heating.
Brookes & Co., Ltd., Manchester, cloak-room fittings.
Hy. Whiteley, Rishworth, movable partition.
Robert Clegg, Bacup, plumbing.
Total £4,515 16s. 7d.

BERMONDSEY.

the construction of offices, &c., at the town hall, Spa Road.
Mr. R. J. ANGEL, borough surveyor.

Alterations in basement.

Holliday & Greenwood, Ltd.	£2,248	0	0
White & Co.	2,169	0	0
Thomas & Edge	2,150	0	0
Smith & Sons	2,109	0	0
C. Chalkley	2,025	0	0
E. Nightingale	1,997	0	0
Chessum & Sons	1,996	0	0
Killby & Gayford	1,950	0	0
T. D. Leng	1,912	0	0
H. Knight & Son	1,893	0	0
Ferguson & Co.	1,880	0	0
E. Moss & Co.	1,864	0	0
G. Parker	1,850	0	0
A. Lowe, Lower Camden, Chislehurst (accepted)	1,799	0	0

BERMONDSEY—continued.

Alterations to boundary wall and formation of new side entrance.

Holliday & Greenwood	£239	0	0
J. C. Chalkley	239	0	0
J. Smith & Sons	235	0	0
Killby & Gayford	230	0	0
B. E. Nightingale	225	0	0
R. A. LOWE (accepted)	220	15	0
J. Ferguson & Co.	220	0	0
J. Chessum & Sons	218	0	0
G. Parker	209	0	0
Thomas & Edge	200	0	0
T. D. Leng	197	0	0
A. White & Co.	190	0	0
H. Knight & Son	186	0	0
S. E. Moss & Co.	181	10	0

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Hughes & Stirling	£6,850	0	0
J. Chessum & Sons	6,457	17	2
Todd & Newman	6,490	0	0
R. A. Lowe	6,490	0	0
J. Ferguson & Co.	6,399	0	0
H. Knight & Son	6,266	0	0
B. E. Nightingale	6,258	0	0
Killby & Gayford	6,230	0	0
G. Parker	6,230	0	0
J. Smith & Son.	6,137	0	0
T. D. Leng	6,132	0	0
S. E. Moss & Co.	6,050	0	0
Thomas & Edge	6,199	0	0
A. WHITE & CO. (accepted)	5,646	0	0

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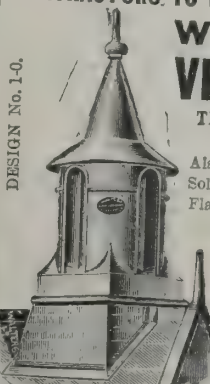
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Hughes & Stirling	£1,350	10	0
J. Chessum & Sons	1,329	2	10
Todd & Newman	1,279	0	0
H. Knight & Son	1,268	0	0
J. Ferguson & Co.	1,263	0	0
Killby & Gayford	1,245	0	0
B. E. Nightingale	1,192	0	0
S. E. Moss & Co.	1,190	0	0
R. A. Lowe	1,189	0	0
T. D. Leng	1,173	0	0
J. Smith & Son	1,165	0	0
A. WHITE & CO. (accepted)	1,156	0	0
G. Parker	1,150	0	0
Thomas & Edge	837	0	0

Special estimate in connection with engineering section, and forming part of engineering contract.

Hughes & Stirling	1,955	0	0
J. Ferguson & Co.	1,819	0	0
H. Knight & Son	1,809	0	0
S. E. Moss & Co.	1,805	0	0
J. Chessum & Sons	1,785	0	0
Todd & Newman	1,734	0	0
R. A. Lowe	1,700	10	0
Killby & Gayford	1,686	0	0
Thomas & Edge	1,660	0	0
J. Smith & Son	1,635	0	0
B. E. Nightingale	1,621	0	0
G. Parker	1,620	0	0
T. D. Leng	1,584	0	0
A. WHITE & CO. (accepted)	1,561	0	0

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W. & J. Webb	2,220	2
G. Webb	2,215	2
W. Bishop	1,997	2
W. Hopkins	1,995	2

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J. Branton	20,474 18
R. C. Brebner & Co.	20,229 5
Currall, Lewis & Martin	19,195 3
Acme Wood Flooring Co., Ltd.	18,953 6
W. Griffiths & Co., Ltd.	18,245 17
E. Taylor	18,295 18
G. Freeman & Sons	18,205 9
A. Faulkes	17,622 14
W. G. White & Co.	17,594 11
R. W. BLACKWELL & CO., London (accepted)	16,892 11
G. Law & Co., Kidderminster (disqualified)	15,940 4

BOURNEMOUTH.

For street works in King's Road and Gerald Road. Mr. F. LACEY, borough surveyor.

W. P. Saunders	£418 0 0
H. C. Brixey	394 2 7
GROUNDS & NEWTON, Bournemouth (accepted)	387 15 5

For street works in Belvedere Road and Heron Court Road. Mr. F. W. LACEY, borough surveyor.

W. P. Saunders	£487 0 0
H. C. Brixey	364 5 3
GROUNDS & NEWTON, Bournemouth (accepted)	351 5 0

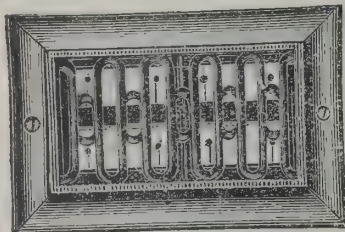
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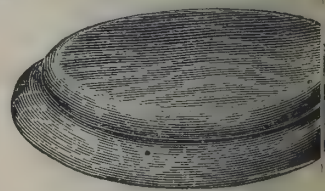
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INEXPENSIVE

BOURNEMOUTH—continued.

paying work in Wimborne and other roads. Mr. F. W. LACEY, borough surveyor. Grounds & Newton (accepted on schedule of prices).

BRADFORD.

the erection of the industrial hall of the Cartwright Memorial Exhibition, Bradford (1904). Messrs LEDINGHAM & EDWARDS, architects, District Bank Chambers, Bradford.

Accepted tenders.

Moulson & Son, Ltd., Bradford, excavator, drainer, bricklayer, carpenter and joiner.

Atkinson & Smith, Bradford, plumber and glazier.

W. H. Horne, Ltd, Bradford, plasterer.

BURSLEM.

street work in Pack Horse Lane.

DSON & BUCK (accepted) . . . £116 18 3

BUXTON.

re construction of the new Stanley Moor reservoir.

HER & LE FANU, Belfast (accepted) . £101,590 0 0

CANNOCK.

re erection of an iron and wood infectious disease isolation hospital, comprising administration and mortuary blocks and wards to accommodate sixteen patients. Mr. HERBERT I. WHITEHEAD, surveyor, Penkridge, near Stafford.

Arch & Son . . . £1,175 0 0

able Building Co. . . . 1,150 0 0

L. Tildesley 1,051 0 0

rs & Co. 1,015 0 0

mpheys, Ltd. 977 0 0

lley & Son 955 0 0

. Walker 948 15 0

awkins & Co. 945 0 0

Harbrow 943 0 0

les 907 0 0

& J. Keay 879 0 0

ter & Paul. 872 10 0

cManus 870 0 0

mith & Co. 863 0 0

gen & Co. 844 0 0

SON & HARRISON, Denmark Road, S.E. (accepted) 848 0 0

Foundations and drainags.

. Williams 215 5 0

CHEPPING WYCOMBE.

For the erection of a town hall in Queen Victoria Road. Messrs BATEMAN & HALE, architects, Birmingham.

J. Smith & Son £12,197 0 0

Barnsley 12,169 0 0

Sapcote 12,043 0 0

Rowbotham 12,000 0 0

Rudd 11,834 3 7

Stephens & Bastow 11,689 0 0

Collins & Godfrey 11,586 0 0

Halliday 11,545 0 0

Webster & Cannon 11,388 0 0

Groves & Sons 11,280 0 0

W. Lee & Son 11,273 0 0

Lovatt 11,190 0 0

Darlington 11,180 0 0

Parnell 11,177 11 0

Lovell 11,127 0 0

W. H. Gaze & Sons 10,971 0 0

H. Flint 10,787 0 0

G. H. Gibson 10,738 0 0

G. H. Hunt & Son 13,373 0 0

For street sewerage works. Mr. E. J. RUSHBROOKE, borough surveyor.

Abercrombie Avenue

G. H. Gibson £680 0 0

LEE & SON, High Wycombe (accepted) . . . 649 0 0

Free & Co. (withdrawn) 585 0 0

Dashwood Avenue.

G. H. Gibson 445 0 0

Lee & Son 412 0 0

Free & Co. 385 0 0

J SMITH, High Wycombe (accepted) . . . 353 18 0

Oakridge Road Sewer Extension.

G. H. Gibson 845 0 0

LEE & SON (accepted) 821 0 0

Free & Co (withdrawn) 705 0 0

Stabling.

Lee & Son 254 0 0

J T. Harris 249 0 0

J. Bond 237 0 0

G. H. GIBSON (accepted) 234 0 0

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CARLTON.

For sewerage works in Cemetery Road, Carlton, Notts. Mr. R. WHITBREAD, surveyor, Station Road, Carlton.

Bradley	£99 19 0
T. H. Harper	85 0 0
Belshaw	79 0 0
COPE & RAYNOR, West Bridgford, Nottingham (accepted)	67 12 5

CHELTENHAM.

For laying a 12-inch pumping main from Tewkesbury to Cheltenham, a distance of about 8½ miles, including crossing the river Avon. Mr. J. S. PICKERING, water engineer.

G. Holloway	£5,914 0 0
Cruwys & Hobrough	5,287 11 4
B. Firth & Co.	4,821 3 7
J. W. Dean & Co.	4,522 19 11
M. Williams & Co.	4,423 9 7
Ross & Crabtree	4,282 12 0
J. RILEY, Cheltenham (accepted)	4,144 11 11

CROYDON.

For alterations and additions to the Whitehorse Road schools. Mr. ROBERT RIDGE, architect.

J. Smith & Sons	£3,947 0 0
Funnell & Co.	3,942 15 0
W. Smith & Sons	3,890 0 0
BULLED & CO. (accepted)	3,625 0 0

DURSLEY.

For sewerage works for Dursley and Cam, Glos.

W. A. Green	£19,973 0 0
J. Byard & Son	17,520 0 0
W. & J. Bennett	15,744 0 0
A. King & Sons	15,288 0 0
S. Wood	14,901 7 7
J. E. B. James	14,225 15 0
E. H. Page	13,343 0 3
J. H. Macdonald	12,928 7 2
T. Free & Co.	12,441 0 0
G. Rutter	12,662 16 8
J. RILEY, Cheltenham (accepted)	13,413 19 11

CUDWORTH.

For sewerage works. Messrs. FAIRBANK & SON, engineers, Lendal Chambers, York.

T. E. Sugden	£6,900 0 0
C. B. Newton	6,751 0 0
Parker & Sharpe	6,232 0 0
Parkin & Co.	5,989 0 0
F. J. Salmon & Co	5,550 0 0
W. Brigg	5,536 1 0
Jones Bros.	5,406 1 0
G. & T. Wilson	5,095 0 0
Morley & Sons	4,991 0 0
G. Mellor	4,898 1 0
M. ARUNDEL, East Ardsley, Wakefield (accepted)	4,770 1 0
A. & C. Harris	4,730 0 0
A. Dickinson	4,675 0 0

IRELAND.

For construction of a new graving-dock within three years. Belfast.

MIDDLETON, SCOTT & CO., London (accepted) £206,000

For the erection of eight cottages, Limavady, viz. two in the townland of Ballyleighry, two in the townland of Canisclare, four in the townland of Crindale.

Accepted tenders.

McCann & Gillespie, Limavady, four cottages, £132 5s. each.

R. S. Hull, Limavady, two cottages, £149 1s. each.

For sewerage works at the meeting-house, Killough, Downpatrick.

J. NORWOOD, Downpatrick (accepted) £48 1 0

For sanitary improvements at Clane dispensary residence. Naas.

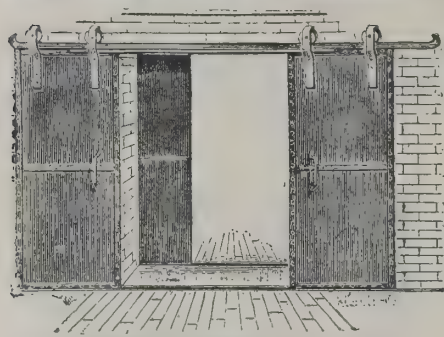
P. BLAKE, 203 Great Brunswick Street, Dublin (accepted) £89

For sewerage works in Church Street, Portaferry.

J. Dorrian £14

Note.—Only tender.

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National Telephone, No. 17 Swadlow.

IRELAND—continued.
laying a main sewer in Gratton Street, Ballymote, Sligo.
Dawson £78 0 0
Frazer 74 13 0
ANDERSON, Ross, Riverstown, co. Sligo (accepted) 64 0 0

JARROW.
repairing, glazing and keeping up the whole of the public lamps within the borough; also for making and fixing lamp-chairs, new copper lamps as per specifications and for fixing lamp pillars for one year.
W. RICHARDSON, Albert Road, for one year (accepted).
Note.—South Shields Gas Co. would only tender for five

LEATHERHEAD.
the construction of 825 yards of 9-inch and 375 yards of 6-inch stoneware pipe sewers, with the necessary manholes and branch drains.
in
Mpey & Co. £1,147 17 6
ston 1,075 0 0
vanagh & Co. 983 12 5
s 953 14 4
kson 926 0 0
teringham 903 3 0
e & Sons 892 0 0
ley 886 19 6
Seter & Todhunter 885 0 0
nton 845 0 0
y (accepted) 826 0 0
ies, Ball & Co. 774 8 3
iker 750 0 0
741 0 0

LONDON.
re construction of a retaining wall on land abutting on Shorth Road and the erection on the wall of railings.
Mr. E. B. B. NEWTON, borough surveyor.
Accepted tenders.
E. Nightingale, Albert Embankment, S.E.,
all £340 0 0
ould & Co., Workington, railings 46 15 0

NEW SHILDON.
For street works in Back Simpson and Adelaide Street, and Back Adamson and Bouch Street, New Shildon, Durham.
Mr. CHARLES HESLOP, surveyor, Shildon.
J. Spark £405 18 0
W. Burdon 398 6 0
T. G. HENDERSON, New Shildon (accepted) 395 9 0
A. Metcalfe (for one street only) 307 10 0

OLDBURY.
For sewerage works for the drainage of Warley. Mr. J. T. EAYRS, engineer, 39 Corporation Street, Birmingham.
Johnson & Langley £7,074 17 7
E. BOORE, Smethwick (accepted) 7,051 2 7

PADDINGTON.
For the erection of a room at the public baths, Queen's Road.
Mr. E. B. B. NEWTON, borough surveyor.
GENERAL BUILDERS, LTD., Progress Works,
Wharf Road, Notting Hill (accepted) £287 0 0

PORTSMOUTH.
For repairs to two of the pumps at the sewage pumping station.
G. Napier & Sons £655 0 0
H. W. Jewell & Co. 363 0 0
J. Shervell, Ltd. 234 0 0
McKinlay & Co. 228 0 0
H. & W. DAVIS & SONS, Landport (accepted) 219 0 0

RYTON-ON-TYNE.
For sewerage works at Crawcrook. Mr. J. P. DALTON, surveyor.
J. W. Turner & Co. £113 16 0
M. H. Nicholson 97 4 9
W. Cumming 95 16 0
T. Brown 89 7 3
W. Craig 83 9 3
J. Robson 78 2 6
J. McLaren & Son 74 0 3
A. TENCH, Blaydon-on-Tyne (accepted) 73 4 8

SCOTLAND.
For repairs, &c., to retort-house chimney at Inchgreen gas-works, Greenock.
D. McERYDE, Port Glasgow (accepted) £46 16 0

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SCOTLAND—continued.

For the construction of the Glenburn culvert, Greenock, for the Corporation. Mr. A. J. TURNBULL, burgh surveyor.

W. H. Kirkwood	£173	5	10
R. Aitkenhead & Sons	168	7	6
J. S. Steel	157	3	9
J. & R. Kirk	155	11	1
J. Hutchison	144	3	5
D. K. MCPHERSON, Greenock (accepted)	141	7	10

For the erection of sanitary conveniences at Seabraes recreation-ground, Dundee. Mr. WM. MACKISON, architect, 91 Commercial Street, Dundee.

Accepted tenders.

G. H. Nicoll & Co., plasterer	£192	14	9
R. Sheach, mason	181	6	0
T. M. Dewar, plumber	156	14	0
Beath & Keay, ironfounder	126	7	6
W. Philip	68	13	10
G. A. Greig	4	10	0

STAMFORD.

For street works on the Northfields estate. Mr. T. W. A. HAYWARD, borough surveyor.

A. Jewell	£1,565	0	0
Bentley & Loch	1,504	15	10
J. Woolston	1,397	0	0
J. C. Trueman	1,239	0	0

TOTNES.

For filling and raising a road for a distance of about 150 feet in length in Compton Village, Marldon, Devon. Mr. S. S. RENDEL, surveyor, Hillside, Marldon Road, Paignton.

P. Collings	£28	0	0
N. BEABLE, Marldon, Paignton (accepted)	19	17	6

WALES.

For the erection of a branch post office at Barry Dock, Cardiff.

Portland stone.

Lattey & Co., Ltd.	£6,250	0	0
H. S. Rendell	6,190	10	6
Lloyd & Tape	6,150	10	0
J. Prout	6,037	18	6
W. Williams	5,418	0	0

WALES—continued.*Quarzfella stone.*

Lattey & Co., Ltd.	£6,310
H. S. Rendell	6,275
Lloyd & Tape	6,270
J. Prout	6,105
W. Williams	5,348

WELLINGBOROUGH.

For the erection of two cottages on the sewage farm, Irlborough Grange. Mr. J. E. H. DE KEY, surveyor, Road, Wellingborough.

T. H. Dorman	£486
Harris Bros.	486
R. Marriott	474
J. H. Smith	463
F. Henson	460
W. Berrill	449
Harrison & Winsor	440
Berrill & Green	420
WOODLAND & MORTLOCK, Elsdon Road (accepted)	384

WEM.

For the erection of a market house, assembly hall, &c., Salop Mr. JAMES BROWN, architect, 12 Castle Street, Shrewsbury.

G. Edge	£4,670
E. Whittingham	4,450
G. Dodd	3,902
T. Jervis	3,875
Toomey & Co.	3,862
J. Hayes	3,800
G. H. Bickerton	3,775
H. Price	3,765
R. Price & Sons	3,700
T. Pace	3,667
J. Gethin & Co.	3,647
E. H. Nicholas	3,632
Treasure & Son	3,619
G. Bullock	3,470
T. Huxley	3,400
T. Morris & Sons	3,343
G. PHILLIPS, High Street, Wem (accepted)	3,330

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WALSALL.
laying a 12-inch stoneware pipe sewer for a distance of about 440 yards in Green Lane from Bloxwich Road to Leamore Lane.
HOLLOWAY, Bilston Road, Wolverhampton
(accepted) £290 0 0

WORSBROUGH.
the laying of a main sewer from West Street corner to Hollin Well, Worsbrough Dale, Yorks. Mr. J. WHITAKER, surveyor.
irrows & Son £179 0 0
rter & Sons 110 0 0
RUCKLEDGE, Silver Street, Barnsley (accepted) 86 14 9

WREXHAM.
the erection of bath-rooms at Wrexham joint fever hospital. Mr. G. MORISON, architect, King Street, Wrexham
H Wycherley £550 0 0
A. Jones 491 7 9
ewis Bros. 450 4 0
AVIES BROS., Hill Street, Wrexham (accepted) 445 0 0

TRADE NOTES.
India Office have decided to strip the present puttying off the large iron roof over the inner courtyard at the India Office and replace same with Helliwell's & Co.'s, Ltd., "Perfection" system of glazing without putty, are carrying out the work at the present time.
WITH characteristic thoroughness and determination to give realism, the Drury Lane management have spared no pains to insure that the incidents of the new autumn production, "The Flood Tide," shall take place in attractive and appropriate surroundings. The saloon deck of the home-going steamer has been made tasteful in satinwood and comfortable with richly tapestried couches; the Hôtel Métropole at Brighton is luxurious in Indian red plush with quaint smoking tables; the house in Mayfair is in old oak with handsome draperies and decorative details in Benares ware, and the room in The Angler's Rest is snug in old red oak—all of which were supplied by Messrs Oetzmann & Co., of Hampstead Road, W.

ILLUSTRATIONS.
THE ROYAL VILLA AND GOLF PAVILION AT LE COQ-SUR-MER, OETEND.
RESIDENTIAL FLATS, TUFNELL PARK.
HOUSE AT WIMBLEDON.
PROPOSED RESIDENCE, HAMPSHIRE.
CATHEDRAL SERIES.—EXETER: WEST END OF LADY CHAPEL.

THE importance of a good and entirely reliable saw guard is too obvious for special remark to be necessary. Statistics prove that the rate of accidents with circular saws has much decreased during the last four years, and persons formerly very prejudiced against saw guards now freely admit that saws are best guarded, and those who have adopted "best" guards have saved the few shillings difference in price scores of times over in extra convenience and efficiency, apart from the saving of lives and limbs made more certain by really efficient guards. The highest-class design, workmanship and materials are put into the new patent "Ideal" saw guards manufactured by Messrs. M. Glover & Co., of Leeds. It is claimed that these guards give greater protection than any other guard for the following amongst other solid reasons:—1. By means of the special construction the sliding hood protects the front of the saw as far down as the wood being sawn will allow, thus saving hands and fingers which slip when pushing the wood. 2. The sliding hood protects the sides of the teeth of the saw as well as the tops. 3. The angle section of the hood makes it very rigid every way. 4. There is nothing liable to shake off or be affected by the constant vibration, which are points of positive danger in some other guards. 5. This patent guard possesses mechanical and accurate means whereby smaller or larger saws can be perfectly protected in less time than the saws themselves can be changed; hence the danger of a badly-fitting guard is obviated.

ELECTRIC NOTES.
THE contract for electric-light and power wiring at Queen Anne's Chambers, Westminster, has been placed with the British Electric and Telephone Company. These buildings which, when completed, will be one of the largest blocks of offices in the world, occupy the greater portion of the site

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LONDON, W.

bounded by Broadway, Tothill Street, New Tothill Street and Dacre Street, Westminster. The electric passenger elevators are being erected by Messrs. Waygood & Otis. This work is being carried out to the specification, and under the direction of Mr. B. H. Rolfe, M.A., consulting engineer to Messrs. Rolfe & Matthews, of 3 Adelaide Street, W.C.

A PARTY of members of the Civil and Mechanical Engineers' Society visited the Council's temporary generating station at Loughborough Junction on Saturday afternoon, and inspected with interest the up-to-date machinery there laid down. The station supplies about nineteen miles of tramways with electric power, the current, generated at a voltage of 625, being taken by feeders to three substations at Clapham, Brixton and the Elephant and Castle, where it is connected with the line. A switchboard, whereby the power can be cut off from any of the substations, meters showing the consumption at each, and cranes capable of lifting twenty-five tons each were among the apparatus which attracted attention. Mr. Miller and Mr. Sonnenein, of Dr. Kennedy's staff, and Mr. McCartie, of Messrs. Ferranti (Ltd.), were in attendance, and rendered all the assistance in their power to the visitors.

VARIETIES.

WE regret to announce the death of Mr. George Alexander Dick, chairman and managing director of the Delta Metal Company, Ltd.

THE Jubilee Primitive Methodist chapel at Burnley is practically completed. The new buildings, for they comprise chapel and school premises, will cost 4,500*l.*, but eventually the school is to be enlarged, and a manse and a caretaker's house erected at an additional cost of something like 2,000*l.*

THE next examination for certificates of qualification for appointment of sanitary inspector or inspector of nuisances under section 108.(2)(d) of the Public Health (London) Act, 1891, will be held in London on Tuesday, January 19, 1904, and the four following days. Particulars will be forwarded on application to the honorary secretary, Wm. R. E. Coles, 1 Adelaide Buildings, London Bridge, London, E.C.

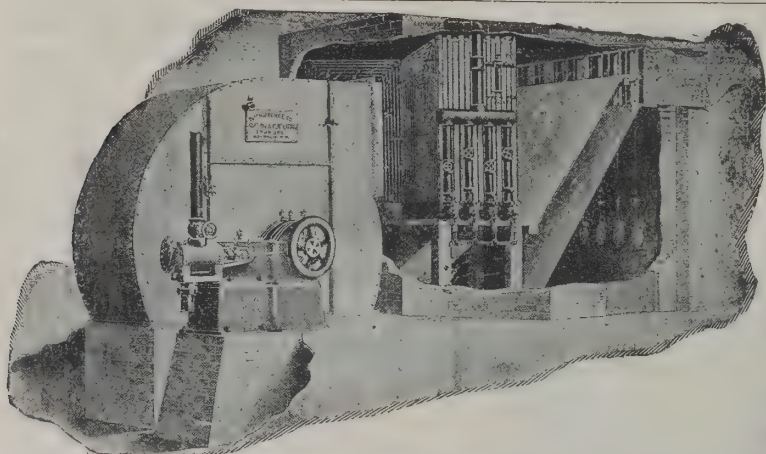
THE inauguration took place on Wednesday of a new school which has been built in connection with the circuit work of George Primitive Methodist chapel, Chester, in Hamilton Street, Hoole. The new buildings comprise a large classroom, seven smaller classrooms and minister's vestry. These form

but the initial part of a more ambitious scheme, which embraced the erection of a new chapel on an adjoining site. The project now opened cost 1,750*l.*, but the total expense when the work is completed will be about 4,000*l.*

IN a small Russian village where a post-office had just been erected it was felt that a lightning-conductor would be a useful addition, and accordingly a request that one be provided was forwarded to the departmental headquarters. There was a long interval of waiting, during which the letter went the rounds of the various departments, and finally a notice was sent to the village postmaster asking him to state, with regard to the request for a lightning-conductor, how often lightning had done any damage in the neighbourhood during the preceding five years, and furthermore how close and how often in the vicinity of the post office.

CONSIDERABLE wilful damage has recently been done to the ancient parish church of Hillesden, Bucks. A portion of the masonry has been deliberately knocked off a buttress by the side of the tower, leaving an unsightly projection, while on the south doorway a chisel has been used to disfigure the inserted sun-dial. The most serious damage, however, has been done to a delicately-wrought niche at the principal entrance, of which a large piece has been broken off. Missing pieces have been found lying in the hedge surrounding the church. Steps are being taken to discover the perpetrators of the mischief.

THE opening lecture of the senior architecture class in Glasgow and West of Scotland Technical College was delivered on Tuesday evening by Professor Gourlay, the subject being "The Christian Churches of Athens." The lecturer began by referring to the way in which the Parthenon and other temples were altered to serve as Christian churches. He divided the churches erected by the Christians into Byzantine style into three distinct types—(1) Those possessing a large central dome, as may be seen in the church of St. Nicodemus; (2) those having a small dome at the crossing of the four arms of the Greek cross, as in the Cathedral or Metropolis; and (3) those with the basilica or western type of plan, as in St. Mary's of the Great Monastery. The names of the various parts of a Greek church with their uses to which they were put were explained. Finally the methods of building used in the churches of Athens, with the architectural results obtained, were studied. The lecture was illustrated by means of photos collected and by sketches drawn by the lecturer while on a recent visit to Athens.



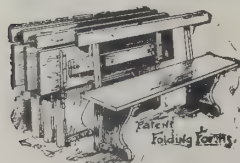
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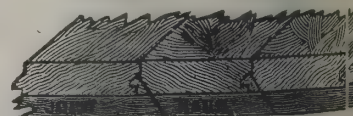
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BUILDING AND BUILDERS.

A reference to the proposed new technical school for Liverpool, which is to be erected on the Raikes Hall estate, and has been paid for, competitive designs have been submitted and the prize awarded.

THE foundation-stone has been laid of the new chancel which is being built in connection with the old parish church of Westerton. The new chancel will extend 14 feet eastwards from the present one, and will be extended westwards up to the old chancel. The alterations also include the refurnishing of the chancel with oak screens and stalls. The cost will be £1,000.

THE work of erecting the King's Sanatorium at Midhurst commenced last week, a large gang of men being employed on the foundations of the building. The various portions of the work have been let to different contractors. Sir John Aird, of London, is possible for the water supply and road-making, and Messrs. Longley, of Horsham, have secured the contract for the foundations. The contract for the superstructure has not yet been placed.

THE Stourbridge Board of Guardians' meeting on the 18th inst. tenders were received for the erection of a new workhouse on the site of the old workhouse at Wordsley, and for the erection of cottage homes at Norton. The tenders for the workhouse ranged from £123,000 to £95,500, and that of Mr. J. Mans, of Nottingham, for the last-named sum, was accepted. The cottage homes the tender of Mr. Griffiths, of Lye, for £10,000 was accepted.

ON Monday afternoon, while some workmen were engaged on the rebuilding of the premises of Messrs. Tonks, Ltd., 15, Ley Street, Birmingham, a scaffolding 35 feet high gave way, and two bricklayers' labourers, named Fred Branscomb, of Spring Lane, Acock's Green, and Anthony Claridge, of St. Martin's, 3 house, Upper Trinity Street, Birmingham, fell to their deaths. Both men were seriously injured. They were removed to the Queen's Hospital and detained.

WORK at Stockhaven Harbour was resumed this week after having been stopped for nearly twelve months. The cause of the stoppage was a dispute between the contractor and the harbour trustees, which is now before the Court of Session. Some time ago the trustees terminated the contract, and at a meeting last week they resolved to proceed with the work themselves under the superintendence of Mr. Barron, C.E., the

engineer, Mr. Law being re-engaged as clerk of works. As several years have elapsed since the harbour extension was commenced, the hope is felt that no further delay will take place.

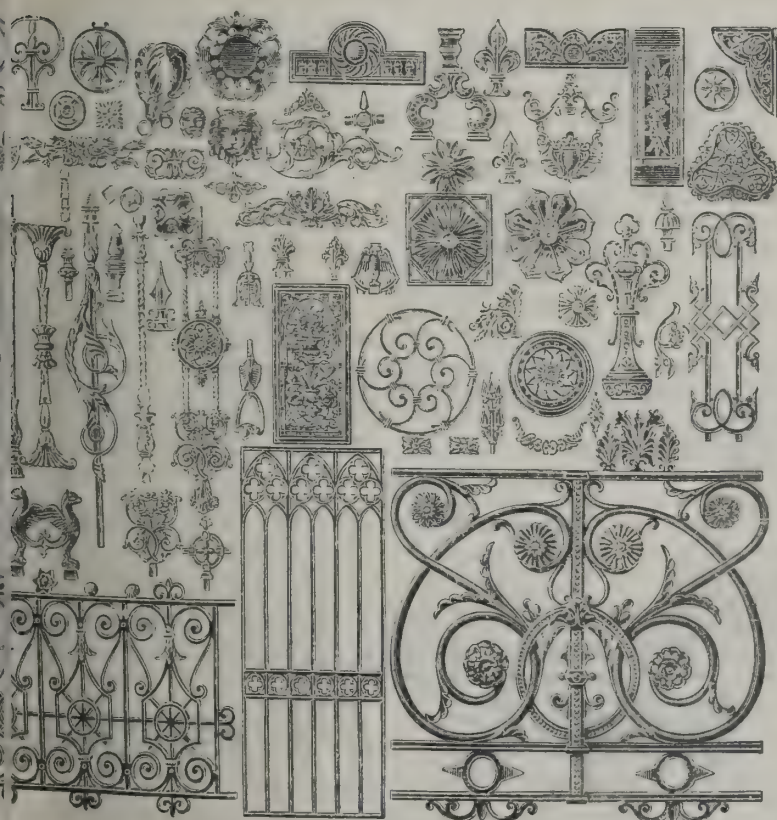
SIR A. M. RENDEL met a joint committee of Kirkcaldy Town Council and Harbour Commission on the 17th inst. regarding the proposed harbour extension, and produced plans showing the existing harbour and wet dock converted into one large wet dock and an outer harbour, six acres in extent, with detached breakwater 500 feet long, for summer steamers and trade in good weather. The total cost he estimated at £100,000. The engineer was authorised to prepare a written report on the scheme, plans to be distributed amongst the members before next meeting for discussion in time for obtaining Parliamentary powers.

THE Dover Harbour Board's proposals for the accommodation of the Transatlantic traffic have been put before the Dover Corporation by Sir William Crundall, acting chairman, pending the appointment of the new Lord Warden of the Cinque Ports. Previous to the building of the marine station the Board have arranged to connect the Prince of Wales Pier with the railway system by a line carried across the docks and over a bridge to the harbour station. They have arranged with the Board of Trade and they now ask for the consent of the Corporation. Contracts have been invited, returnable in a fortnight, and the line can be built in time to meet the requirements of the Hamburg-American service next July. At the same time railways are to be constructed round the docks, Parliamentary sanction having been granted last Session. The Corporation have favourably received the scheme.

AT last week's meeting of the Buxton Urban District Council the gas and water committee recommended the acceptance of the tender of Messrs. Fisher & Le Fanu, of Belfast, for £101,500 for constructing the new Stanley Moor Reservoir, subject to certain alterations in the schedule as the engineers may think fit. Mr. Hulme proposed, and Mr. Garlick seconded, the adoption of the report. Mr. Smithurst protested against a town with a population of 10,000 spending £100,000 on water. He said the Council had listened too much to interested parties rather than exercise their own common sense. The scheme altogether would cost £140,000, and a town of 10,000 population was not justified in spending it. The report was adopted, all except Mr. Smithurst voting in its favour.

THE Linlithgow Town Council have had submitted to them a report by Messrs. Warren & Stuart, Glasgow, to the effect

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that what is known as the division in the tank at the sewage-disposal works connected with the new drainage system has proved not to be watertight, and that the subsoil water has burst open the floor of the tank. The engineers recommend the laying of a drain to carry off this water at a cost of 367, and that this expense should be borne by the Town Council. A special meeting having been called to consider the matter, it was resolved to inform the engineers that the Council declined to accept responsibility in regard to the steps to be taken to make the tank watertight, and that they looked to the engineers to see that the work was repaired and properly executed before being taken off the hands of the contractor.

SIR ROWAND ANDERSON, LL.D., has prepared designs for the reconstruction of Dundee College buildings on a definite plan and in order to secure that the space available shall be utilised to the best possible advantage. According to the design prepared the new building will be almost coextensive in length with the frontage of the present buildings, and it has been planned to accommodate the departments of zoology, botany, geology, mathematics, law and all the subjects of the arts curriculum, including languages, philosophy, history and education. It will contain also a library, a museum, a hall and the necessary administrative offices. The total cost is estimated by the architect at 85,000, but provision has been made for undertaking the work in three sections, beginning at the western end, where the conditions of the existing buildings are at present the most unsatisfactory. The hall, library and offices will occupy the central portion, and the biological sciences will eventually be accommodated in the eastern wing.

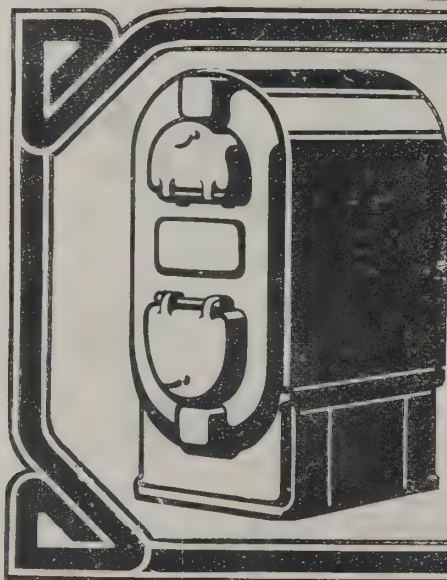
THE memorial-stone was laid on Saturday of the new church of St. Barnabas at Bitterne Park, Southampton. The church is of very simple plan, it being a parallelogram divided into three parts by two arcades. Its length is 115 feet and width 51 feet in the clear of the walls. There is no chancel arch, but the nave arcade is continued one bay beyond the dwarf stone wall dividing the chancel from the nave, the sanctuary extending some 12 feet further east. The church is entered from a porch in Lodge Road, and from Rose Road by a doorway on the north aisle. It contains seating accommodation for 600 worshippers and a choir for about thirty, good organ chamber, small morning chapel and vestry, and in the basement there is a large heating chamber and storage space. Each of the entrances will have draught lobby, and at the west end three arched recesses have been formed between the projections of the west buttresses and under the sill of the west

window, the central opening or recess being intended to receive the font. The interior is of a very simple character. It is well lighted from aisle and clerestory windows, and in addition there are two larger five-light windows to the east and west ends. The roofs are open and boarded and left to the plane, and the walls are plastered, with stone dressings to the reveals and windows, arcades, &c. The glazing is with tinted cathedral glass in pale tints, being mostly in simple squares, a little ornamental work, however, being introduced into the tracery of the window heads. The exterior of the church is faced with coursed Swanage rubble, with the dressings to quoins, &c., in soft stone, and the roofs are tiled with a dark colour red tile. The church is rather severe in outline, the flèche it was intended to have, turret and other features at first contemplated, and which would have broken the sky-line, having been omitted from motives of economy. The architectural character of the church may be described as Gothic of a late period. The seats will be of oak on a wide block floor and the choir stalls and other chancel fittings will also be of oak. The heating will be by hot-water pipes and radiators and the lighting by electricity. Messrs Jenkins are the builders, and the architects are Messrs. W. H. Mitchell Son & Gutteridge, of Portland Street.

GLASGOW SEWAGE WORKS.

THE annual inspection of the Western District Sewage Works now in course of construction by the Corporation of Glasgow took place on the 15th inst. On the invitation of the Lord Provost the chairman and the committee on sewage disposal about one hundred gentlemen comprising members of the Glasgow Corporation and other public bodies interested in the undertaking, met in the City Chambers at 11 o'clock, and twenty-four carriages proceeded to visit the works.

The drainage scheme for the city embraces three sections each distinct from the others and with separate works for the disposal of the sewage. The first of these, authorised in 1896 and doubled in extent in 1901, comprises about eleven square miles, one-half being within the city and the remainder in the landward district of the county of Lanark. The works for the treatment and disposal of the sewage of this area are situated at Dalmarnock, and the drainage is collected and conveyed there by a main sewer constructed at the cost of the Caledonian Railway Company. The second section was authorised in 1896, and includes



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al area on the north side of the river not provided for the burghs of Partick and Clydebank and intervening the counties of Renfrew and Dumbarton, the whole being 14 square miles. The works for the disposal of sewage derived from this area are situated on the river at Dalmuir, about 7 miles below Glasgow. The third authorised in 1898, comprises the whole of the al area on the south bank of the river, the burghs of Partick, Pollokshaws, Kinning Park and Govan, as well as residential and rural districts in the counties of Lanark and Renfrew. The extent of this section is 14 square miles, may be enlarged by the inclusion of the burghs of Partick and Renfrew. The works for the disposal of the sewage of this area will be situated on the river bank at Braehead, about one mile eastward from Renfrew.

The principal features of the western scheme, which was authorised yesterday, are the construction of an outfall sewer to the drainage of the higher levels of Glasgow and to the works at Dalmuir; the construction of an intercepting sewer to collect the drainage of the lower levels of the city of Glasgow; the construction of an intercepting sewer to collect the sewage of the lower levels of the burgh of Partick, and a further intercepting sewer to convey to the Dalmuir works the sewage of the burgh of Clydebank. The levels of the Partick intercepting sewer are sufficiently depressed to collect the drainage of the upper district of Renfrewshire, to the west of Glasgow and Partick and to the east of Glasgow, and negotiations are in progress for adjusting the levels, and the inclusion, in accordance with the provisions of the Sewage Acts, of that territory within the main drainage system.

The Glasgow and Partick intercepting sewers will be pumped into the outfall sewer at Partick Bridge, the lift being 37 feet. The pumping engines, three in number, will be of the triple-expansion inverted marine type, with pumps, each capable of raising 11,250 gallons of water, or 16 million gallons per day. Steam is supplied to the engines by four boilers, working at a pressure of 100 lb. per square inch. The Clydebank intercepting sewer will be pumped at Dalmuir, the lift being 21 feet. The smaller intercepting sewer at Dalmuir will be of the centrifugal type, and power will be transmitted by electricity. The whole contents of the outfall sewer will be delivered into the precipitation tanks above tidal level. The purified

effluent from the tanks will pass by gravitation over a discharge weir into the river, and the sludge will be pumped into specially constructed barges and conveyed to sea. After careful deliberation and much patient investigation, it was resolved to adopt at Dalmuir the same method of sewage treatment as that which has for the last seven years been in successful use at Dalmarnock, with this exception that the sludge presses, which by the compulsion of the situation of Dalmarnock works have been employed there, are to be dispensed with, and the liquid sludge carried out to sea. The precipitation tanks at Dalmuir, which are to be worked on the system of under-surface continuous flow, are more favourably situated than those at Dalmarnock, each being about 750 feet in length, thus allowing opportunity for more complete precipitation than is afforded in the shorter tanks at the Dalmarnock works, and effecting a saving in the reduced proportion of chemical agents required for the process. The work that has been completed up to the present time represents a large proportion of the whole undertaking. The western outfall sewer is constructed, the Partick and Clydebank intercepting sewers are virtually finished, the Glasgow intercepting sewer is being vigorously advanced, the Partick pumping station is nearing completion, the precipitation tanks, dock, wharf and outfall works at Dalmuir are constructed; and the sludge tanks, pump-house, machinery and other works are in active progress, and sufficiently advanced to warrant the hope that the greater part of the sewage derived from the western area will be undergoing purification during the course of next year.

HOUSE PAINTERS AND DECORATORS' ASSOCIATION.

THE tenth annual convention of the National Association of Master House Painters and Decorators of England and Wales was opened at Nottingham on Tuesday. It was attended by a large number of delegates and others, including the Mayor of Nottingham, Lord Henry Bentinck, M.P., and the presidents of the Irish and Scottish associations. In connection with the gathering an exhibition of decorative art as applied to manufactures was also held. The Mayor, in the name of the city, welcomed the Association to Nottingham, and Lord H. Bentinck, in appropriate terms, formally declared the exhibition open. The president of the Association (Mr. John Riley, of Notting-

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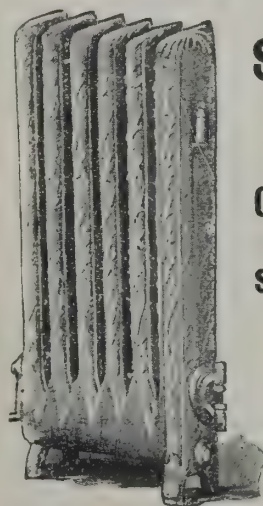


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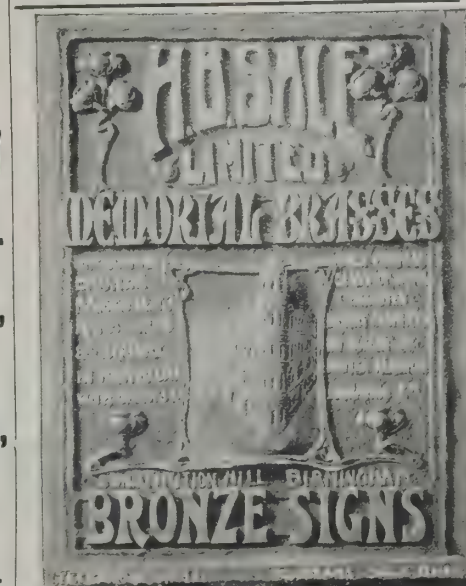
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ham), in his inaugural address, congratulated the Association upon its interesting prosperity. He denied that they were united to combat labour, for they were actuated by much higher motives. They wished so to educate their lads that they might cope successfully with any form of decorative treatment required. The necessary instruction was not provided in the ordinary technical schools, but they had taken matters in hand themselves and established technical classes in nearly every town where there was a local association. Their ambitions in that direction, however, were not yet attained, but they had almost completed a scheme for the establishment of a national training school in which their lads could be educated instead of having to study on the Continent. The reading of papers followed. The social side of the programme included a reception by the mayor and mayoress and a dinner. The president-elect of the Association is Councillor J. Higson, of Manchester, and next year's convention will accordingly be held in that city.

REFUSE DISPOSAL.

A PAPER on "Twenty-five Years' Progress in Final and Sanitary Refuse Disposal" was read at Southport by Mr. W. F. Goodrich. He said for a long time past it had been generally conceded that the only system of disposal which was at once final and sanitary was that of the disposal by fire. Other methods had been tried, such as tipping on land, tipping at sea, sorting and utilisation, and in America a process of garbage reduction, but it might be fairly said that real progress had only been made with one system—disposal by the agency of fire. Tipping refuse on to land, and accumulating hundreds, and in some cases thousands of tons of filthy decomposing material was perhaps the most ancient method of disposal. That the hoarding up of filth in this manner was detrimental to health, and at times serious in its consequences, was shown by the several deaths in the neighbourhood of Portsmouth about a year since. Medical officers of health from Land's End to John o' Groat's, likewise from Dan to Beersheba, condemned the accumulation of refuse. The Local Government Board had but little sympathy with the practice; indeed, early last year they declined to sanction a loan of 300,000 required by the Corporation of Bury St. Edmunds for the purchase of land for tipping purposes. Little need be said regarding the tipping of refuse at sea, having in mind that such a method of riddance can only be employed in the case of towns on or in close proximity

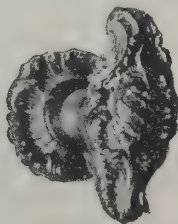
to the seaboard. There was ample evidence available clearly show that this system of disposal was not satisfactory. Many years ago the refuse of Liverpool, dumped overboard miles out, was constantly washed up on the beaches of board resorts on the North Wales coast. Even last summer bitter complaints were made because of beaches defiled the north-east coast with refuse from large manufacturing towns on the seaboard. The tipping of refuse at sea has aptly termed "a fair weather system," by which was meant that in favourable weather only is it possible for the vessels to proceed to sea. Such a system cannot by any stretch of imagination be called sanitary, its irregularity conducing to nuisance, and was at once a fatal weakness. Sorting and utilisation, once a favoured method of disposal, was now rarely heard of. With a keen appreciation of the commercial value of the system was elaborated, and every effort was put forth the endeavour to popularise it, but without avail; while those who would still favour the tipping of refuse (so long as it is not tipped anywhere near their own particular residence), do not favour the loathsome and degrading practice of sorting. As already stated, in America a system of reduction has been extensively tried. In the main this process might be described as a process of cooking and chemical treatment of the garbage only; but as garbage comprised only about 13 per cent. by weight, or 18 per cent. by volume, of the average American civic waste, it must at once be admitted that this system was weak, leaving as it did the bulk of the waste still to be disposed of otherwise. As with sorting so with reduction, the commercial element had ever been the dominating factor. Such a system did not appeal to those who were in the main bent upon making money. They confined their attention to that proportion which offered a possible profit, while the bulk of the waste had still to be dealt with. The process of reduction was productive of nuisance, so much so that the necessary works had always to be erected well outside of a city, and even the inhabitants had on more than one occasion very forcibly shown their disapproval of the travelling odours. Although an immense amount of money had been subscribed and lost in the development of reduction processes in America, there were distinct signs that the system was becoming unpopular. It was likewise evident that destruction by fire was likely to greatly develop in the near future. Furthermore, American experts freely expressed the opinion that real progress was possible by following closely on British lines. Alluding to the method of disposal by fire, he said while many valuable improvements

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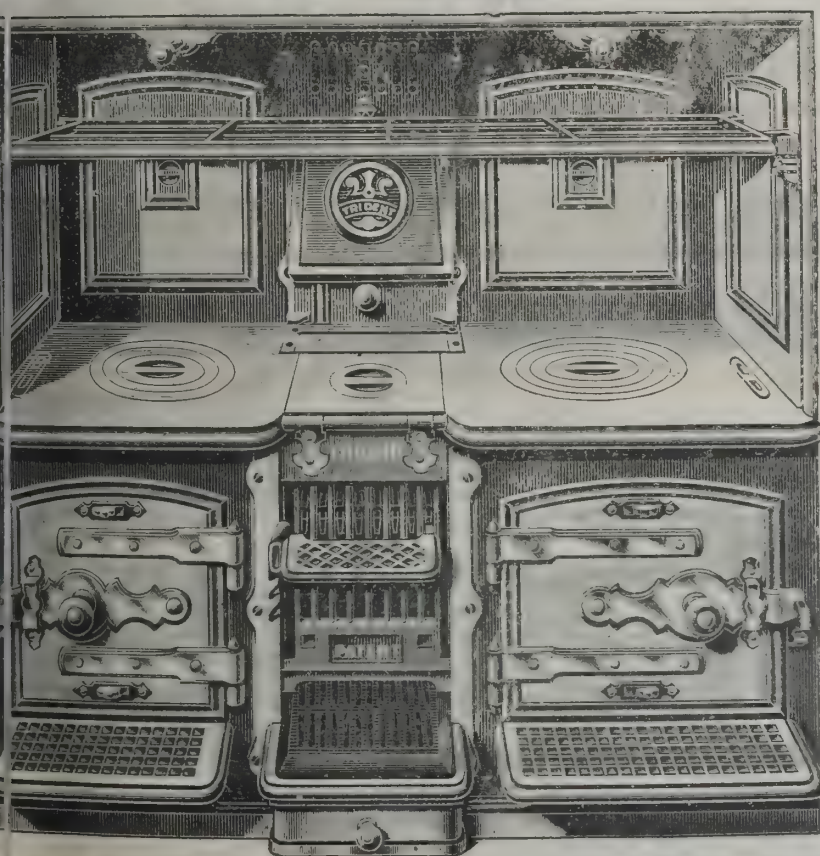
es had been introduced in connection with destructors, it always be admitted that the really vital improvement the introduction of high temperature working, and only in as this had been recognised had real progress been made. In the burning of coal, a poor draught, with constantly low furnace temperature, involved imperfect ignition of the gases, a serious waste of fuel and the emission of black smoke. So with the refuse destructor, a low temperature in the furnace must result in the mere cooking of the refuse, and the gases must inevitably result in nuisance. The smoke was admittedly a nuisance, but noxious low temperature gases distilled from stewing refuse presented a nuisance probably without parallel. The modern high temperature system had rendered nuisance practically impossible. Improvements in design had been such as to effectually prevent the escape of dust; the residuum or clinker now produced was of a vitreous and perfectly inoffensive nature, and was used for a variety of purposes. Only with the high temperature system had the production of power become possible. It was idle to introduce a steam boiler to intercept low temperature gases, firstly because the temperature was practically useless for steam-raising purposes; secondly, because the primary duty of the destructor was, and is, to destroy, and unless this be done, and done in a manner above all else, steam raising should be left severely alone. Any attempt to secure and maintain a high combustion temperature had at the same time clearly demonstrated the value of the destructor as a power producer, and it had been established beyond all question that as the destructor was perfected for the performance of its primary duty, so did it become more satisfactory in the performance of its secondary duty—the production of power. The combination of a destructor with an electricity works had been the subject of much discussion, and had been very severely criticised. It might, however, be submitted that the most eminent critics had not stemmed the tide; on the other hand, the public had done not a little towards removing misapprehension and popularising the combination. If proof of its necessity be needed, then it might be found in the fact that as recently as five years ago destructors had been combined with electricity works in two towns only. Now sixty-one other towns had adopted the combination, while still many more had decided to combine the two works. It had been urged by some critics that the combination was only suitable for small towns, and this in the main because the amount

of power available from the refuse was not likely to meet the ultimate power requirements of the generating station, but surely such a line of argument must apply equally well, if not more strongly, to large towns where, for obvious reasons, the demand for current increases more rapidly. The striking progress which had been and was being made in large as well as in small towns was perhaps the most conclusive reply to such critics. In the city of Liverpool destructors were still being erected, arranged to supply power for electric traction, and this after most exhaustive trials. The unmistakable success of the combination had warranted the repeated extensions, and it must not be forgotten that for many years before it was decided to combine destructors with electricity works in Liverpool that city possessed its own electricity works of very large capacity. In conclusion, he said, twenty five years ago twelve destructor cells only were in use in two towns; to-day 1,650 destructor cells are either in operation or in course of erection in 180 towns in Great Britain, together with no fewer than 300 steam boilers. Nor was progress confined to these islands. On the Continent some large British destructors had been erected, also in Australia and New Zealand. There was every indication that the disposal of refuse would develop along these lines, and lastly, that in this particular branch of engineering, at any rate, Britain would be easily pre-eminent for many years.

NORWICH NEW CONGREGATIONAL CHAPEL.

A NEW Congregational chapel which has been erected in Magdalen Road, with a return frontage to Clarke Road, was formally opened on the 17th inst. The main elevation to the eastward consists of a large gable, with a Latin cross at the apex. It is divided by enriched buttresses, which terminate in octagonal pinnacles. The oak doors, which constitute the principal entry, are set in the stone jambs, and are flanked on either side by a three-light window. Immediately above the doorway runs a broad band of diaper in alternate brick and stone, and immediately above that is a fine segmental-headed window with three mullions. The side elevations have each six transomed windows with elliptical heads. Seats are provided for 700 worshippers—about 400 on the ground floor, and the rest in the galleries. A large iron roof spans the whole width of the church, and supports an elliptical-shaped plaster ceiling, with moulded ribs and

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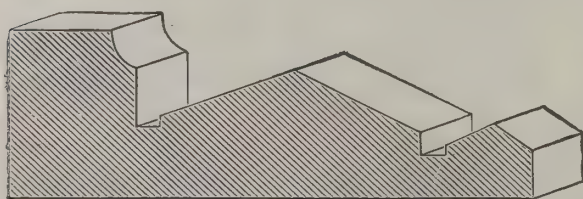
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plaster enrichments. The main entry to the church is by way of two oak doors, behind which is a vestibule giving access both to the floor and galleries, the galleries being also approached from outside. There are four emergency staircases, each gallery having one at either end. The pulpit and the platform beneath it have been handsomely worked in teak. Beyond the pulpit is ample space for an organ, which will be provided as soon as funds permit; and also at the west end are deacons and minister's vestries. The fronts of the galleries are modelled in plaster. In the basement, or rather in the fall of the ground, the church having been built on a sloping site, are a choir assembly-room, a heating chamber and lavatories. The architects are Messrs. Edward Boardman & Son, Queen Street, Norwich.

PRESERVATION OF TIMBER.

A PAPER was read at the last day's meeting of the British Association by Mr. W. Powell on the preservation, seasoning and strengthening of timber. After dwelling upon the importance of timber to man, he said he might show how some kinds of timber, at present valueless, may become exceedingly useful; how timber used for structural purposes may be so strengthened as to bear a much greater load or strain; how our streets may be cheaply paved with sanitary wood-blocks which will neither absorb surface water nor give out disagreeable effluvia; how we may combat the ravages of dry-rot, and finally do all this simply, naturally and at comparatively small cost. He found that by boiling timber in a thin saccharine solution until most of the air in the timber was exhausted, and then by leaving the wood in the syrup to cool, a certain amount of sugar was absorbed by the timber, in some cases as much as to cause the timber to sink. After the wood has become sufficiently saturated it is put into a drying-stove and the moisture driven off at a fairly high temperature, until the wood is thoroughly dry and ready for immediate use. That process differed from others mainly in the fact that before drying is attempted the interstices of the timber are filled in with a viscid glutinous solution, which takes the place of the natural sap and air which the wood has been forced to part with, and so, when the moisture is driven off by stoving, the sugar which remains in the wood acts like a strong binder and holds the fibres together, just as cement or mortar binds the stones or bricks in a wall. There are thousands of square miles of land

in the States and Canada covered with timber which at present is of little commercial value. This class of timber is especially amenable to the Powellising process, and the results are somewhat astounding. Very remarkable results had recently been brought out at Silvertown, where some timber processed by Messrs. Burt, Boulton & Haywood's works showed the following results in increased strength:—Pitch pine, from 14 to 32 per cent; white pine, from 29 to 39 per cent; yellow pine, from 56 to 107 per cent. If this silvertown process could increase the strength of yellow pine from 100 per cent, then it follows that such timber would be able to bear a corresponding greater strain, or that 25 to 50 per cent less timber would be required to bear the same strain. The question as to the effect of the process on the flammability of wood—especially of such wood as the pines—has naturally arisen, for many persons imagine that because sugar is introduced into the timber it would become more inflammable. A little reflection, however, will show that the reverse should be the case, which, indeed, is borne out by tests. Timber properly processed will stand very high temperature in drying and be all the better for it, but each class of timber naturally requires modified treatment in each stage of the process. In all timber, and especially in walnut, oak, beech, box, maple, mahogany, &c., where there is a feather or grain, the process brings out the ornamental character of the wood more distinctly, and thus even some of the commoner woods may be used for ornamental purposes, as the appearances when cut and polished are much improved. By this simple and inexpensive process it is probable (1) that some varieties of timber now at present merchantable, especially some kinds growing in Canada and the United States, may be made of considerable commercial value, and thus an important addition be made to the world's stock of useful timber. (2) That such timber may possibly furnish us with an ideal paving block at once cheap, tough and sanitary. (3) That the lighter timbers used for structural purposes may be made to bear much greater strain without increasing their weight appreciably, and at the same time be rendered less inflammable and impervious to the attacks of dry-rot. (4) That hard woods, such as beech, birch, elm, ash, maple, mahogany, &c., have their valuable qualities enhanced, their liability to split or crack diminished, and their appearance when polished or varnished much improved; (5) that timber may be rapidly dried and seasoned, and that an enormous amount of capital now locked up may be released.



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CONSTRUCTION OF TALL CHIMNEY SHAFTS.

Importance of constructing tall and safe chimney shafts suggested by the instructions concerning them introduced by the Metropolitan Building Act. Work of the kind is claimed by engineers as well as architects. In many parts of the country the manufacturers believe in local specialists who are guided by empiric rules. In consequence there is a great variety of proportions in different parts of the country. The Building Act orders that for 20 feet below the top the thickness be at least 8½ inches, and the increase a half brick for each additional 20 feet measured downwards. The width of the base of a shaft be square is to be at least a tenth of the proposed height and if round a twelfth of the height. The brickwork and mortar are to be of the best quality. It cannot be said the conditions are too severe for the cheap building which is now in vogue throughout the country exemplifies its worst qualities in brickwork which is found in the flues of houses, because it is generally concealed, and there is no doubt similar conditions have found their way into factory chimneys.

It is therefore an advantage if instead of the common method which requires both skill and care on the part of the builder when used in the construction of shafts, bricks or terra cotta blocks of special shape are employed. The principle of the latter is the essential principle of the Alphonse system, which has been adopted for about thirty years in Germany and also in the United States, Russia, Austria, Belgium, Norway, Sweden, &c., and two for the Elsa station of the Nile irrigation works. Four thousand at least, have been constructed, and their permanency is the best testimony to the qualities of the material and of the method they exemplify. Believing that round chimneys are effective not only for draught, but for resistance to wind pressure, the blocks are formed of radial shape, that is to say, the outer and inner lines become parts of the circumference of a circle while the sides tend towards a centre. They resemble in extent the voussoirs of an arch. They are made of various sizes, and therefore in construction the thickness of the chimney shows a break of joints, the mortar or cement being continuous. There is no need of the cutting of the blocks, or, in one word, the "fudging" unavoidable with a brick. The blocks are perforated, which not only lightens them, but allows of a more efficient bond than is possible by the ordinary "frog." As trained workmen only have employed the process of erection is carried on with all the

regularity of machine work. Economy is also secured, as there is no need of external scaffolding. A special lining has been invented to suit chimneys where gases or excessive temperature have to be contended against. From the arrangement by which the lining is supported on corbels it complies with the regulation of the Building Act, by which lining material is to be independent of the thickness of the brickwork, and not to be bonded therewith. There are coloured blocks which can be used in cases where it is considered desirable to impart variety to the exterior by ornamental patterns, initials or names.

In England and Scotland many tall chimneys on the Custodis patent system have been raised. It is remarkable that the majority of them are in connection with municipal undertakings, where, as the employment of any new system affects the reputation of the borough engineer, care is taken in the selection. Blackpool, Hornsey, Birmingham, Tunbridge Wells, Wimbledon, Watford, Bournemouth, Swindon, Reading, Worcester, Eastbourne, Mansfield, Wrexham, Maidenhead, Hanley, Taunton, Southampton, Coventry, Malvern are among the places in which Custodis chimneys are to be seen. In each of those cases there have been tests and investigations, and they form collectively the most remarkable collection of material testimonials to the efficiency of the peculiar construction which could be devised. The works for public and private companies are no less satisfying. While so many examples exist in this country, varying in height from 60 feet to 275 feet, further commendation of the Custodis system is unnecessary.

The system is protected by two patents in this country. The claim is for "A chimney having a lining built up in tiers or sections on internal corbels, so as to leave an air-space between the main body of the chimney and each lining, which air-spaces communicate with the outer air and the interior of the chimney through adjustable ducts."

FORESTRY IN GERMANY.

THE German forestry academies have developed in course of time out of the so-called "master schools" (Meisterschulen), which were founded during the second half of the eighteenth century. None of these schools now exist in the districts in which they were originally founded, but during the nineteenth century other academies and institutes for forestry were founded in their stead. At the present day the German empire possesses the following schools of forestry:—Tharandt, in Saxony; Munich and Aschaffenburg, in Bavaria; Eberswalde

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and Münden, in Prussia; Tübingen, in Württemberg; Giessen, in Hesse; Karlsruhe, in Baden.

Students of forestry in Germany are generally divided into two distinct classes, *i.e.* into fully-qualified students and into extraordinary students or not fully-qualified students. The former, who generally form the majority, possess the full preliminary educational and other qualifications, and pursue their studies with the object of obtaining official positions in the State forests; the latter, who do not possess the full qualifications, are allowed to attend the academies and institutes if they can show a reasonable degree of preliminary education, but they cannot enter the State service.

In one respect, however, all the academies and institutes for forestry agree: they require, without exception, the leaving certificate of a "gymnasium," "real-gymnasium" or "upper real school." The courses in these higher preparatory schools are arranged for a period of from nine to ten years.

The object of the Eberswalde forestry academy is threefold and embraces (1) instruction in forestry; (2) the supervision of the forestry experimental stations in Prussia; and (3) the management of the Society of German Experimental Forestry Stations.

There are thirteen professors besides private lecturers, assistants, officials, foresters and servants. The course of instruction in forestry consists of two courses of one year each.

The instruction given in the lectures is supplemented by practical work of every description, for which a large number of scientific institutes, collections and other facilities for practical work are available; amongst these the following may be mentioned:—(1) Extensive woods of over 40,000 acres, containing oak, beech, birch, fir, pine, &c.; (2) forestry and chase collections; (3) botanical collection; (4) zoological collection; (5) physical and meteorological collections; (6) geodetical collection; (7) mineralogical collection; (8) library of 16,000 volumes and 300 maps; (9) various experimental gardens; (10) institute for pisciculture; (11) meteorological station; (12) various laboratories; (13) vegetation house; (14) dog-breeding establishment; (15) seed-testing institute.

A special feature of the Eberswalde academy consists in the great number of excursions arranged for practical work, inspection and scientific observation. These sometimes amount to seventy or eighty during the year, and range from smaller excursions of one-half or a whole day to longer excursions of two days, and in August to excursions of from a week to ten days. They are almost without exception conducted by pro-

fessors of the academy or some member of the scientific staff. The department for experimental forestry includes branches for special forestry, for meteorology, for the physiology of plants, for zoology, for the chemical investigation of soils and for mycology. Amongst the scientific publications issued by the academy during the year the following may be mentioned:—(1) Editing of the "Review of Forestry and the Chase" and of the annual publications in forestry and chase legislation and administration; (2) The results of the experiments made in the cultivation of foreign woods in the Prussian State forests; (3) Critical comparison of the most important forest-technical and forest police regulations of German and foreign forest administrations; (4) The atmospheric conditions of the single months of the year 1900; (5) On the extermination of rooks; (6) The occurrence of noxious animals in Prussian State forests; (7) Annual report on forest zoology; (8) Chemical processes in sterilised yeast cells; (9) Chemical problems and exercises for agriculturists; (10) Investigation on the warmth of soils; (11) Forest produce in the German Tariff Bill; (12) The representation of the interests of forestry in the Agricultural Chambers; (13) Planting experiments with various trees; (14) The value of wood-litter for forest protection.

Persons desirous of commencing the study of forestry at the object of obtaining positions as higher forestry officials in the State forests must prove that they are in possession of the following preliminary qualifications:—(1) The leaving certificate of a "gymnasium," "real-gymnasium" or "upper real school," with specially good marks in mathematical subjects; (2) age under twenty-two; (3) that they do not suffer from hereditary, aural, visual or vocal defects and are of a strong and healthy frame of body; (4) certificate of good conduct; (5) possession of the necessary means for studying.

After having satisfied these conditions, candidates are required to undergo a period of practical forestry work of at least one year under the supervision of a higher forestry official. This is followed by a period of study of at least two years at a forestry academy or at a university forestry institute. The examinations which are then required are in number.

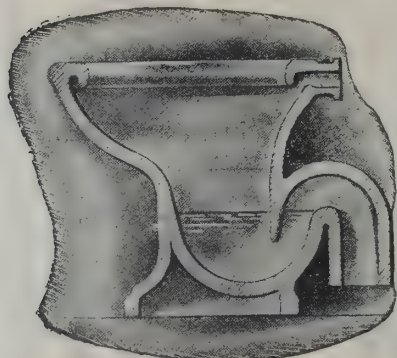
The application for admittance to the first examination must be sent in not later than six years after the period of practical forestry work, and must—in addition to the school and academy or university certificates—be accompanied by the following:—(1) Certificate of one year's practical forestry

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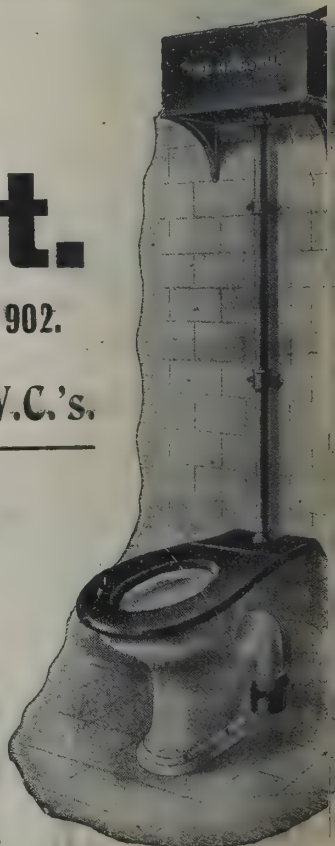
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(2) a "curriculum vitæ" written by the candidate; (3) a detailed map, drawn by the candidate, of an area of at least 100 acres, based upon the results of a practical survey made out by the candidate himself, together with field notes and tables of co-ordinates and measurements. This must be performed with the aid of a theodolite and a level; (4) a coloured map detailing the principal features of an area of at least 1,250 acres on a scale of 1 to 25,000; (5) a plan of a length not less than 1½ miles, with the candidate's field-book and calculations; (6) a declaration on oath that the work indicated under 3, 4 and 5 has been performed by the candidate himself without external aid.

The following standard of knowledge is exacted in the subjects of the first examination:—

Forestry.—Thorough knowledge of the whole science of forestry with reference to forest cultivation, forest management, forest valuation, utilisation of forest produce, forest protection and police, history and literature of forestry.

Pure Mathematics.—Knowledge of arithmetic and algebra including equations of the second degree, logarithms and their practical application and the theory of series; geometry of planimetry, stereometry, plane trigonometry and spherical trigonometry as well as linear and angular co-ordinates.

Surveying.—Knowledge of plane surveying, levelling and the construction of geodetical instruments; barometrical measurements; proficiency in the manipulation of all levelling and levelling instruments; proficiency in drawing up the details of simple survey work; knowledge of Prussian survey regulations, with special reference to survey work.

Statistics and Mechanics.—Knowledge of the elements of statistics and mechanics.

Zoology.—Acquaintance with the systematic classification of the animal world, and knowledge of the most important animals, birds and insects for forestry and the chase; thorough knowledge of the systems, nomenclature, anatomy and habits with special reference to noxious insects.

Botany.—Acquaintance with a recognised good system of classification, practice in the classification and description of plants with the use of suitable terminology; special knowledge of German varieties of wood and other plants of importance for forestry.

ance for forestry; acquaintance with the general laws and theories of the anatomy and physiology of plants.

7. Mineralogy.—Knowledge of geognosy and geology as far as is necessary for the purpose of a general and clear comprehension of the formation and structure of mountains, &c.; total and most important constituents of the latter with special reference to their action upon the growth of vegetation; knowledge of the rocks, minerals and soils of the most importance for forestry.

8. Chemistry and Physics.—General properties of the elements and principal compounds; principal chemical theories and laws; heat, light, magnetism and electricity; special reference to forest technology (preparation of charcoal, lamp-black, &c.).

9. Law.—Knowledge of the historical development and the general elements of Prussian and German material and formal law, and of the principal chapters of civil and criminal law regarding the administration of forests.

After passing the above examination the candidate is accorded the title of forestry "Referendar," and is now required to undergo two further years of practical forestry work, during which time he must keep a careful daily record of the work performed. He may then enter his name for the second or State examination, accompanying his application with the following papers:—(1) "Curriculum vitæ;" (2) leaving certificate of higher preparatory school; (3) certificate of the first period of practical work (one year); (4) forestry academy and university certificates; (5) certificate of the second period of practical work (two years); (6) military and other personal papers.

This final examination embraces the following subjects:—(1) All branches of forestry science and economy; (2) Prussian and German law, especially administrative, constitutional and private law; (3) political economy; (4) financial science; (5) organisation of forest administration, official duties, forest budget and accounts, regulation of the chase, &c.

Those forestry "Referendars" who pass this second examination successfully are promoted to forestry "assessors," and their names are placed on the list for available positions as higher forestry officials (Oberförster, upper forester). Until they obtain such definite positions they are generally occupied by the State at a certain scale of daily remuneration.

The entire area of the German empire amounts to about 135,000,000 acres, of which about 126,000,000 acres are devoted to agriculture and forestry. Of the remaining 9,000,000 acres,

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which consist of waste and barren lands and of land used for industrial purposes, about 2,000,000 acres might perhaps still be reclaimed for agricultural and forestry purposes by means of bog-cultivation and drainage.

Of the entire agricultural area of 126,000,000 acres, about 35,000,000 acres, or more than one-quarter, consists of forests or forest land. About 18,500,000 acres of the total forest area are cultivated as purely forest holdings, and about 16,500,000 acres are attached to agricultural holdings. The total forest area is distributed amongst 950,000 holdings, of which the greater number are only of small extent; of the larger ones, about 2,000 belong to the States and Crowns, and possess a total area of about 12,500,000 acres; of the small holdings 97 per cent. are attached to agricultural holdings, so that, to a certain extent, they may be considered as agricultural holdings. It would seem that the number of agricultural holdings, with forests lands attached, is gradually declining, most probably owing to the increased efficiency of farming. On the other hand, forest land shows a gradual but distinct increase.

Although the example of the German empire shows that it is possible to reap a substantial annual benefit from instruction in forestry and the consequent rational cultivation of forests, mere pecuniary gain is by no means the sole factor which ought to justify the solicitude displayed on their behalf by far-seeing governments, as there exist many other reasons, dictated by other motives and considerations, for the cultivation and preservation of forests.

The forests of a nation are closely bound up with the lives of the people in legends, poetry and history. In olden times they were protected by laws and statutes under pain of severe punishment, and they are still preserved in some countries with the greatest possible care, not only by the State, but by private landowners, provincial and municipal corporations and other bodies. An empire of the inland extent of Germany, for example, requires for social, hygienic and climatological reasons a larger extent of forest-land than countries with a less extent of inland and longer coast-lines. The proximity of forests acts upon those who dwell in or near them in a similar manner as the proximity of the sea exercises a healthy influence upon those who dwell on or near the coasts, and it may be asserted that, to some extent, a country without forests resembles a country without a coast.

The inhabitants of the forests, the foresters, wood-cutters and other forest workmen and dwellers are as regards health, strength and a certain native shrewdness and sagacity, as

superior to the peasants of the plain as these again are superior in health, strength and many sturdy virtues to the major inhabitants of the towns.

From an æsthetic point of view forests are also necessary, as necessary in their special province as da moors; heaths, rocks, mountains and even bleak lands, all form the necessary complement to cultivated land, and impress upon the beholder the infinite play of contrasts and variety displayed in all the manifestations of nature.

Finally, from a climatological and hygienic point of view the value of forests to a nation cannot be too highly estimated. The presence of large forests supplies the air with moisture and most probably exercises influence upon the regularity and extent of the rainfall; heavy and protracted rainfall might cause serious inundations is regulated to a greater or lesser extent by forests, which act as natural reservoirs for water storage and gradual supply. Air vitiated with dust and other impurities, chemical, physiological and mechanical, passes into forests to undergo filtration and chemical transformation, and issues forth again purified and revived with health-giving constituents. The fate of parts of Italy, which under rational conditions of forestry and agriculture, have been the paradise of Europe, is a warning example of the many others of the dangers that attend the practice of reckless deforestation, and the conclusions to be drawn therefrom have not been overlooked in Germany, where unruly forces are now being rendered amenable to control by afforestation of their sources.

The devastation caused by the recent floods in Silesia is a necessity of action of this nature in Germany.

In Switzerland, where the floods have wrought much damage during the rainy summer of this year, an influential party is advocating the diminution or prevention of floods by afforestation instead of by engineering works for the regulation and correction of the courses of rivers, to which latter the preference has hitherto been given. The Association of Foresters, which met lately at Schwytz, has expressed itself most emphatically in this sense.

Leaving aside the question of the relative efficiency of two methods of the prevention of floods by river regulation and afforestation, the former is certainly much more expensive than the latter. Between 1871 and 1901 the Swiss Government expended about 2,000,000 l. on the regulation of rivers by engineering works, and only about 125,000 l. on afforestation for the same purpose.

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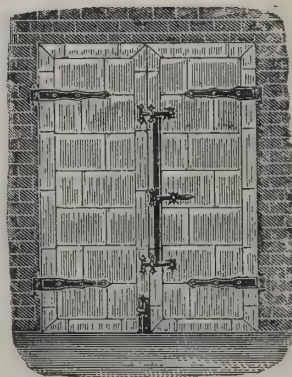
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The Architect.

THE WEEK.

rumour that three such historical buildings, which at the same time remarkable examples of architectural art, the Villa Caprarola, the Villa Madama, outside Rome, and the Farnese Palace, in Rome, are in the hands of the same owner, is enough to startle all lovers of art. The Villa Caprarola stands on Mount Simino, and is at some distance from the road to Siena from Rome. It was designed by Bramante for Cardinal FARNESE, the nephew of PAUL III. It is recorded that St. CHARLES BORROMEO remonstrated with its owner about its magnificence. So much money, he thought ought to have been given to the poor. But the Cardinal's reply was that he preferred to let them earn it. The villa is pentagonal on plan, and surrounded by ramparts and bastions. The rooms are adorned with paintings by the school of Raphael. The history of the FARNESE villa is full of incidents in the history of the FARNESE family. English visitors are somewhat disappointed with the building, for in trying to combine a fortress with a villa the result seems to be expressive of neither. The Villa Caprarola is said to have been designed by GIULIO ARMANDO, but it is believed the plans were RAPHAEL'S. It is never finished, but the position is excellent, and the views by GIULIO and GIOVANNI DA UDINE are interesting. The Palazzo Farnese was mainly designed by SAN CARLO CARRACCI; the famous cornice is by MICHEL ANGELO, and the interior is by VIGNOLA. The owner wished, it is said, to make it a museum, who had been a footman, the architect. The rooms were partly derived from the Coliseum and the Theatre of Marcellus. At the present time the villa is occupied by the ambassador of France. It is considered to be one of the most important of the Renaissance buildings. Among the paintings is one on the wall, the *Triumph of Bacchus*, by ANNIBALE CARRACCI, which a large plate was published in *The Architect*.

EUGÈNE TRAIN, who died suddenly on September 20, one of the prominent official architects of Paris. He held the municipal service in 1853 as an overseer of the city, and he advanced step by step through merit alone he obtained one of the highest positions. Half a century's loyal service certainly deserved honours and rewards. As his colleague M. BOUVARD said in a speech at his funeral, M. TRAIN was one of the first who attempted the use of metal and ceramics in the decoration of buildings, the success of his efforts is shown by the Collège Rollin and the Lycée Voltaire. M. TRAIN was a nephew of the architect BALTARD, the architect of the church of St. Etienne and the Halles Centrales in Paris, and his body lies in BALTARD'S tomb. M. TRAIN was a member of the Council of architecture for the Prefecture of the Seine, and honorary professor of the National School of Decorative Art.

The session of the Liverpool Architectural Society will be held on Monday evening, when an address will be given by the president, Mr. JOHN WOOLFALL. The following papers are to be read at succeeding meetings:—MR. PETER COWELL, "Venice"; MR. W. CURTIS GREEN, "The Architecture, Formal or Irregular"; MR. H. FIELD CLARKE, "The Bill for Altering the Law of Light"; MISS ETHEL CHARLES, "Reflections on Architecture"; MR. E. BERTRAM KIRBY, subject to be decided; MR. E. GUY DAWBER, "Country Houses"; MR. MATTHEW HONAN, "John Wood of Bath"; MR. RYAN TANNER, jun., "Interior Woodwork in England"; MR. FRANK RIMINGTON, "Small Houses of To day and To morrow"; MR. G. GILBERT SCOTT, "Notes on the Liverpool Cathedral"; MR. HASTWELL GRAYSON, M.A., "The Domestic Flue." The annual general meeting will be held on April 4, 1904.

CELLULOID has for some years past been employed in the making of set-squares, scales and protractors. It has the advantage of lightness and smoothness of surface. Its cleanliness of paper is never soiled. White celluloid allows black or gold figures to be legible. It is, how-

ever, uncertain whether the material does not expand or contract to a degree which diminishes its use, especially when the utmost accuracy is desirable. Messrs. LONGMANS, GREEN & Co., the publishers, having a wide connection among educationalists, engineers, architects and men of science, have brought out a series of aids to drawing in the form of set-squares, protractors, scales, &c., in which all the advantages of celluloid are retained, and by using a very tough wood for edges the risks of shrinkage or other distortion will be avoided. They are the invention of Professor D. A. Low. One ingenious addition is an "adjustable protractor set-square." Imagine the long line or hypotenuse of a set-square to be formed as an arc of a circle and the material to be divided in order to form a groove. In this if another arc graduated is placed it will have motion and the chord will serve as a ruler for any angle desired. This protractor will be found useful not only in geometrical drawings but in laying bases for various ornamental forms. With all the improvements the prices are as low as for ordinary celluloid squares, and the appliances are the best substitutes which have yet appeared for those in ivory and boxwood which were once generally used.

THE GONCOURTS, who delighted to present literary celebrities with their wrong side outwards, were compelled to admit that DUMAS FILS was the possessor of a grand talent, that for women as well as men he idealised the commonplaces of their hearts, and that the man himself was superior to the dramatist. Women especially were the studies of DUMAS, and types of them are the most successful of his *dramatis personæ*. M. SAINT MARCEAUX, the sculptor who is entrusted with the memorial of DUMAS which is to be set up in Paris, has endeavoured to suggest his peculiar genius by representing him as listening to the appeals of a crowd of women who look up to him as if he were the redresser of their wrongs, or their advocate with posterity as well as contemporaries. They stand by the pedestal on which the dramatist is seated, clad in the unconventional costume he preferred when working. As his attention seems turned towards them, they are introduced only on one side, and the indifference to symmetry becomes a characteristic of the work, which is novel and not displeasing. M. SAINT-MARCEAUX has set up the model of his work in order to test its general effect. The treatment of the principal figure is true to nature. It would be absurd to represent DUMAS FILS as if he were in the "fine frenzy" of poets. He declared he was without imagination, and that all he did was derived from observation, reflection and deduction. For months he kept considering a subject without writing a single word. The labour of writing was fatiguing and suppressed his appetite, but he found compensation in being able to sleep better than at other times. A rigorous sobriety was necessary with his delicate constitution, and he avoided wine, coffee and liqueurs.

THE Council of the Victorian Institute of Architects, whose "Proceedings" are models of typography that put to shame those issued by European societies, has boldly taken the rôle of arbiter of taste for Australia. Even postage stamps are not considered too trivial to engage attention. A new stamp was lately issued and the Postmaster-General received the following protest:—"That this Council, representing the members of the Royal Victorian Institute of Architects, desires to place on record its deep regret that the first Commonwealth postage stamp should be so utterly weak and inartistic in design, and also to express the hope that it will be withdrawn from issue to prevent our Australian designers being held up to ridicule." The rebuke was received with good-humour, for the following reply was sent:—"I have the honour by direction to acknowledge the receipt of your communication of June 23, and to thank your Council for its criticism, contained in the resolution you forwarded, of the new Commonwealth postage stamp. I am to add that any design of greater merit that may be submitted to this Department will receive consideration." Will the members of the Victorian Institute accept the hint and design a model stamp?

ARCHITECTURAL EDUCATION.

ONE of the easiest ways of realising the extent of a change in manners and customs is to imagine a man of an earlier period returning to the world, and to ask ourselves how far he would be surprised by what he saw. Let us suppose an English architect who passed away some sixty years ago revisited his own country at the present time, when the educational sessions are about to open. Can there be any doubt of his amazement when he discovered the facilities which are being offered throughout Great Britain for the training of youths who are ambitious to become architects? In no other calling is there so much eagerness to obtain candidates. The recruiting sergeants do not put forth such temptations in their addresses as will be found in the programmes of courses which are especially intended for students of architecture. Lawyers give no sign of a desire to have their ranks strengthened. Medical professors do not provide courses or clinical lectures at popular prices. The churches are all said to be in need of pastors, but there is no seeking in highways and byways for them. Even in the Army and Navy it is not easy to secure recognition as a student without a liberal expenditure. But as regards architecture all the mysteries are revealed, not only in London, but in Manchester, Liverpool, Birmingham, Leeds, Glasgow, Dundee and other places for almost nominal fees.

If our ghost, after his sixty years' exile, were to return to his old office and to glance over the prospectuses and programmes which would find their way to him, he could hardly fail to ponder over the differences which exist between now and then. In the forties of the nineteenth century architecture might be called a close profession. The parents and guardians of youths understood there was only one way open to aspirants, which was by paying a premium for the privilege of entering an architect's office. It was not clear to outsiders what kind of training was to be followed. They had to take their chance as to whether after the specified time the youths were capable of building cottages and cathedrals. As there was no second means of approach, a good many PECKSNIFFS were able to gain a comfortable living by acting as toll-keepers. In London there were professors at that time in University College and King's College, but they were looked upon as no more than auxiliaries to the long-established system of producing architects.

It is remarkable that in the forties authors and publishers seemed to be afraid of meddling with the legitimate process of which so many worthy and wealthy men were the results. When JOHN WEALE, who as a bookseller was aware of the state of things, courageously published a shilling series of technical volumes like those used in France, he was encouraged by the approval of men of science and engineers. But having a liking for the art and knowing that people were interested in Gothic churches he brought out two or three little treatises on architecture. It is evident he did not calculate on receiving much support from architectural students. For instance, in the preface of LEEDS'S treatise on the Orders we read:—"Those who pursue the profession of architecture must, of course, apply themselves to the study of it technically, and acquire their knowledge of it, both theoretical and practical, by methods which partake more or less of routine instruction." In other words, no method of gaining knowledge outside the office was to be considered as of any use in the training of the English architects of the future. It would take us long to describe the events which have led to the change in policy. A great many architects still maintain that the old-fashioned system of education in an office continues to be the most effectual and is not to be superseded by lectures in colleges or by the reading of books. They would argue that an efficient architect can be turned out by pupilage or apprenticeship, while it is doubtful whether any architectural professor or teacher would have the courage to assert that an architect can be fully trained in their classrooms without any experience in an architect's office. There are certain essential duties called by some mere routine, and by others professional practice, which are of the utmost importance, and the training therein is only to be acquired by taking some part in the affairs relating to them. They may be treated as abstractions by professors, but they assume a different appearance in an office.

To all who have the least experience of architecture as a business or an art, what we have said will seem to be an unnecessary statement of everyday realities. We are a young people have a different opinion. SETH PECKSNIFF, to whom we referred, is still considered as being the best of large numbers in the profession rather than a fantasist of the imagination. His acquirements could easily be surpassed. In the numerous art schools where originally it was only professed to teach architectural drawing, the instruction has been generally described as "architecture." There is also, of course, a building instruction course, and to a young mind it seems hardly a combination of the two does not make an architect according to a Government standard. If, then, a more elaborate system of education is followed, and one in which professional architects take a share, it is allowable to suppose that no obstacles can arise to the perfecting of a student and that when the courses are over he will be competent to open an office, put a brass plate on the door and execute all manner of commissions.

It would be well if in all classes of the kind, but especially in those where architects co-operate, there were a little plain speaking at the commencement of a term. It should be impressed on students from the first that they can only be partially instructed in the classes of art schools, colleges or polytechnic schools. They might also be told that unless they are careful and attentive the knowledge they are about to receive may not be advantageous to them afterwards. In the course of the inquiries made from time to time into the working of Government art schools, it has often been declared by manufacturers that they find great difficulty in overcoming the defects of students, who in gaining various rewards come to them for employment, who by their incapacity, conceit and indifference to practical necessities become almost as unfitted for everyday duties as if they were untrained novices. A similar experience is found in architecture, and it is often said half seriously and half jokingly, that double premiums should be charged for students who have gone through a complete course of architecture in one of the new institutions. All knowledge is good, and, if rightly used, even a Government class should be beneficial, but what is to be considered is not the instruction as it stands before men of experience and how it can realise its partial extent, but rather as it usually appears to the imagination of the young, who have only insufficient means of testing its incompleteness in practice.

If adults would but recall their days of studentship they would own to their difficulties in seeing any connection between most of their studies and actualities. How can we have they discussed with their fellow students about the advantage of learning mathematics, dead languages, and so on? The pages before them constituted the dreary world with which they were concerned. In technical and art schools there is a like constraint. In the last report of His Majesty's Chief Inspector of Art Instruction we read:—"The study of architecture often shows too much reliance upon the text-book. Schools which have no architectural museum or a good collection of architectural casts are often near admirable buildings to which the student should more often resort for study. The profiles and mouldings are not seldom practically ignored, whilst the elaborate drawing of the enrichments of the mouldings is made." The defects of the architectural students are described only correspond with those in literary and other classes. The true relations of whatever engages them are overlooked, and what they perform is on that account rarely profitable to them.

A pupil who is a short time in an architect's office would acquire a more definite notion of what mouldings are and how far their adornment corresponds with their scale and profile. What is true of mouldings applies equally to other subjects. If employed to supplement the work of an office, the instruction offered in colleges and schools should be of service. It is not to be expected that an architect or his manager could afford the time to explain how strains in beams and roofs can be worked out, or could show the correspondence between the details of various styles. In the same way, many other questions arise which a pupil would wish to have answered, but which a press of business will prevent. In such cases it is well to have a friendly guide to whom recourse can be had, whether as a professional

a tutor. There are now a great many of the latter who are willing to resolve difficulties for slight remuneration. Students should be aware of these facts. If they suppose that by following a certain number of lessons they will be enabled to perform the variety of work which an architect in ordinary practice will have to do, then we fear they are preparing themselves for many disappointments.

CEILING DESIGN.

ON March 10, 1501, HENRY VII. incorporated the Plasterers' Company. The Master and Wardens to sue and be sued as "The Guild or Fraternity of the blessed MARY of Pargettors, commonly called Plasterers, London." The introduction of the two names is suggestive of the development of the trade. Parget is related to the Latin *paries*, a wall, and signified work on walls or partitions. A plasterer afterwards was less bounded in his operations, and could employ the material not only vertically but horizontally. Indeed, the London members of the guild were disposed to consider they could meddle with all trades. Before a century was over they were found working with the tilers and bricklayers, and at a later date the paper-stainers were compelled to obtain a special charter to prevent the plasterers from exercising the art or the use of painting with oil-colours as well as size-colours, the latter alone being permissible with them. The documents stated that they could procure for themselves and their families a convenient living and maintenance by nothing but lathing, daubing, plastering and lime-

work; it is remarkable that in Rouen, where more records relating to trades are preserved than elsewhere, although the statute of the plasterers is only dated 1478, there are still regulations which go back to 1289, and the statute in question was no more than a consolidation of earlier regulations which had become so numerous as to cause confusion. Most of the old houses in Rouen were of timber, and in consequence were liable to fires. Plaster was used as a supplementary material, especially in the construction of chimneys, and at the time there was no belief in its protective qualities. One of the objects of the statute was to prevent the introduction of plaster did not increase the risk of fire. It does not appear that in Rouen plaster was in use years prior to 1478 employed for ornamentation. The ceilings of rooms were of wood, and if figures, armorial shields or decorative panels were introduced on the ceiling, or they were generally carved in stone or wood. It may therefore be assumed that both in England and in France up to the end of the fifteenth century the use of plaster was limited to utilitarian purposes. The extension of its employment in decoration is evidence of a great change, which can be attributed to several causes.

One was undoubtedly the use of *stuc* or *carton-pierre* by Italian sculptors, and several examples of figures in that material have been preserved to our time. The Palace of Fontainebleau is supposed to have been one of the earliest examples in which plaster was employed for architectural decoration. At a later time it was introduced in the Netherlands, and GIOVANNI DA UDINE was ordered by MAXIMILIAN to decorate the vaults of the loggia with the material. The use of *carton-pierre* was supposed to be derived from the small figures and ornamentations in stucco then discovered amongst the ruins of the Palace of Pompeii.

Evidently the Renaissance artists had been desiring a cheap yet enduring means for decoration in relief. According to VASARI, they could obtain nothing better than a compound of gypsum, chalk, pitch, wax and red bricks, which they afterwards gilded. GIOVANNI, after many experiments, found that by mixing white marble dust into dust and sifted, with white travertine lime he was able to make stucco equal to that of the ancients. The success of the ornamentation was so manifest that commissions appear to have been given rather than the artist was able to execute. Some painters were so pleased with the results that they endeavoured to employ the material for figures in the foregrounds of their wall-paintings. PINTURICCHIO

and CARLO CREVELLI were amongst them. But the illegitimate combination of modelling and painting, although amazing to the ignorant, was soon discovered to be not deserving of approval.

Although the manipulation of stucco and plaster had been reacquired, there was some hesitation about applying it more than partially in the decoration of ceilings. The Moors, for instance, were admirable workers in plaster and stucco, but in the Alhambra they were careful to avoid showing large areas of the material. OWEN JONES, in the restoration of a part of the Alhambra at Sydenham, employed plaster ceilings, but he acknowledged that he departed from his model, where the ceilings are of wood, and sometimes, as in the Hall of Justice, the wood was allowed to exhibit its own colour. The earlier Renaissance ceilings, in which the Gothic arrangement was departed from, consist of mouldings or ribs in connection with wooden beams, and the plaster is therefore allowed to be only a subordinate accessory. Not only the main lines are joiners' work, but the subdivisions also, although not necessarily disposed in such a manner as to suggest a system of beams. SERLIO, the architect, appears to have introduced the system into France by which a series of compartments were left for decoration either by means of painting or stucco-work, and a great variety of arrangements became practicable. It is doubtful whether a Renaissance architect would not be horrified by the wide expanse of flatness, broken only by a centre-piece and a cornice, which is to be found in the majority of the rooms in modern buildings.

It is remarkable that Gothic architects endeavoured to resist the innovation in some places by compromising their own style with that of the Renaissance. VIOLETT-LE-DUC says that "in breaking away from the routine by which the masters of the fifteenth century were enslaved, they applied to new forms the resources of the art of building of the Middle Ages. At the beginning of the sixteenth century architects very frequently employed the system of vaults composed of slabs resting on ribs, which allowed them to decorate these vaults with rich sculptures and to obtain effects until then unknown. Arranging a sort of network of stone, with key pendants or floral ornaments at the points of intersection of the ribs, they placed sculptured slabs between them." But it must soon have been perceived that there was no advantage in having heavy stones and costly carving hanging over people's heads, when another arrangement was available which was light, cheap, yet effective.

In England there was at first a desire to have ribs arranged in geometrical forms, and to fill in the panels either with plastering or with a material resembling *carton-pierre*. There is little doubt that in the sixteenth century Italian artists had emigrated to England, it may be stopping on the way in France; and, in consequence, there is often more elegance in the ornamentation of the ceilings than in the carving. Strap-work perhaps could scarcely be considered as their work, but even with it there is a filling in of spaces which recalls the South.

The ceiling of a room presented a freer field than the walls or floor for the decorator. There need be no break in a design by the introduction of large pieces of furniture or other objects. The Elizabethan or later artist could therefore treat his ceiling as a whole, or adapt a series of panels to it. As a rule, in England there was a fear of the former system. We cannot always say which part was considered to be most important. The ceiling may have been planned in such a way as to allow of the use of some one pattern, but it is also possible the pattern was already in existence, and the space had to be accommodated to it. When we say a pattern, it may have been one of several elements that would by itself form a little ceiling. But whether simple or elaborate, it was repeated until the space at disposal was covered. The spectator must feel on looking at one of these ceilings that the ornamentation could be carried on over a far wider area; or, if necessary, vastly diminished without any loss of effect. There is neither a definite beginning nor ending. The elements may be formal, but from the manner of using them they lose much of that quality. Another peculiarity arises from the all-overishness of the ornament. There are no plain spaces to repose the eye,

and by force of contrast to enhance the effect of the ornament.

INIGO JONES brought the treatment back to the more pure continental manner then followed by Frenchmen and Italians. The ceiling was not apportioned out into divisions corresponding with one element or pattern. There appeared to be a systematic arrangement in which principal and subordinate parts were recognised. He realised also to some extent that the ornament of a plaster ceiling should be superficial, and there was no need to go back to ancient Roman examples when ceilings of temples were cut out of stone slabs or formed of bronze castings, and it was becoming to demonstrate that the material was no mere incrustation. When WREN came he had not the courage to insist on the rationale of ceiling decoration. He adopted French models, but in the selection he was hampered by want of sufficient acquaintance with the practice of the artists of that country. It would have been easy for him to discover that they were also partial to ornament that was in very slight relief and as delicate as if modelled by a *sucrière* or a lacemaker. He preferred the coffered style from its massiveness. WREN'S ornament also was inspired by GRINLING GIBBONS, a sculptor who could fashion lace cravats out of wood, but who liked to present images of substantial fruits which seemed ready to drop into the mouths of spectators. They are excellent if considered as representations, but something more appropriate in form is desirable in a ceiling.

ALBERY, GATTON AND MERSTHAM.*

WE have to-day visited three places, each possessing a peculiar interest of its own, and it is hoped that the following brief account of them will be worthy of your attention.

Albery was formerly a separate manor, though included within the parish and now amalgamated with the Manor of Merstham. The name is spelt in the Domesday Survey as Albery. It seems remarkable that a few years ago our Society visited Oldbury Moat at Enfield, under the leadership of Messrs. McKay and Harradence, and that the old earthwork we saw at Hedbourne a fortnight ago was situated on Aubrey Farm—the field inside is called Middle Aubrey and that to the north of the camp Long Aubrey—and that to-day we have seen a moat at Albery Farm.

These words, Oldbury, Aubrey and Albery are no doubt various ways of spelling the Saxon words designating an ancient dwelling-place, and it is significant that in each instance they indicate an earthwork of some kind. The county histories give the usual extract from Domesday Book and the list of persons who held the manor from time to time, but the following paragraph from Manning and Bray's "History of Surrey" is perhaps more worthy of your attention:—

"At Albery was formerly a capital mansion house, the residence of the Southcotes." The family had held to the old ideas and still acknowledged the supremacy of the See of Rome in this land, and in the reign of Charles II, when one of the family died, and was refused burial in the churchyard of Merstham, they abandoned the mansion house, and some years later—about 1750—it was demolished. It is said to be the Rector Sambourn, who held the living of Merstham from 1675 to 1723, who would not sanction the burial of this member of the Southcote family. We must remember, in looking at this incident, that in 1679 Titus Oates flourished, and in 1680 Lord Strafford was beheaded, and that it was a period when violent prejudices and strong passions held full sway on both sides.

Manning goes on to say of the house that it was called by way of eminence "The Place." It stood in what is now called the Great Meadow, through which runs the rivulet forming a paddock. On the opposite side of the road a field of three acres retains the name of the "Walks." The chapel is said to have been splendid. The family were very benevolent, and the last Lady Southcote is said to have taken her station at regular stated times on the garden terrace overlooking the road, in order that she might hear the petitions of those who were in distress and satisfy the claims of the indigent poor.

Here is no mention of a moat, but, from the allusion to the chapel and faith of the Southcotes, it seems certain that they were established here at a time when the majority of mansion houses were surrounded by moats.

Albery was not a very large manor, and it seems unlikely that within its limits there was more than one mansion house.

* A paper read by Mr. Jonathan Downes before the members of the Upper Norwood Athenæum.

The description of the Great Meadow from which the cuts off a paddock corresponds so exactly, that it is a reasonable assumption that the spot we visited this afternoon was the site of the old abode of the Southcote family.

Of Gatton Mr. Leveson-Gower, F.S.A., said at a meeting of the Surrey Archaeological Society in July 1879, "situated on what is called the Pilgrims' Way. Its name is Gate town, as Reigate may be Rige Gate—the Gate on Reigate (Gate, it may be said, is here used in its secondary or meaning of a way or road. "Gang your own gait—go your own way.") "Peculiar interest attaches to the road, as it is one of the earliest marks of civilisation that the county possesses, leading between two of the chief towns of England, Winchester and Canterbury." Mr. Leveson-Gower need not have limited its course. It might well have run from Dover or even Penzance, not only to Canterbury but to Dover. It may have been one of the old Ridgeways or Icknield ways, one meets in many parts of the land. Some of you will have heard King Alfred's blowing stone and seen the White Horse and Wayland Smith's cave, will remember that the road stands beside one of these very old Ridgeways. Indeed, it goes on to say that this part of it may have been a British road anterior to the Romans, but used by them to witness the remains of villas at Abingdon and Colley, and at Reigate; coins, &c., here at Gatton, and more villas at Icknield and Titsey."

These latter are also on the Pilgrims' Way, as it is marked on maps, and I should here mention that in the time, about sixty years ago, the lane turning out of the road to the east nearly opposite to Merstham Church was called Pilgrim Lane.

But Gatton was an ancient place before Thomas Becket was slain and before the pilgrims began to come this way to his shrine.

Brayley says that in the time of Alfred the Great a duke gave land at Gatetune to his son Ethelwald. There have been another place of similar name, but this is certainly the Gatone which is described in Domesday Book, and it was held by Herfrid of the Bishop (Odo of Bayeux). In the details in Domesday Book it is certain that no castle existed here then, although Aubrey, writing 600 years later (under the belief that there must have been a town here, there were members of Parliament), boldly invents a story of the town to the south-west of the house, on the site of which he says a castle formerly stood.

Odo forfeited the manor to the Crown when Rollo of Normandy, whose cause he had espoused, was defeated by William I., surnamed Rufus.

Hamo, who assumed from it the surname of De Catesby, then held the manor of the king *in capite* by service of a knight's fee and payment of castle guard to Dover Castle. It remained in his family for some 300 years. Then occurred a very memorable event in the history of Gatton. In the reign of King Henry VI. granted it to John Tymperley for his services and faithful services, in payment of 40s. a year, with licence to empark and with liberty of free warren. The licence to empark almost certainly precludes the existence of a town at that period. Two years later, says Brayley, Gatton was empowered to return two members to Parliament, and it is not improbable that even this privilege was granted to Tymperley's services, although their precise nature is unknown. There is here no mention of a Charter of Incorporation or of the appointment or creation of mayor, aldermen, burgesses, bailiffs, or the usual essentials of a borough. Elections at a later period were conducted by a corporation elected annually in the customary form at the usual court of the manor. Therefore, although Gatton was spoken of as being a borough, I think it is fair to infer that it was never actually and legally constituted as such.

The first members in 1451 were Thomas Bentham and Hugo Hulls. I will not give you the whole list, but a few examples, which will show that the "rotten borough" so returned men of much the same class as other boroughs.

In 1558. Edward Slyfield, of Slyfield Manor, Great Ockham.

1553. In the first Parliament of Philip and Mary when that Thomas Copley was returned by the election of a lady to elect the member."

1586. John Puckering, serjeant-at-law, afterwards Speaker of the House of Commons.

1603. Sir Thomas Gresham, of Titsey Manor, and for many years of the Royal Exchange.

1625. Sir Thomas Carew, serjeant-at-law and Speaker of the House of Commons.

1702. Thomas Onslow, of West Clandon.

1812. Wm. Congreve, son of Sir William, the inventor of the rockets that bear his name.

And in 1831, the last members were John Saville, Viscount Pollington, eldest son of Lord Mexborough, and John Cooper, fourth son of the Earl of Shaftesbury.

The elections, according to local tradition, took place in what is called the town hall, a kind of Grecian temple.

d on six columns, almost hidden from sight in a clump of
outs and limes. Behind it is a large urn standing upon a
pedestal, on the four sides of which are these
inscriptions:—

"Comitium Gattoniense, 1765.

H.M. Dolus Malus Abesto."

"Stat ductis Sortibus Urna.

Salus populi Suprema Lex Esto."

It may be thus roughly translated:—"The Hustings of
Gatton, 1765." (Comitia—Roman legislative or elective
assembly.) "Let trickery and evil be far from us. The urn
stands though the lots are drawn. Let the well-being of
the people be the supreme law."

1765 implies the date of the erection of this structure it
is probably due to Sir Mark Wood, who was the then lord of
the manor.

That the initials H.M. may mean I cannot say.

It is to return to the succession of the lords of the manor.
Under what circumstances has not been traced, Gatton
is the property of the knightly family of Copley until
1765, when, on the death of Sir William Copley, it descended
to his granddaughters, Mary and Anne. Mary was married to
John Veston, of Sutton Place, near Guildford, and Gatton was
sold to them on a partition of the estates. They sold it to
John Turgis, who became one of its members in 1660. His
son succeeded him, and also represented Gatton in Parliament
1704, when he died s.p. He bequeathed the property to
his kinsman, William Newland, who, together with his
sons, also died s.p. George, the younger brother, Fellow
of Magdalen College, Oxford, and Professor of Geometry in
St. John's College, London, dying in 1749. The manor de-
scended to some female relatives of the Newland family, who
obtained an Act of Parliament for the sale of the estates in
1765, of Geo. II.

It was passed by sale from hand to hand until early in the
nineteenth century, when they were purchased by the trustees (during
the minority) of Frederick John, fifth Baron Monson. Born
1781, s.p. 1841.

It is the Lord Monson who commenced to build the
Hall, and who, in 1834, renovated and decorated the
interior. His remains rest in the mausoleum which he built
for himself a few years before his death. The place belonged
to the Monson family until 1890, when it became the property
of Mr. Jeremiah Colman, the present owner, who
renovated the Marble Hall as we now see it.

The church of Gatton is mentioned in Domesday Book,
1086, as being in the gift of the prior of St. Pancras Priory,
until the dissolution of that house. Since 1550 to the
time the advowson has been vested in the lords of the
manor. Of the structure Brayley says it is Anglo-Norman, and
there may still remain some foundations of the church
as recorded in Domesday, but he only adds that in 1834 it was
renovated by Lord Monson, of whose correct taste
and quality it presents an eminent example. The exterior is
well executed. Lord Monson sought far and wide for his
decorations. The wainscot and canopies of the nave
and stained glass are said to have come from the cathedral
at Chartres, Louvain; those of the chancel from Burgundy,
the communion-table and pulpit from Nuremberg (they are
said to have been designed by Albert Dürer). The com-
munion-rails came from Tongres, in Flanders; the stalls
belong to a Benedictine monastery at Ghent, the carved
work brought from Rouen, and at the west end of the
chancel a Gothic screen from an English church, bought by
Lord Monson, "after the more than asinine stupidity of a
man had consigned it to destruction." It is a fine
specimen of open carved work. In the west window are the
figures of Henry VII. of modern execution, and they are
very likely incorrect, as the supporters are depicted sitting
on haunches.

The name of Merstham has been variously spelt Mestham,
Merystham and Marstham; but the Domesday Book
says "Merstan is held of the Archbishop of Canterbury
by the monks." Major Heales, F.S.A., says it
is probably derived from the word *mere*—defined as a marsh-
y boggy swine walk—and *stan*—a stone or house of
stone. From the fact that Merstham was formerly noted for
its pottery it is probable that the last syllable should be "stan"
or "ham." So far back as the fourteenth century
Henry II. granted a patent to John and Thos. Prophete to
use here to be used in the construction of Windsor
Henry VII.'s Chapel in Westminster Abbey is almost
entirely of Merstham stone. And according to local
tradition the present London Bridge is said to have been built
of Merstham stone, conveyed thither by means of an early
tramway, known as the Surrey Iron Railway. It
was opened in 1801 and finished in 1805. It was a double
track, worked by horses and ran from Merstham and Croydon
to Wandsworth. It was constructed of iron
girders laid down in parallel lines in which the

wheels of the waggons ran. Eventually it was purchased by
the Brighton Railway Company.

The stone is a kind of firestone, soft when quarried, but
hardens by exposure to air. It stands great heat, and hence is
called firestone.

Merstham Church.

The earliest and chief part of the existing fabric is of the
end of the twelfth century. The west doorway has suffered
from severe cleaning, amounting almost to recutting about
twenty-five years ago. The dog-tooth is cut in a chamfer,
which is somewhat unusual. The lancet windows in the tower
are original, notwithstanding their modern appearance caused
by careless scraping.

The first bell is inscribed:—"Sancta Katharina ora pro
me."

The second:—"x Robertus x Mot x me x fecit x 1597 x."

The third:—"Bryan Eldridge made me 1643, Nicolas Best
and Rich Sharpe, Churchwardens."

The font is of Sussex marble and of Norman design, and
resembles one of the same period at Shere. The chancel arch
is similar to French work executed about the same time, and
its capitals bear sculptured foliage resembling acanthus leaves.

In the north chancel or chapel is an altar tomb bearing an
inscription which may be thus translated—"Here lies John
Elmbrigg, gent., who died the 8th day of Feby., 1473. And
Isabella, his wife, who was the daughter of Nich. Janys,
quondam Mayor and Alderman of London, who died 7th day
of Sept., 1472, and Anne, his wife, daughter of John Prophete,
who died — day of —, 14—."

There were three brasses of these persons, but that of the
husband, in the centre, is missing. Scrolls proceed from
them—"Sancta Trinitas," "Unus Deus," "Miserere Nobis."
Beneath is a brass showing seven daughters with butterfly
head-dresses, and on the right of this is the depression which
once contained a brass of the four sons.

In the middle chancel is a brass to "Thomas Elmbrigg,
Armiger, who died 27th March, 1507." A small brass to John
Newdigate, who died 21st Feb., 1498. Also one to "Peter
and Richard Best, sons of Nicholas Best, and Elizabeth, his
wife, of Alderstead, in the Parish of Merstham."

The father may have been the son of Nicholas Best, church-
warden, whose name is inscribed on one of the bells.

In the north chancel is also a curious life-size effigy of a
man attired in a long robe with a purse at his side. The face
has been roughly obliterated. This figure was found placed
face downwards, beneath the floor of the south chancel, when a
vault was being excavated for the interment of one of the
rectors.

Some have thought it to represent the Nicholas Janys,
mayor and alderman, mentioned on the Elmbrigg tomb.

THE GOVERNMENT ART SCHOOLS.

IN his last report Mr. S. J. Cartledge, the chief inspector,
writes:—

There are many excellences in the work of schools of
all kinds, but these, with this simple comment, can be left to
take care of themselves. Much of the elementary imitative
work would be strengthened and the students would learn to
draw with more freedom and boldness if "free arm" black-
board practice were more widely adopted. Some teachers
show timidity in introducing such practice, fearing that it may
lead to a lack of accuracy. But where concurrent practice in
accurate pencil, brush or pen drawing is followed, the danger
of unbridled freedom is non-existent. In geometrical drawing
the work is often slovenly and inaccurate, the points of contact of
curved with straight lines are indeterminate, angles are wrongly
plotted, and repeating patterns especially are vaguely constructed.
Sometimes it would appear that the student is left too much
alone with the text-book, without the necessary demonstration
or explanation of method. Blackboard drawing is sometimes
weak in the memory section, which is, in the few cases referred
to, a mere matter of cram from printed examples of flowers,
animals, common objects, &c., one view only of the subject
selected—that given in the text-book usually—being possible
to the student. Fewer students appear to be studying perspec-
tive drawing, and the weak point seems to be the inability to
understand the uses of geometrical plans and elevations, which
are so necessary in this subject. Shadows and reflections
should be more generally studied. In freehand drawing too
much preoccupation about the kind of line supposed to be
necessary to pass the examination appears. Distinct and
accurate representation of form should be the aim here. Model
and object drawing in the weaker schools shows much ignorance
of foreshortening, a kind of half-teaching about the "vanishing"
of lines appearing to satisfy the instructor in such schools. In
the study of light and shade there is a serious falling off.
Loose, sketchy, feeble work is seen in many schools. Though
the teachers have complained of the complexity and unsuit-

ability of the examples lately given in the Board of Education's examination in this subject, that is rather a reason for their seeing that the students study carefully from examples of simple form to secure their understanding the meaning and expression of "shadow," "shade," "half-shade," "reflection," "light," "half-light," "high light," &c. But in a large number of schools students are found working from the casts used in the examinations, to which the teachers have expressed objection. The study of architecture often shows too much reliance upon the text-book. Schools which have not an architectural museum or a good collection of architectural casts are often near admirable buildings to which the students should more often resort for study. The profiles of mouldings are not seldom practically ignored whilst an elaborate drawing of the enrichments of the mouldings is made. Studies of the human figure from the antique and the living model are curiously unequal. In many cases memory drawing from the living model is attempted before complete imitative study has been effected. It is obviously of little use to memorise an imperfect realisation. In the work from the antique this defect is not so apparent, and it may be due in the life work partly to insufficient opportunity of studying from the living model. In some schools such study is curtailed on account of the expense incurred in employing models. The study of anatomy calls for no special remark as to defects. In design the predominant weakness is a lack of thorough nature study. Too often a hasty drawing is made from a spray of natural foliage without careful research into the principles of growth, the beauties of contour and the more minute delicacies of form, and then a pretentious composition is imperfectly schemed by reference to this imperfect drawing. In some cases no study from nature is made, the details being annexed from one of the illustrated text-books on design. Though improvement is shown, lettering is still far from thoroughly studied in some schools. In figure compositions too little recourse to nature often betrays itself, and in the illustration of classical or legendary episodes an imperfect acquaintance with the myth or legend is apparent. Ornamental painting is too often mere cram for the examination in this subject. Still life painting would in some schools be better done if simpler groups were arranged and objects with little detail or pattern were used. The study of principles of ornament and historic ornament is frequently confined to text-book work, without reference to local buildings and museums. Modelling in all its branches often shows pupils working at subjects beyond their strength. This appears especially in figure studies in the round and in the higher branches of modelled design. The study of mouldings here appears often to be neglected or superficially followed. Students of modelled design who attempt subjects connected with architecture should have some knowledge of that subject, or at least of that part of it which is concerned with the details with which they are dealing in their designs, even if those details are only the mouldings of a panel or frieze. But the weakest point of all appears in the study of colour, which in many schools does not receive the degree of attention it requires.

Some schools neglect the preservation of the executed work of the students, which should be kept together each session for the inspector's examination in order that the progress of individual students may be gauged.

In the course of this report I have dwelt rather on faults than on merits, but it should be stated that the best work of the best schools was never better than it is to-day. And where effort is being made I think it is exerted with more energy and more intelligence than in the past. Therefore the outlook is hopeful, as the example of the efficient schools is bound in time to influence the weaker ones.

It is interesting to find here and there natives of other countries studying in our schools of art, as I have seen them in London, Manchester, Liverpool and other centres. In this connection Mr. FitzRoy says:—

"At Leicester Municipal School of Art I found a young French student, son of a Paris jeweller, sent from Paris to Leicester to take a two years' course to 'learn to draw and to design in the English way.' This appears to be some evidence of the appreciation of the work of English schools of art in France.

"At New Cross School of Art (Goldsmiths' Institute) I also found four students from Toronto, Canada, come over for a year's course."

The fact that the teacher is the dominant influence in the work of art education renders it fitting to refer again to the difficulties experienced by teachers in their arduous work. The position and qualifications of art teachers are often misunderstood. The training of the efficient art teacher gives him a sound knowledge of the history, principles and practice of various forms of art and the manipulation of their different materials of expression. But he has a more important qualification than these. He has a knowledge—one most difficult of attainment—of how instruction in the principles and practice of art is best conveyed to the students, who, as human material,

vary infinitely more in character and behaviour and are much more difficult of manipulation than the materials of practice art. The peculiar and special value of this expert educational knowledge in art is apparent when the failures are recalled that have been made in art education by men of eminence as producers. Until the special value of the educational qualifications of the art teacher is more generally realised, his duties will be performed in many instances under conditions of discouragement and want of appreciation which are not conducive to successful work. Sometimes a teacher has to struggle against difficulties in the way of bad premises and equipment without the nature of his disadvantages being in the least degree taken into account or even realised by his governors. An instance recently occurred in which some members of a governing body were not satisfied with the work of their art master, which they compared with that of a neighbouring school. It had not occurred to them until it was pointed out that their premises did not admit of some of the work successfully done at the neighbouring school being touched at all by their own, to say nothing of the cramped and unsuitable accommodation for most of the higher work, which is well provided for in the neighbouring institution.

When a school of art forms part of a large institution such as a polytechnic or a technical institute there are some instances of difficulties arising from the want of appreciation of those in authority of the means of keeping the machinery of art instruction up to date. Occasional friction arises in large institutions from the drafting of art students into other subjects of study, and the placing aside of the art master's authority over the art students. Happily such cases are rare.

In my last report I referred to the desirability of art teachers having opportunities of visits to foreign countries to see the life and work of other nations. I am glad to be able to report that some of the art masters have during 1902 taken advantage of foreign travel. Among these I may mention the head-master of an important school of art in Surrey who recently paid a voluntary visit to Spain, from which he derived much information on art matters that will be useful in his work, and through his instruction to the art education of the country at large.

The head-master of a school of art in Staffordshire was sent in the summer to Germany and Austria by the county council for the purpose of visiting the principal glass-making districts. As he is a practical artist in glass this visit could not fail to be of utility not only to him as a teacher but to the glass industry of the country, which will find profitable information in his excellent report to the technical instruction committee of the Staffordshire County Council. The practical suggestions made by him as the result of his impressions should commend themselves to other localities, which would do well to follow the example of Staffordshire County Council and send the masters of their schools of art to see what methods of teaching manufacture are adopted in similar localities abroad. The expenditure involved will be a sound investment through strengthening thereby of our national industries.

EXCAVATIONS AT NAUKRATIS.

A CORRESPONDENT of the *Times* writes:—How and why Naukratis was the one privileged colony of Greece in the Nile Delta under the Saite Pharaohs is known to every student of Herodotus. How its site came to be rediscovered in 1884 is known also to all who have followed the amazing record of Mr. Flinders Petrie's explorations from their own time. The excavations which he then set on foot, and Mr. E. Gardner and others continued, showed this site to be (as it indeed, to be expected) of a very singular character. The great trading cities of the Eastern Mediterranean seem to have poured their products into it, and to have combined the Egyptian influences to create and foster native industries whose output was of a curiously hybrid nature. West of the East co-operated in the decoration of the local pottery in the style of the local terra-cotta fabrics, and even the architecture of the local shrines. Naukratis must have been an exchange and mart of a very cosmopolitan kind. If nothing else testified to the fact, it might have been readily inferred from the multitude of balance-weights in many materials related to several standards which are strewn over the mound. And if ancient writers had not referred to the fastidious and sensual luxury of the place, the extraordinary abundance of the finest painted sherds of all contemporary fabrics, forming the great abundance of vessels dedicated to the goddess of love, and the abundance of indelicate plastic and decorative types, would have taught us to regard Naukratis as the home of a civilization as much Oriental as European. To the predominance of the Ionian element among its Greek population were also evidently others, notably Cypriote and Phœnician, which could not make for continence or frugality.

Side by side with the Mediterranean colonists lived, as we are now assured, in a distinct part of the town, a considerable Egyptian population, which had its own name for the place.

recognised the Greek designation. Both names have been written in hieroglyphic script together on a splendid papyrus-bundle which was dug up some four years ago in the heart of the southern desert. The spot, now cultivated and irrigated land belonging to Prince Hussein, lies in the middle of an area trenched by Mr. Petrie in 1884, and by him believed to be a Greek necropolis; but it is clear that it is purely Egyptian, the centre of a population which lived apart. Whether the Egyptian city existed there before the Greek suburb to the north was founded we do not yet know for certain; but it is not improbable that it did so precede Naukratis proper, and must be referred to the time of the founder of the Saite dynasty. Indeed, there is some reason to think that the subsequent invitation to Greek traders to settle beside it, and the grant of exclusive trading privileges, were precautionary measures. Amasis decided to bring into one spot in Egypt, where they could be garrisoned by a resident garrison, in easy communication with the neighbouring Sais, the scattered members of an enterprising foreign folk of useful commercial capacity but piratical instincts. As this folk was undoubtedly affected by contact with the Egyptians, so the latter must also have been affected by the Greeks. The interest of Naukratis is such that it has brought well to work the mounds over and over again in order to recover whatever significant remains antiquity may have left buried there.

The first object aimed at by all excavators of Naukratis has been the shrine, or group of shrines, rendered famous by Herodotus as the Hellenion, founded and controlled in common by the great Greek cities of the Asiatic coast. This may not have been part of that emporion, or exchange, of the same cities managed. As the oldest known instance of a Hellenic factory, such as the Italian maritime republics, the Portuguese, the Dutch and our own merchants were to establish later in *partibus infidelium*, this foundation by the Greeks of the sixth century B.C. in Egypt has a special interest. Mr. Petrie, looking for some large open space, such as might have been at once a great market and the precinct of a temple, thought he had found it at the end of the mounds, where an area comparatively free of debris was then surrounded wholly or in part by formidable walls of brickwork. But Mr. Petrie did not attach sufficient weight to negative evidence, which he himself supplied, to his failure to find Greek remains in this area, or anything pointing to an Hellenic temple, or to the positive fact that no Greek remains were found in and about it is almost exclusively of Egyptian origin. Furthermore, perhaps he jumped too hastily to the conclusion that here was one *temenos*, enclosed by a single wall, and that it was empty of any buildings other than a rack-like structure which he found in the southern half. Chance discoveries made since have demonstrated that there were other buildings there, and it seems clear that it was the heart of the Egyptian part of the town. In the case of it were Egyptian shrines, and round these rose masses of brick building to a considerable height, according to the growth of most cities, in which the level of the quarters rises steadily round the unalterable religious centres. Mecca supplies a good example. There the dome of the Great Mosque is now sunk below the streets and has become the receptacle for their flood drainage. The true site of the Hellenion was probably found fifteen feet higher at the other end of the mounds. This northern position is shown by an enormous preponderance of Greek remains, which represent the foreign quarter and the locality in which the shrines to Greek divinities were erected. Here Mr. Petrie had explored precincts sacred to Apollo, Hera and the Dioscuri. And here it was that, in 1899, a shrine of Aphrodite was found, forming part of a complex of buildings within a walled enclosure, among whose ruins occurred fragments of dedications to other divinities, and notably several inscribed to the "gods of the Hellenes." In the past spring exploration of this region, rendered possible by the low water throughout Egypt, has served to give definition to the area within which these curious dedications occur, and their number; and it is almost certain that this precinct must have contained a temple to the *Theoi Hellenioi*, or of small shrines dedicated to the worship of the Hellenic deities included under this category. To these shrines the Greeks were made separately or in common; and it is not possible to suppose that it was their shrines and precincts together that constituted the Hellenion.

The terrible ravages wrought by limeburners, by the climate and by the delta acting on structures of unbaked bricks and by the ladders for nitrous earth, have left little enough for an explorer to explore, and he must be content with hardly more than the almost indestructible potsherds which survive as once dedicated by pious patriots or lovers in the desert. These sherds are often of singular excellence, probably the finest fabrics of Hellas from the middle of the fifth century onwards, and extraordinarily representative of the work of the potters. In fact, a better collection of Greek potsherds for educational purposes could till lately be

made at Naukratis than on any other single site in the Hellenic world. To these, however, every explorer of Naukratis has been able to add a great number of votive terra-cottas, whether remains of single figures or of groups. Those found in 1899 in the shrine of Aphrodite within the Hellenion enclosure were particularly fine; those found during the latest excavations, inferior in quality, seem to pertain not to Aphrodite only, but to cults of Artemis and Herakles. Remains of sculpture in other materials have always been of rare occurrence at Naukratis, where the limeburner has been diligent; but this year has added several pieces to the plastic fragments we possess from this site in marble, stone and plaster.

Evidence accumulates that the town underwent at least one sack of a very drastic sort not long after its foundation. Structures, which are not of later date than the earlier part of the fifth century B.C., have earlier ones underlying them and separated by a thick belt of debris. Probably the deep trench found by Mr. Petrie in the precinct of Apollo, full of fragments of early vases, was cut when the time came to efface the marks of this cataclysm. Who sacked Naukratis? One thinks naturally of the Persian invasion and the maltreatment of the Delta by Cambyses. Herodotus says nothing of Cambyses in connection with this particular city; but there is no reason why he should have done so. A Persian sack was ancient history by the time Herodotus came to visit Naukratis, and all trace of it had probably been obliterated. It may be remarked in this connection that of his visit in the latter part of the fifth century B.C. a possible relic has come to light in the recent excavations, namely, the base of a painted vase inscribed "Herodotou." This vase was found within the Hellenion precinct; and seeing the comparative rarity of the name and the coincidence of the date of the vase, as judged by its fabric and the lettering of the dedication, with the probable epoch of the Halicarnassian's visit, one may be allowed to read on this offering an autograph of the father of history.

The exploration has been pushed this time to the very limits of the so-called mounds. The site of Naukratis is, from an archaeological point of view, done with. Stray potsherds may yet be reclaimed, and in the irrigated lands about the skirts of the site a monument may come to light from time to time; but there is no longer any scientific reason why the levelled and excavated area should be withheld from cultivation.

POLYTECHNIC CLASSES.

THE pioneer Polytechnic in Regent Street commenced its twenty-second class session on Monday evening, September 28. A visit to the auditorium of the Polytechnic on Monday evening last revealed a sight most encouraging, for hundreds of young men and women were to be seen paying their class fees for the winter session. Some idea of the extent of the educational work carried on in the Regent Street Polytechnic may be gathered from the fact that last session 14,400 students attended classes and nearly 15,000/ was paid in fees. Considerable successes are obtained every year by the students, and a few amongst many obtained last session were six National Competition medals and ten book prizes, fourteen City and Guilds silver and bronze medals and 23/ in money prizes, eighteen London County Council scholarships, fourteen University of London Inter. Science and three Inter. Art degree passes, and several students of the art schools had works exhibited in the Royal Academy exhibition. A special feature of the work is the comprehensive courses of instruction at nominal fees arranged to meet the requirements of various trades and professions. For instance, an excellent architectural and building trades course may be taken each evening for a period of seven months at a fee, including certain textbooks, of one guinea, and for this sum a student may attend, if he is so minded, classes every evening weekly in twenty subjects. For a sum of 12s. 6d. a mechanical science course ticket, admitting to classes in ten subjects appertaining to engineering, may be taken every evening weekly from September to May. Other equally advantageous courses at nominal fees may be had in electrical engineering, natural science, domestic economy, business training, in addition to the various day schools. Some 600 evening classes in 220 different subjects are held weekly. Altogether the Polytechnic may well anticipate another successful session.

Two Statues have been placed on the new west façade of Hereford Cathedral. They represent St. Ethelbert and St. Thomas of Hereford. They are partly reproductions of the mutilated effigy of King Ethelbert which is placed on a pedestal against the pier on the south side of the sacristy, and of the small figure of Sir Thomas de Cantelupe, which forms one of a group of mutilated figures over the tomb of Sir Peter de Grandison against the north wall of the lady chapel. They have been designed and executed by Mr. Fincher, sculptor, of Peterborough.

NOTES AND COMMENTS.

It is sometimes difficult to determine how far the amalgamation of two buildings, which separately and formerly complied with the London Building Act, changes their character and makes them subject to later amendments relating to new buildings. A knotty case of the kind came before the Tribunal of Appeal at the end of last week. The demand for instruction made it necessary to enlarge that useful institution, the City of London College. In 1894 that was attained by taking a house which was separated from the main building by a court, and connecting them by means of a bridge. The arrangement was then legal. It is now proposed to utilise a vacant warehouse in Ropemaker Street as an addition, and the question to be determined was how far the amendments of 1898 were applicable. Mr. E. WOODTHORPE, the district surveyor, raised the following objections:—(1) The roof should be made of fire-resisting material throughout; (2) the staircases in the building were not in accordance with the Act; (3) the uniting of the present City of London College (including the original building in 1883 and the addition of 1894) to the building proposed to be converted was objectionable, because the building, if united and considered one building, would not be in conformity with the Act at present in force (the London Building Act, 1894). The President of the Tribunal advised a compromise. The College authorities accordingly withdrew their appeal respecting the corridor communication, and the hearing was adjourned to enable the parties to agree upon a second means of escape in case of fire at the new premises, No. 9 Ropemaker Street, and also to agree upon the requirements necessary to make the building fire-resisting.

THE lectures to students of the Royal Academy will commence on Monday next with the course on chemistry by Professor CHURCH. The subjects will be similar to those of preceding years, with the exception that in the last lecture "Solid Oil-Colours" will be introduced. They will comprise:—"Grounds for Painting," "Composition and Classification of Pigments," "Tests and Trial of Pigments," "Selected and Restricted Palettes," "Vehicles and Varnishes" and "Methods of Painting." Professor THOMSON's course of twelve lectures on anatomy will begin on October 26 and will be completed on December 3. The subjects of the lectures on painting and sculpture will be afterwards announced. Professor AITCHISON's lectures will be devoted to "VITRUVIUS." The first will be given on February 29.

ILLUSTRATIONS.

CEILING OF CHAPEL, ROYAL MILITARY HOSPITAL, KILMAINHAM.

THIS structure, erected in 1680 from the design of Sir CHRISTOPHER WREN, in his capacity of surveyor of works to the Crown, possesses many features of interest, not the least of which is the ceiling of the chapel. The plasterwork is attributed to CIPRIANI, and is said to be not inferior to any similar work in the kingdom. The ceiling is of the same date as the structure, and the timber supporting it becoming defective through age, it was in danger of falling. Every effort was made to keep it in position, and the idea of conserving it was reluctantly abandoned. Examining the design critically, it may be regarded as a very interesting example of the plasterwork of the period rather than as possessing great artistic merit, as it is perhaps somewhat overloaded with ornament to be architecturally good. After much consideration the Board of Governors eventually approved of the scheme of reproducing it in its entirety in fibrous plaster by Messrs. JACKSON & SONS, 49 Rathbone Place, London, at a cost of about 1,800/. A portion of the old ceiling was preserved for the Museum of Science and Art in Kildare Street, Dublin. Careful photographs of the whole ceiling were taken by Messrs. CHANCELLOR & SONS, Dublin. In carrying out the work it was found possible to introduce the old scrollwork of the four panels across the old ceiling into the new fibrous plaster, and the old enriched relief work was secured to new ground. During the progress of removal it was found that the main cornice at the springing of the coved portions of the ceiling was defective, and this was renewed in timber with enrichments in plaster; the supporting brackets were secured to steel sections built into the walls. For the latter portion of

the work Messrs. T. R. SCOTT & Co., of Dublin, were employed at a cost of 186/. The painting of the ceiling was done by Messrs. JACKSON, at a cost of 210/. The following is an extract from the seventieth official report of the Board of Works, on whose professional advice the carrying out of the work devolved:—

In our sixty-ninth report we stated that after the close of the financial year 1900-01, in compliance with the direct order of His Excellency the Lord Lieutenant and His Royal Highness the Duke of Connaught, Master of the Royal Hospital, we have taken a deep interest in the subject, Messrs. JACKSON & SONS, Rathbone Place, London, a firm of much experience in such problems, had been consulted, and that after careful examination they had reported that the ceiling was totally unsafe and that permanent conservation was impracticable. We here only repeat the principal points of their report, viz:—(1) The key of the stucco plaster has almost gone in places, owing to disintegration and the enormous weight of the ceiling. (2) The laths, on to which the plaster is keyed, are in a bad condition. (3) The greater part of the timbers to which the laths and ceiling are fixed is in a very unsafe condition owing to decay of the outer surface of parts of the wood appearing to be rotten, but the interior being decayed. In the light of this report of those already received, the whole question was considered anew with a view to deciding which of the possible courses should be followed:—1. To endeavour to repair the ceiling. 2. To erect a new ceiling on similar lines and of improved architectural character as proposed by Thomas Drew. 3. To erect as close as possible a reproduction of the existing ceiling.

Having consulted the Irish Government and the Governor of the Hospital, your lordships were pleased to direct that the third course should be followed, and accordingly, with the approval of the Board, a contract has been entered into with Messrs. JACKSON & SONS for the construction and erection of as close a reproduction of the existing ceiling as possible, but in a lighter material. Advantage has been taken of the false ceiling put up by the Board, and Messrs. JACKSON have removed to London all portions of the ceiling they require for the purposes of reproduction. One portion will be reserved for the museum of the department of agriculture and technical instruction. The remainder of the ceiling has been demolished. The work of reproduction is going on in Messrs. JACKSON's shops, the Board's officers will prepare the necessary drawings of the work of the ceiling. Complete photographs were taken of the ceiling was touched. It only remains to say that the information obtained during the removal and demolition of the ceiling has shown that the decision against attempting to repair and maintain it was a wise one, but it may be possible to work a small portion of the old into the new ceiling.

The reproduction of the old ceiling has been carried out with thorough success.

BROWN HALL, OXFORD.

THIS illustration shows the upper part of the staircase as seen from the loggia. It is approached directly from a large central hall. The materials used were American whitewood, the arcade in Sirapite plaster; the trellis risers are of teak. The work was executed by Messrs. MESSOM & SONS, Twickenham, under the designs of FREDERICK G. KNIGHT, architect.

EMMANUEL CHURCH, STOUGHTON, NEAR GUILDFORD.

THE above church is for a new parish cut out of the district of Stoke-next-Guildford. It will be built in portions as the funds permit. The portion now erected and opened is the chancel, vestries, heating-chamber, and three eastern bays of the nave and aisles, and the lower portions of the tower. The walls are built of brick, and externally with Bargate stone, and plastered internally. The whole of the dressings, both internally and externally, the arcades are of Bath stone. The roofs are all of timber construction, unstained and unvarnished. The floors are laid with wood blocks, except the passage to the chancel, which are tiled. The screen between the chancel and choir vestry is of oak, traceried, and with upper part glazed with lead light glazing. All the doors are of oak, and the windows are glazed with lead light. The western end of the nave and aisles is filled in with temporary brick wall, and there are two temporary porches at this end. The cost of the portion erected, including the roads and gates, has been about 4,800/. The builders were Messrs. WEBSTER & CANNON, of Aylesbury, and the architect, Mr. W. GILLBEE SCOTT, F.R.I.B.A., 25 Bedford Row, London, W.C.

PEACE AND PORTRAITS.

the course of his reign the troops of Napoleon were able to enter Rome, Madrid, Naples, Vienna and Berlin, besides other capitals. He succeeded in reaching Moscow, and the feat was only considered to be preparatory to his arrival in London, which was to be the crowning effort of his power. But the campaign began on his return, and when he arrived in Vienna he was treated by Metternich as that worse kind of bankrupt—commander without an army. Abdication followed, and a fortnight after the event a convention was signed by which the empire was diminished to the area it occupied on January 1, 1814. About a year after he surrendered his authority Napoleon was exiled from Elba. There were a hundred days of Imperialism, followed by a new collapse at Waterloo. The allies took possession of France. The works of art which had been pillaged were returned, but there was no destruction of architectural monuments like the Bridge of Jéna, although they were considered as trophies to the conquerors. The indemnities which had to be paid amounted to about twelve hundred millions of francs, and it was necessary to provide for the presence of 150,000 foreign troops during five years.

It was not the desire of England to subject France to unnecessary humiliation. Frenchmen believed then, and some still believe, that all their disasters were to be traced to English interference. There were, however, many Englishmen who were favourable to France, for they looked on the Revolution as an attempt to free the country from intolerable evils. The English interest in the long war were, as Lord Eldon said, "all that she had not lost;" in other words, safety alone dictated the contest. An effort was therefore made to remove before the appointed day the Army of Observation which had been placed under the control of Wellington. Diplomacy at length succeeded in arranging a congress, which was held in Aix-la-Chapelle in November 1818. The Emperors of Russia and Austria, the King of Prussia and plenipotentiaries from France and Great Britain attended. It was agreed that all foreign troops should be withdrawn from France, and easy terms were granted for the payment of the sums due to the allies.

At the Congress was the final incident in the great war, when the Prince Regent resolved to signalise the treaty by having portraits painted of the principal parties who took part in it. For that purpose Sir Thomas Lawrence was appointed to paint at Aix-la-Chapelle. He had already produced portraits of some of the statesmen and commanders who were engaged in the preceding events. Lawrence was essentially a portrait painter, and he was only twenty-three when, on the recommendation of Reynolds, he was appointed painter-in-ordinary to the King. The terms on which he undertook the foreign mission were not extravagant. He was to be paid no more than his usual prices for the portraits, with 1,000*l.* for travelling and other expenses. The honour counted for much in the transaction. His highest prices were for a head or three-quarters, 300*l.*; a kit-cat, 315*l.*; a half-length, 420*l.*; a bishop's half-length, 525*l.*; a full-length, 630*l.*; an extra full-length, 735*l.*

As it was feared accommodation would not be available in Aix-la-Chapelle, the Government decided to have a temporary building constructed which could be despatched to that city. It provided one room which measured 50 feet by 18 feet, another of 20 feet by 18 feet, and a third of 18 feet by 12 feet. Filled with canvases it was shipped on October 3, Sir Thomas Lawrence having left on September 29. But, as is usual whenever officials have charge of arrangements, the studio and materials did not arrive until the time for their use had passed. Fortunately the authorities of the city rescued the artist from his difficulty by allowing the large hall of the Hôtel de Ville to be fitted up as a painting-room. It is a rare event for a painter to have several imperial and royal subjects at the same time, besides statesmen, warriors, and others. The letters which Lawrence wrote to his friends are interesting, but like much else relating to the war have been neglected. The Emperor of Russia was taken in hand. The painter usually drew a countenance in outline on canvas before using colour, but in this case he made a separate drawing, as the Emperor was likely to be busy with other affairs. For it he gave two sittings and, says Lawrence, "informed me of the exact duration of his stay with his armies, adding that he would give me other sittings on his

return." He next described his meeting with the Emperor of Austria:—

"A few days after the departure of the Emperor of Russia after making due inquiries as to the number and length of sittings, the Emperor of Austria condescended to fix a day for his coming, and punctually at the hour I had the honour of receiving him in my new painting-room; and the result has been that, from the first sitting to the last completion of the likeness (for it is finished), I entirely succeeded. I may truly and accurately say, to the delight of his officers and attendants and of numbers of the people of Aix-la-Chapelle, by whom he is exceedingly beloved, crowds lining the terrace and the hall of the Hôtel de Ville on his departure and shouting forth the enthusiasm of the heart for their former sovereign. Yesterday was his sixth sitting, and he sits to me once more for the hand, the face being entirely completed. I had some difficulties to encounter. His countenance is rather long and thin, and when grave is grave to melancholy, but when he speaks benevolence itself lights it up with the most agreeable expressions and making it the perfect image of a good mind. He lives in all the state of imperial majesty, with splendid state equipages, &c., and of right takes precedence of Russia."

We then learn more about the Emperor of Russia:—

"This morning I had the honour of receiving the Emperor of Russia, who came in the uniform he wore at the battle of Leipzig. He is a man of business, and I felt that, come when he would, it would be a sacrifice of time. He sat to me for an hour and three-quarters and appointed to come again the day after to-morrow, and I had faintly painted in the head from the drawing. The sitting, though the first, advanced the portrait considerably and successfully. I have no fear of the result. He saw my pictures of the Prince Regent, Blücher, Platoff, &c., for the first time, and with them that of the Emperor of Austria and the portraits of the Ministers, Prince Hardenberg, Metternich, Count Nesselrode, with all of which he seemed greatly pleased. He is still a subject of great interest and eager curiosity. The landing-places of the stairs, the halls and terraces are lined with respectable people of the place, strangers, &c."

The Emperor surprised the painter by fixing the easel on one occasion and lifting his portrait to it in order to allow of discussion. Lawrence considered by the incident he was elevated to the rank of Titian, whose pencil was raised from the ground by Charles V. The King of Prussia and the Emperor of Austria were likewise courteous:—

"The King of Prussia returns here to-night. His sitting and the Duc de Richelieu (a fine subject for the pencil) will complete my list at this place, for neither the Russian nor Austrian generals are at Aix-la-Chapelle. The weather is delightful; my faithful servant Holman fags for me with hearty zeal, and disdain of labour and hours. I am in my painting-room by half-past eight after breakfast, and between nine and ten the fine Prussian band march into the grand place, and enliven the brightest morning with fine airs and marches, some of which I have heard before, particularly an English air, which probably you may remember, of 'God save Great George our King,' and which they play with many charming variations. Have you had enough of me? I suppose the Emperor of Austria has, for he told the Duke of Wellington the other day that on that morning I had been in very good-humour—I had let him off for two hours.' At least this informs you of the good humour of the speaker."

A few days afterwards Lawrence found it necessary to make a change in the pose of the Russian emperor, and the result is described in the following letters:—

"I had to act decidedly against his judgment and wishes, and to make a total alteration in the picture, changing entirely the action of the legs, and consequently of the trunk. You will readily imagine that, circumstanced as I am, I work with the utmost vigilance of eye—I never exerted this with more certain effect than in drawing in that very action. The process was new to the Emperor, and the accuracy with which it was done surprised and pleased him. All seeing in it an unusual action of His Majesty, gave it their unanimous approbation, and I only on the day after saw its defect, and at all hazards determined to amend it. He stands always resting on one leg—(you know what I mean: the other loose on the ground, like the figures of the antique), and he stands either with his hat in his hand, or with his hands closely knit before him. The first figure was thus. You perceive that he here seems to be shrinking and retiring from the object of his contemplation, determining at the same time to preserve and hold fast one certain good from the enemy, whatever be the issue of the battle. These were my objections, and the vexatious thing was that before an audience of his friends, I was to commence the alteration by giving him four legs, and though gradually

obliterating the two first, still their agreeable lines were remaining in most complicated confusion. What I expected took place: during almost the whole of it the attendant generals complained, and the Emperor, though confiding in my opinion, was still dissatisfied. However, I accomplished the alteration, and the vessel righted. . . .

"There has been but little of that gaiety that you might have expected here from the meeting of so many illustrious personages. A few concerts (at which Catalani sung more miraculously than ever), and I think but two balls. The first was over before my arrival; the other I saw, in which the three sovereigns danced the Polonaise, or rather walked it, with several ladies, beginning with either Lady Castlereagh or the Princess of Tour and Taxis (sister of the late Queen of Prussia). There were an infinite abundance of stars and diamonds, and a deficiency of beauty. Lord Castlereagh was by much the handsomest man in the room, although there is great nobleness in the upper part of the countenance of the Emperor of Russia. The Emperor Francis has a face, when speaking, of benevolence itself, and that expression I have been happy enough to catch. The King of Prussia is taller than either, but with more reserve of manner. He has good features, and is of a sincere and generous nature. The Princess of Tour and Taxis has a very fine figure and manner.

"On Tuesday last I had the honour of receiving, in the entrance hall of the Maison de Ville the Empress-Dowager of Russia, and of accompanying her up to my painting-room, where I had the happiness of witnessing her delight on seeing the portrait of the Emperor, and of receiving from her the fullest and frequently repeated testimonies of her approbation in sentiments that I will not trust to paper. I think that relatively to my professional life it was the happiest and proudest day I have ever known, the Emperor, who had returned but the night before from Brussels, having visited me in the morning just as he was setting off again, and honoured me (being entirely alone) with the most gracious and flattering conversation, at the close of it firmly holding and pressing my hand for many minutes.

"The Emperor has commanded me to paint a copy of it for the Empress-Dowager—(you should have witnessed her apprehensions, frequently uttered, lest it should not be as identically her son as the original picture)—a copy of the Emperor Francis, of the King of Prussia, of the Prince Regent, and, in the garter robes, of the Duke of Wellington.

"The King of Prussia has commanded a copy of his own portrait for Berlin, and of the two Emperors and of the Prince Regent, in military dress. The ministers, in whose portraits I have equally succeeded, all request copies of them—Prince Hardenberg, Prince Metternich, Count Nesselrode and the Duc de Richelieu. Prince Hardenberg (the old Chancellor) through General Woronzow (son of the late ambassador), who attended the Empress, informed me, when with her, that Count A. was charged with a message to me from the Emperor, and the next day he came with the general, presenting me, from his Imperial Majesty, with a superb diamond ring. On my dining with Prince Hardenberg, His Highness presented me with another from the King of Prussia, with his initials in the centre, accompanied with a most gracious message.

"My professional intercourse with the Emperor Francis is not terminated. I have again to paint him, and am just setting off to Vienna for that purpose, and (to complete the general plan of the Prince Regent) to paint the portrait of Prince Schwarzenburg, who, as you know, was generalissimo of the armies in the last campaigns against France. The Emperor Francis has promised a copy of his portrait for the Town House of Aix-la-Chapelle.

"Providence has enabled me to give the fullest exertions of my faculties to this arduous business, and a coincidence of rare circumstances has given a professional distinction to it that has never yet occurred. Sent here by royal command, the magistrates of an imperial city, in which for centuries the Emperor has been crowned, granted me the principal gallery of the Town House for my painting-room, and to this the three greatest monarchs in recent political importance have condescended to come to be painted by me—the Emperor Francis sitting to me seven times, the Emperor Alexander (including two for a drawing) seven times, and the King of Prussia six; the average time in each sitting being two hours, and in the result, and even during progress, my exertions being accompanied and crowned with the most complete success."

The foreign employment must have been agreeable to Lawrence for another reason, it allowed him a respite from the daily and hourly demands of usurers. There was never a more improvident painter. Although in the receipt of large sums from his portraits he was always borrowing, and interest was piled up against him with that expedition which to outsiders is incredible. He was often unable, owing to the clamours of creditors, to find an hour for painting during the day, and it

was only at night by the aid of a collection of oil lamps that work was got through. In Germany he was able to have temporary enjoyment of freedom, and the following description of Heidelberg suggests that under novel circumstances a courtier became the student:—

"Of all the grandly romantic spots by nature, art, or interesting circumstances that I ever saw, or that I think exist, Heidelberg is the first. On the heights overlooking the university stands a castle—a dream, a relic of Ariosto, left him to be once seen by Lord Byron and Walter Scott, both this case having a right to the grand vision.

'Towers and battlements he sees
Bosom'd deep in tufted trees,'

excites no image half so magnificent. It is all ruins, but of so gorgeous a nature—and then so various—part of it is a vast mass of rocks, then instantly contrasting with another mass, encrusted with embellishments of architecture and sculpture between each window, of which there stand tiers of dukes, lords and knights in richest armour, with all the highly-wrought grotesque accompaniments of the thirteenth and fourteenth centuries. Then again come the massive square walls, of seemingly impregnable defence, with round towers and more intricate structures for offensive warfare, and round them all, outermost walls of amplest extent, and still existing remains of hanging gardens of Babylon, and a keep of tremendous depth and a fallen tower, that discloses the small stairs of the more dreadful depth beneath. A nearer approach to the town from a fine bridge, with statues uniting at a small distance with the magnificent forms I have mentioned (all of which overhang the town on a great height) is equally picturesque, though of another character. Then students meeting you in every street in dresses like those of Andrea del Sarto and the Florentines of Michel Angelo's time, all of them with port-feuilles under their arms, seem to bring forward in daylight vision another and the most interesting of that painters can languish to have known."

Although retreat from financial difficulties was permitted, Lawrence was too well aware that sooner or later the chase had to be resumed. The journey to Vienna was not in the programme when he started, and the Prince Regent had given further directions for portraits of the Pope and Cardinal Gonsalvi, which necessitated a journey to Rome. Every painter is eager to visit Italy, but Lawrence admitted that he had certainly less pleasure in the anticipation of such a climb to his mission than he ought. He wished to have a postponement of the extended journey, but it was suggested to him that the least hint of his desire might ruin him with his patron, the Prince Regent. At length he accepted the inevitable. Lawrence arrived in Rome in May 1819, and like many other travellers he was at first disappointed. Afterwards his eyes were opened to the importance of the buildings and paintings. One of his letters to Joseph Farington, R.A., expressed his views about Michel Angelo and Raphael:—

"I have already been often at St. Peter's and the Vatican, and for many hours each time. The latter I determined to see alone. Hereafter we shall have many a talk on the comparative merits of the two great men. Yesterday I dined at half-past one that I might remain till night in the Sistine Chapel and the Vatican, or rather in the chambers of Raphael, for, as you know, the former is part of the immense building. It often happens that first impressions are the truest—change and change and then return to them again. I try to bring my mind in all the humility of truth when estimating myself the powers of Michel Angelo and Raphael, and again against the former 'bears down upon it,' to borrow a strong impression, 'with the compacted force of lightning.' The diffusion of truth and elegance and often grandeur cannot support itself against the compression of the sublime. There is something in that lofty abstraction; in those deities of intellect that people the Sistine Chapel, that converts the noblest personages of Raphael's drama into the audience of Michel Angelo, before whom you know that, equally with yourself, they would stand silent and awe-struck. Raphael never produced figures equal to the Adam and Eve of Michel Angelo—the latter is miserably given in Gavin Hamilton's print—all its fine proportions lost; though it is Milton's Eve, it is more the mother of mankind, and yet nothing is coarse or masculine, but all is elegance as lines of the finest flower. You seem to forsake humanity in surrendering Raphael, but God gave the command to increase and multiply before the Fall, and Michel Angelo's is the race that would then have been. But you must read Mr. Fuseli, his only critic. In both the Sistine Chapel and the rooms of Raphael all, in too many parts in them, is ruin and decay. At least it appears so to me, who was not sufficiently prepared for the ravages of neglect and time."

he relates how he obtained an order to go round the gallery over the cornice in the Sistine and was able to make a close inspection of the works. It enabled him to verify what was said by Reynolds in favour of Michel Angelo. "It was not used," he added, "to be presumptuous in my opinions about art, but in my own mind I think I know that Joshua Reynolds could not have had another opinion on the subject." The differences between the two great artists are explained by saying:—

Michel Angelo's line is often (I should say usually) severely drawn. Michel Angelo is often, and, in the highest degree, so in his forms and proportions—his Eve reaching at the end is an example of it, and, in dignified beauty, has never been equalled by Raphael, whilst the awful and appropriate simplicity of his tone, and that breadth of light and shadow, so finely described by Mr. Fuseli (I mean in his whole treatment of this noble work—a masterpiece of elevated criticism)—produce altogether an impression on the reason as well as the imagination, against which all the variety and beauty of the sometimes grandeur of Raphael contend in vain. It is not for against Achilles—you love him, but see that he must be so.

The effect of the scenery was to reveal Lawrence as a lover of landscape. The view from the Villa Pamphili of an evening is considered to be remarkable, for Monte Mario, St. Peter's, and in the furthest distance Soracte could be seen. He said he was struck by the extraordinary beauty of the scene with that undefined richness of delight which amounts almost to pain, formed, as it is, of many causes—thoughts of the past, of youth and of age, and absence, which, I think, when alone, the close of the day in the country always brings before us." But to us one of the most remarkable passages relating to Roman scenery is contained in a letter to Farington, in which we have the first tribute to the inherent greatness of Turner which time had still to give. Lawrence writes:—

Turner should come to Rome. His genius would here be clothed with materials and entirely congenial with it. It is the proof of its influence on my mind that, enchanted as I am, I am when I go out with the beauty of the hues and forms of the buildings—with the grandeur of some and the richness of the picturesque in the masses of the ordinary buildings of this city—I am perpetually reminded of his pencil, and I feel the sincerest regret that his powers should not be excited to their utmost force. He has an elegance and often a greatness of invention that wants a scene like this for its free expansion, whilst the subtle harmony of this atmosphere, that wraps everything in its own milky sweetness—for it is colourless compared with the skies of France and England, and more delicate than the small Claude of Mr. Angerstein's and Lord Egremont's, though the latter has a slight tendency—has it not?—its softness—this blending, I say, of earth and heaven—can be rendered, according to my belief, by the beauty of his painting. I must already have written the substance of this to you, as I have to Lysons, but my dwelling on the subject arises from no affectation or assumed feeling. It is a fact that the pictures and scenes around me do thus impress themselves on me, and that Turner is always associated with them; and, though frequently, not so often, and Gaspar Poussin is less. You perceive my dread of displeasing you by the mention of another name, yet the sweetness of his colour is nearer than Gaspar and his composition is often finer. As a man of distinguished genius, and therefore worthy of the affection and admiration of his pupil. I seem to do justice to Mr. Callcott by not mentioning him as an artist less worthy of the enjoyment of this scene, but I think he is generally ready to yield the palm to Mr. Turner, and therefore will not be offended at the exclusive preference that you have shown."

It should be remembered that in 1819, when Lawrence was returning from Rome, Turner was still, according to Mr. Ruskin, in his first manner. It is doubtful whether he had then visited Italy. He was in Switzerland, and the *Gardens of the Apennines* is evidence that he saw the south, but through the haze as it were, of Nicolas Poussin. He acted on Lawrence's suggestion, for in 1820 he exhibited a view of *Rome from the Campidoglio*, which Mr. Ruskin described as little more than a collection of materials. The following year there was nothing, but a notable pause; in 1822 a small picture, and in 1823 came *Day of Bala*, which, according to the eulogist, "is encumbered with material; it contains ten times as much as is necessary to a good picture, and yet is so crude in colour as to be unfinished." Lawrence's foresight was, however, soon to be justified.

The business for which the painter went to Rome was not, however, to be neglected for studies of scenery and paintings. Pius VII., whose portrait he was to paint, was an effective agent in the downfall of Napoleon, for his meekness under brutal treatment revealed the extent to which physical force was to be carried wherever the French prevailed. There could not be found a worse example of French vulgarity than the Emperor. Lawrence has described his first interview with the Pope:—

"I was introduced into a small closet, in which the Pope sat, behind the opening of the door, and after bending the knee was left alone with him. He has a fine countenance—stoops a little—with firm yet sweet-toned voice, and, as I believe, is within a year or two of eighty, and through all the storms of the past he retains the jet black of his hair. I remained with him, I think, between seven and ten minutes, during which time he held my hand with a gentle pressure, from which I did not think it respectful to withdraw it. With a phrase or two of French (which he does not like to speak), and the rest in Italian, he spoke his sense of the Prince Regent's attention to him, and his gladness to gratify his wish, accompanying it with compliments to me. I then defectively expressed my gratitude and reverence, bent to kiss his hand, and retired."

The Pope sat about ten times, and the portrait is considered by some to be the most effective of the series. Lawrence also painted the portrait of Gonsalvi, the Secretary of State. The artist considered they munificently provided for him in Rome. Delightful apartments were prepared for him, with servants and a carriage.

The whole series can be seen in the Waterloo Gallery of Windsor Castle, and forms the most important historical collection in the country. They are as follows:—Duc de Richelieu, General Overoff, Duke of Cambridge, Earl of Liverpool, George IV., Viscount Castlereagh, Baron Humboldt, George Canning, Earl Bathurst, Count Münster, Cardinal Gonsalvi, Prince Hardenberg, Frederick William III., King of Prussia; Emperor Francis II., Emperor Alexander I., Count Nesselrode, Pius VII., Count Capo d'Istria, Prince Metternich, Charles X., Prince Schwarzenburg, Archduke Charles, Sir Thomas Picton, Duc d'Angoulême, Duke of Brunswick, Leopold I., Mr. Herman Platoff, Duke of Wellington, Prince Blücher, Marquis of Anglesea, Count Czernitshoff, Prince of Orange. Dr. Waagen, in criticising them, said:—

"Among so great a number of portraits all cannot be equal in merit. I was particularly pleased with those of the Pope, Cardinal Gonsalvi and the Emperor of Austria. Besides the graceful and unaffected design, the clear and brilliant colouring, which are peculiar to Lawrence, these are distinguished by greater truth of character and a more animated expression than is generally met with in his pictures."

There are a few portraits in the Waterloo Gallery which were painted by other artists, and it is possible some of those mentioned above are not properly ascribed to Lawrence.

The success of the paintings was not without effect on George IV. As soon as he ascended the throne he resolved to have similar portraits by Lawrence of subjects who were the principal representatives of science and literature. Walter Scott was to come first. There was much difference of opinion about his portrait when completed. Lockhart saw there was a neglect of proportion which diminished the majestic effect of the head with its mighty pile of forehead. But the genial Scott was delighted with it. After his last sitting he wrote:—"I ended this morning my sittings to Lawrence, and am heartily sorry there should be another picture of me except that which he has finished. The person is remarkably like, and conveys the idea of the stout, blunt carle that cares for few things and fears nothing."

Before he returned from the Continent, Sir Thomas Lawrence was elected President of the Royal Academy in succession to Benjamin West. He enjoyed the dignity for ten years, and died on January 7, 1830, in his sixty-first year.

The Citizens of Ballarat, Australia, have decided to erect a statue to the memory of the troops who fought in the South African war. The statue is to be equestrian, in bronze, and the cost will not exceed 1,300*l.* delivered in Melbourne. The pedestal is to be constructed locally. Designs are being received by the Agent-General for Victoria for transmission to the committee.

STANDARDS OF SIZE, QUALITY AND STRENGTH, IN RELATION TO BUILDING CONTRACTS.*

DURING the hearing of a law case in a neighbouring State recently, the learned judge held that "best quality" of materials and workmanship, when specified for a cottage, required the use of as good material and finish as when specified for a mansion. Although the question of materials and workmanship was but a small item in the case the ruling is important, and shows a danger to architects and builders, inasmuch as other judges may rule similarly, and cause loss of money and lowering of their good name to men who are conscientiously working under the usual business interpretation of the terms.

For some time I have foreseen this legal difficulty, and about 1894 read a paper before this Institute in which I suggested the adoption of definite standards of quality, both of material and finish, standards about which no practical men would disagree. The Institute recognised the importance of the subject by appointing a committee, but the financial crisis of that time and other causes claimed so much attention that the question was allowed to drop.

There are other and important considerations in addition to the legal. The architect's work has an art side as well as a business. The conditions of art productions are interfered with by business worry and disputes on details, most of which could be avoided. Sometimes special artistic power is found in young practitioners, but their clients suffer from their lack of experience, and get poor execution of the work, and the profession, as a whole, is blamed. We should all gain if the business details could be standardised, just as the legal details are standardised in our conditions of contract.

Architects generally specify materials and workmanship to be the best of their kind, although on many occasions good material and medium finish would be sufficient. Often good and substantial work is what is required; why not so specify? Personally, I frequently specify good and substantial.

Again, the standard of finish for some offices is lower than others, although the works may be similarly specified. We all know how much more highly we value recommendations from some offices than from others.

Further, I consider the present lack of standards causes loss of much work to the architect and builder, work which goes to the jerry-builder—so-called (would that we could deprive him of the ancient, honourable term builder and call him fraud).

He uses old bricks and bats, where he can cover them up by plaster, and mixes his mortar with garden soil and rubbish and spoil from the excavations. He uses indifferent hardwood for the roof and joisting-carrying plaster ceilings, and for ground-floor plates and sleepers and stumps, and is away out of reach when a few years later the roofs twist and leak, and the plaster falls, and the floors rot and sink. By the adoption of definite and lower, but substantial standards, I maintain that the straightforward architect and builder would get more work, and the standard of taste and health be improved, and loss to the building public would be prevented.

In our building contracts there are three parties—the proprietor, the architect and the contractor. All of these may be honest, or all or some may not. Our conditions of contract provide for the difficulties that may arise as to quantity and price of extra work, but leave the architect as the sole judge as to quality. A young or partisan architect may insist on an impossible standard of quality under the "best" clause and ruin the contractor; or a grasping proprietor may sue the architect and contractor for collusion because he does not get an impossible quality under the "best" clause, and a judge may endorse his view. The only business way is to arrange standards of quality, state them in the specification, and do our work without danger of the costly interference of the law courts.

In addition to the question of quality, there are questions as to sizes. The timber-yards quote for nominal sizes, as distinguished from full cut, and we all know how nominal some stock sizes and gauges are in G.I., and the tendency to hide them under the indefinite term ordinary.

Strength (with which is associated permanence) is too much regarded as a private matter. Building regulations, city and suburban, settle the thickness of brick and stone walls, but little or no account is taken of the use of old or second-hand materials, or weak or improper materials. The Government, for a fee, guarantees a secure title for the land when paid for and the local authorities collect fees for the building, but there being little or no check upon the use of old or insufficiently strong material, the buyer from the "jerry fraud" suffers in the end and the local handy man flourishes. Standards of load and strength are largely insisted upon in America, and some should be required here.

* A paper read by Mr. Anketell Henderson, P.P., M.C.E., at the meeting of the Royal Victorian Institute of Architects.

As to sizes there should be a distinct understanding of what is meant. In timbers an agreement as to stock sizes does not mean what is to be allowed for sawing out of stock sizes. A joinery, floorings, linings, &c., should they be quoted, finished sizes or not? As to G.I., the question, full size or nominal size, and true gauge. Similarly for other materials, nominal weight, &c., where they differ from actual, should be noted, as in lead and glass. I have met nominal 4 lbs. lead that weighed $3\frac{1}{4}$ lbs., and if all the materials of a building were of equally nominal size, the life of the building would be shortened. There are many difficulties as to standards of size, including weight, that are not easily overcome. All that is wanted is distinct understandings beforehand between client and architect and builder. These could be printed upon a slip, to be pasted on to the specification or inside the cover.

Most of the difficulties hinge round standards of quality. I have consulted with leading builders, and while foreseeing practical difficulties in applying the standards and settling disputes, they see little difficulty in settling the standards. Assuming the words medium, good, best and special to be taken as standard terms, I have never had difficulty in judging with any disinterested practical man I have met. One standard may be specified for material and another for finish (say, plastering, best material and medium finish), but that is easily understood and priced. One can hardly expect best finish of medium material, and the material would generally be specified higher class than the finish. The standards would occasionally have to be amended, owing to variation of quality of material obtainable in the market. For example, forests unfortunately thin out, and then smaller trees are used, and the timber is inferior and less matured and permanent. The architect who would try to judge present deals by a standard of twenty or even fifteen years ago would be sadly out.

In view of the enormous amount of jerry building, I think a standard of "quality of building" is necessary. This involves questions of materials and strength. A man when building should state on a form whether he intends to use best brick, second, or old; whether lime or cement concrete for foundations and the size thereof, and whether clean sand or soil; the nature of damp-proof course. Ceilings, whether wood or plaster, and if the latter, whether hardwood joists or Oregon, also the sizes of timbers and the spans. All the covering work should be described, and a purchaser be entitled to this statement at the building surveyor's, and have certificate as to the execution of work. Extra inspection would be necessary, but the man who proposes to use inferior material should be charged an extra fee, as his work may endanger health, and certainly endangers pockets.

Buildings should be classed according to probability of permanence, as shown by the quality of materials and the size of materials in proportion to their load.

Prices are allied to sizes and quality. The contractor should not be deprived of profit where he provides the money for work, and he is always entitled to discount for cash, as the proprietor's interests are protected by the retention money.

The essence of contracting is to obtain a choice of the lowest tenderers, but the architect has a right to choose trusted experts or dealers for special work and obtain their prices. The contractor, who runs no risk of loss in these prices, has a right to charge a less commission upon them if he likes, and that charge should be made to the proprietor through the contract, and should be declared fraudulent if claimed from a trusted expert or dealer. Cases have been reported to the Institute in which the trusted expert or dealer has been threatened with boycott unless he paid full commission to the contractor. This point should be settled between our Institute and the Master Builders' Association.

Strength, to which is allied permanence, involves elastic resistance of walls, arches, vaults, &c., the elastic resistance of metals and timbers and the chemical and physical resistance to decay. These qualities may overlap; for example, by building walls in cement mortar you render them capable of elastic resistance, as well as static.

As to walls, the public are well protected where there are building acts and regulations, but there are inexplicable differences in these, both as to principle and practice. In Melbourne and suburbs the sizes are based upon the area or cubic contents of the building and its height, and cases might arise in which walls that were not altered in height or length would yet have to be thickened because the area of the building was increased. The wall would have no more work to do, but still have to be thickened to comply with an old-fashioned regulation. This could not happen in England, or in any other colony or elsewhere that I know, because in these places the scientific principle of proportioning the thickness to the height and length of the wall is followed. Melbourne still follows the practice of London in 1844, a practice abandoned there in 1855. In some respects Melbourne is now more liberal in its requirements, in others less.

In respect to modern steel-framed structures Melbourne

hind. In New York and Chicago curtain walls, built in iron or steel columns and supported by girders and to them, are allowed to be about one-third the thickness. Room is thus gained and load on foundations lessened. Manhattan Life Insurance building, 241 feet high, has walls at top and 2 bricks at bottom. In most other Birmire states, 6 feet would be required at bottom.

I mentioned before, by building in cement mortar the ins the additional strength of elastic resistance. Those not contemplate steel-framed structures should, if they cement mortar, be allowed a reduction of thickness. inch extra thickness required for buildings exceeding cubic feet might be remitted in case of walls built in mortar, and instead of the $4\frac{1}{2}$ -inch extra required for two storeys below, it might be limited to every three

length of rafters, beams, columns, &c, forms no part of building acts, as in America, but it is inquired into only Public Health officers of this State in the case of public works. Complaint is made to this Institute that they are in recalculating stock forms of roof and other structures instead of adopting the common-sense standards of North, Tredgold, &c, and that they also recalculate girders, &c, instead of accepting the results of work given and guaranteed by firms of world-reputation. This should be stopped in the interests of economy and to save delay; and standards of strength and safety should be agreed upon and tables approved and issued for stock work, and common-sense be given to standard authorities.

so factors of safety there is much difference of opinion, and to want of scientific analysis and consideration. of safety is required to provide against—

foreseen defects of material and workmanship. possible inaccuracy of estimate of load, to say nothing of use of the building.

terioration of elastic resistance by repeated variation or alteration of stress or excessive load.

terioration by exposure to weather.

inside work No. 4 can be struck out, for external wood is vital. For Oregon used externally it would be more than for red gum or red deal.

(variability of load) is more important for the floor for the beams, and more important for the beams columns. Hence some American practice, which one factor of safety, and designs the columns for 7 per cent. and the beams for about 85 per cent. of the loads, and the joists for 100 per cent. Where the building is not likely to vary, or it is designed for a load, the factor may be low. I know of heavily-buildings in Melbourne with a factor of $2\frac{1}{4}$ to $2\frac{1}{2}$, but I do not advise less than 3 for special materials and work-

merica factors of safety and standards of weight on foundations and of pressure on concrete, and of brickwork, and strength of steel and loads on form part of nearly all building acts. Perusal of laws that practical scientific men are at work at them, even define the limits of deflection for some build-

LEEDS SCHOOL OF ART.

September 24 the class of design of the Leeds School of Art was opened with an address from the chairman, Mr. Wilson. He said:—

to congratulate your teacher, Mr. Musto, and your- in the occupation of these new buildings, which have admirably designed to meet your requirements, they are not to be formally opened until October 8, classes, as you are aware, commenced on Monday I have the pleasure to announce this evening the of the class of design, and on behalf of the Architectural Society and myself I wish you, Mr. Musto, and you, from the bottom of my heart every good wish in departure, which I trust will be long remembered as marking date in the calendar of your careers. Your ere this evening is strong presumptive evidence of being elected to follow the profession of architecture. already spent some years of your youth at school, acquired by the observation of men and things and which has developed into an inclination towards study. The prospectus of architectural classes, variation of which Mr. Musto was kind enough to ask him, sets forth the several subjects in the y, intermediate and final courses for the examinations al Institute, which are now to be taught in this presume that those of you who have set these as your goal will, before entering upon the final ve already passed the preliminary and intermediate,

from which you will have acquired that valuable and necessary knowledge which should always precede any essay in individual effort.

The work of this class is intended to prepare you for Division I. in the final course, viz. Design. This subject calls for the "design of a building of moderate dimensions, or a portion of a more important edifice, to be made from particulars given. The drawings to comprise plans, elevations and section to a scale of 8 feet to the inch, some details to a large scale, with a sketch perspective." I know of no subject in the whole of the examinations which is calculated to test the knowledge which the student has gained from the previous subjects than this of design. The examiners allocate 350 out of the total of 1,000 marks given in the final course to design, the largest number for any other subject being 125 marks. The work of these classes will give you a further opportunity of testing your aptitude for the profession, and should you find the work uncongenial you can abandon its further pursuit.

I have long thought that pupilage should be preceded by some elementary training preparatory to an office career. Many architects who refuse to receive pupils as beginners would probably take them if they were well grounded, and in such cases the period of pupilage would obviously be shortened. A year or two spent in a school of architecture should enable a student to acquire at moderate cost the rudiments of his work before learning in an architect's office the practical details of his profession. Pupils are frequently unable to take advantage of the opportunities offered in an architect's office because they have not previously studied the elements of their work; consequently they are only beginning to learn something about architecture when their articles terminate. I cannot impress upon you, gentlemen, too strongly the responsibilities which rest upon you as students of this school during this its first session in these new buildings.

The committee of this Institute have equipped the several departments with a wealth of facilities previously unknown in connection with the drawing schools of Leeds. The Architectural Society have given their approval and support, more particularly in supplying visitors to your classes, and through their President, who is a member of the Statutory Board of Examiners, arranging for this city being one of the local centres for the preliminary and intermediate examinations. The libraries of this Institute, the Architectural Society and the city provide a fund of information bearing upon architectural history and work. I trust that your appreciation of these combined efforts will be shown by your signal success in the examinations, by the place you will take in the ranks of your profession, and the glory you will thus reflect upon your Alma Mater.

Ours has been defined as the most difficult of the visual fine arts, yet there is much less labour spent on learning architecture than there is on learning painting and sculpture, although the votaries of these fine arts commonly have more natural aptitude for their calling. We know the painful years students of painting and sculpture devote to getting the groundwork of their art, while from three to five years spent in an office, mostly tracing, is thought enough for an architect. Architecture has been said to be the art which so disposes and adorns the edifices raised by man, for whatsoever uses, that the sight of them may contribute to his mental health, power and pleasure. If you are to attain this high standard you will have to pay the penalty of sacrifice and put forth your greatest strength. Is it not true that we are none of us so good architects as to be able to work habitually beneath our strength? and yet there is not a building that I know of lately raised wherein it is not sufficiently evident that neither architect nor builder has done his best. It is the especial characteristic of modern work. All old work nearly has been hard work. It may be the hard work of children, of barbarians, of rustics; but it is always their utmost. Ours has as constantly the look of money's worth, of a stopping short wherever and whenever we can, of a lazy compliance with low conditions; never of a fair putting forth of our strength. Let us have done with this kind of work at once; cast off every temptation to it; do not let us degrade ourselves voluntarily, and then mutter and mourn over our shortcomings; let us confess our poverty or our parsimony, but not belie our human intellect.

It will be conceded that there is a due relationship and proportion between the height of a structure and the depth and strength of its foundations. If it is your ambition to build up an architectural reputation which, like a lofty campanile, shall soar above the mediocrity of its surroundings, then you must lay the foundations of your career deep and broad in the knowledge and practice of the science of building and in the art of architecture. For the height of your attainment will always be measured by the strength and solidity of its foundation.

Mr. Musto followed with a lecture on "The Study of Architectural Design: its Necessity and its Recompense." He remarked that young men starting their profession found no difficulty in taking up constructional work, but somehow he usually found that beyond that they had not gone. As time

went on he trusted they would find that they were increasingly looking at design and the artistic side of things. One of the great values of examination was that it formed a distinct object to work for. The subject of design did not appear in the intermediate programme at all. He had had to discourage young men from beginning the study of architectural design because they had not gone over the preliminary ground, but when once they had passed that preliminary ground the sooner young men got to work on thinking out actual design work the better. He advised students to visit old and new buildings, and in addition to measuring and sketching and analysing, he suggested that they should criticise and sum them up, and consider whether the things that they accepted they were fully justified in accepting, or whether it ought not to be possible here and there to improve upon them. Alluding to a letter which appeared recently in the *Yorkshire Post* from a lady, he said she complained bitterly that architects were most horrible people, who would not provide cupboards and several other things. Some of his friends asked him to look at the horrible letter, but he did not agree with them. He thought that lady was perfectly justified in her complaints. An architect who designed a house that had not enough cupboards and proper bathroom and wash-house arrangements, and proper facilities for carrying on household work, ought to become something different from what he was. Whatever houses that lady had met with, he thought they might assume that they were not designed by an architect at all. At any rate, whoever designed these houses could not have known his business to give her justification for her complaints. As to the rewards of architects, these were few and far between. The engineer and the contractor, and the secretary and anybody else, could get his name in the papers, and get presented to royalty, and get honours and baronetcies, but an architect had to live on his own innate appreciation of his art. The prospects of a man who had not only studied construction but detail and design work were perceptibly greater than those of a man who had done nothing but constructional and strictly practical work.

Mr. R. Wood and Mr. G. F. Bowman (vice-presidents of the Architectural Society) addressed some words of advice to the students, and the latter moved a vote of thanks to the lecturer.

Mr. R. P. Oglesby seconded and the Chairman supported the resolution, which was adopted.

A vote of thanks was afterwards passed to Mr. Butler Wilson for presiding.

MUSEUMS AND HISTORICAL STUDIES.

THE Senate of the London University has adopted, on the recommendation of the Extension Board, a scheme of study for a more advanced certificate. The object is to give special encouragement to the study of history with literature and art—or, shortly, the humanities. The scheme is designed to present a broad view of history in its largest aspects (treated not merely from the political point of view, but also from the economic, industrial and social points of view) with literature and art, so as to give a comprehensive presentation of the life of the people and of the forces moulding nations and communities. The course of work is so arranged that those untrained in classical literature and foreign languages and able only to give a limited time in the evenings to study may profit by it. In addition to attendance at lectures and classes the student will be required to undertake a definite course of private reading and to submit to the lecturer regular paper-work, either in the form of essays or answers to questions. Visits will also probably be arranged to museums and picture galleries illustrative of the periods dealt with in the lectures. Three sessions are to be devoted to the general study, and the work will probably divide itself into a session each for ancient, Mediaeval and modern times. It will not be possible in this limited period of time to do more than present a broad view of general truths, so as to show the great chains of events and decisive movements which have determined the course of history. The student will also be required to undertake a session's work in the fundamental principles of evidence and reasoning, which may be either carried on concurrently with the history work in one of the three sessions or may be taken independently in another session. The course will deal on the one hand with the mode of discovery and establishment of some of the great scientific generalisations in one or more departments of natural science, and on the other hand with the method of estimating evidence in some other department such as law, so as to afford some insight into the principles on which evidence should be estimated and some indication of the special errors to which in common life average minds are most liable. A student who obtains four sessional certificates, three in the humanities course of work and one in the principles of evidence and reasoning, will be qualified to receive the vice-chancellor's certificate.

Having obtained the vice-chancellor's certificate the student will then be eligible to undertake a further session's work by attending an approved course of study of a more special kind

in one or other of two groups to be tested at the end of the session by an examination in the group selected, which will include three papers. The two groups are:—(1) General history as a main subject (two papers), and English literature as a subsidiary subject (one paper); or (2) the British Constitution as a main subject (two papers), and economic history with special reference to England as a subsidiary subject (one paper). The student will then (one other condition referred to below being satisfied) receive the new advanced certificate. The name of this certificate and the privileges it may carry are still under the consideration of the university. The condition above referred to is that the candidate should show evidence of sufficient preliminary training to profit in the course of study. What kind of evidence the university will accept will have to be determined, for the present at least as the cases arise. Particulars are published of the courses of lectures which have been arranged under the scheme.

MANCHESTER SOCIETY OF ARCHITECTS.

ON September 19 the members of this Society visited the recent buildings at Alderley. Mr. McConnell's (Messrs. Thos. Worthington & Son, architects) was the greatest treat of the day, with its picturesque whitewashed stone-slatted exterior and charming interior. A fireplace of green tiles, beaten brasswork and bosses of green enamel attracted much attention. The same architects' house at Agnew, a brick and stone building, contained much of interest. Mr. Alex. Graham's Epileptic Homes at Sandlebridge, now approaching completion, formed a study of a novel type of building, in which the planning and all practical details had evidently been worked out with the greatest care and foresight. The growing darkness prevented more than a hasty glance. Messrs. Worthington & Son's convalescent home, however, showed that when completed it will make an excellent grade of simple character.

TESSERÆ.

Domestic Subjects in Painting.

THOUGH in a general sense all subjects are historical, much as the events of the day form the material for the history for the morrow, yet it may be as well to keep a distinction usually accepted, and to term what treats of the present as local or domestic, and what treats of the past as purely historical. It is generally supposed that such subjects are much easier to attain in the illustration of those subjects which we are every day cognisant, than of events, the knowledge of which literature is our only guide. And doubt there is a great advantage in being able to consult the actual materials necessary for the object we have in view, and also there is a greater likelihood of awakening the interest of the spectator by depicting the real present than the ideal past; but, on the other hand, as regards the former, the truth of the artist's delineation is put to a severe test, for it is easily compared with living nature, whereas in treating of the past the truth of the painter's conception is not subject to such a searching comparison. Moreover, there is a halo about the past which never clings to the present, and in this the artist shows the highest powers if he can excite sympathy by subjects which, unlike the stirring events of history, have hitherto held no place in the mind. And such local and domestic themes the highest quality of painting can be equally developed, and a picture of Ostade, merely representing an old woman cleaning a brass pan, is worth acres of the pretentious medallions we see in Italian art after the middle of the sixteenth century. Certainly no artist ever better deserved the title of an inventor than Hogarth; his pictures are perfect stores of clearness and with no redundancy of ornament, the being a single detail introduced which is not necessary for the elucidation of the subject. It is sometimes questioned whether an additional charm would not have been imparted to the pictures had they possessed those qualities of colour and execution which we admire so much in the Venetian and Dutch painters. The result would probably have been satisfactory. The impression produced by his and other great works arises from the combination of the qualities of truth, possess, and it is impossible to decide with any degree of accuracy on which particular quality the expression of the artist depends. We might as well say that the humour of Sterne would have been more pungent and effective had they been decked in the refined language of Marlowe. Moreover, by drawing attention to the peculiar charm of an abstract quality he would most assuredly have weakened its hold on the mind. Hogarth produced the effect he sought in a far more satisfactory manner than would have been possible through the introduction of qualities which, however fascinating and appropriate in works of a different character, would have imparted no additional strength to his conceptions.

Pompeii.

Withstanding the magnificent ideas we are apt to form of the splendour of Athens and Rome from the remains of public structures, it is most probable that their general appearance was far from being either lively or imposing. Streets with little more than dead walls towards them have produced an effect the very reverse of grandeur. Entrances to the houses and the shops in some of the were the only signs of habitation in these sepulchral or could the shops themselves, windowless as they have made a much better appearance than those of our criers and butchers. At Pompeii the general width of streets is not more than that of the foot pavement in London street, in many not so much. Unless therefore we are to admire such dismal lanes as branch off from the main Street, we are afraid we should not be greatly charmed by the classical mode of laying-out towns. In point of fact it is probable that the streets of Rome did not much, if indeed those of the provincial city, which may account for the series of walking in them so humorously described by the Roman satirist. It is true the houses were not very different therefore the passage between them did not appear so narrow as it otherwise would have done; yet this difference certainly did not contribute to dignity and beauty. The most spacious street at Pompeii was that of the Forum, and the view of it in Sir W. Gell's work will not be a very favourable at least a very honest idea of the general physiognomy of domestic architecture among the ancients. Excepting here and there a small window, or rather an aperture to admit light, there are no features to give the appearance of blankness, and nothing to contribute to variety or to decoration. The absence of windows in the street, altogether so contrary to our notions of domestic life, must have given such a sombre aspect to the street for the most part such an air of dulness to the apartment within, that very few will be inclined to admire this mode of building. We must not, however, impute it to Turkish suspicion and jealousy, or to an affectation of privacy; since had they been so situated, the inmates would have as well have sat in the open street as in an apartment exposed. Not only would the rooms have been open to the view of passengers and neighbours, in a manner more than for the Asmodei and Paul Prys of antiquity than to those who would have been thus placed under constant surveillance, but they would hardly have been on account of the noise and din from the street. Therefore, the Pompeians had been as taciturn as the monks of La Trappe when abroad, and tolerably discreet when at home, they could not have manifested their independence better than by building as they did. We, on the other hand, are fettered by no such inconveniences as the ancients may therefore build as we please.

A City Art Society.

From time to time an attempt is made to gain a footing for the City of London. But somehow or other it is never secured. At the beginning of 1831 it was the City Art Society with the title "City of London Artists and Conversazione" would be an exception, as it was to possess the elements of success. The following were the regulations:—1. The number of members shall be limited to 100. The contingent exception hereafter stated (Law 5). Every member's subscription shall be one guinea per annum, payable in advance, on or before the first Thursday in the month of January in the honorary secretary and treasurer, Mr. Frederick W. Hall Court: on failure, a vacancy shall be filled by the election of members vested in the general body; to take place on the third Thursday of the month of January. 2. None but artists and amateurs are eligible to become members of the Society. 3. As the object of the Society is to promote the love of art, the mutual improvement and advantage of the members in its respective departments, to form a centre of attraction in this division of the art, it is expected that every member will forward to the meeting specimens of his own works, or those of other artists, which he may consider as tending to the furtherance of the object of the Society. 4. When a vacancy is declared, the names of the candidates shall be determined by a majority of "scratches" or by ballot. Should any two candidates be named, an equal number, the decision to be vested in the members who shall determine without seeing the names. A candidate desirous of becoming a candidate, forward his name to the honorary secretary the recommendatory signatures of two members (the same having been publicly exhibited two weeks prior to the day of election), shall be required. Nevertheless, to meet advantageous contingencies, any member at any time wishing to become a member, may forward his signatures of twelve members, six of them being members of the Society, and forwarding his application thus signed to the honorary secretary, shall be eligible to be elected at the

next meeting (his application having been publicly exhibited during that evening), though such election should occasion an excess in the number of members, such excess to be reduced by the first vacancy declared. 6. Every member, in addition to his own, to be allowed two transferable single tickets each for any one evening of meeting; the committee as a body to have the privilege of six on all evenings, in order to the introduction of illustrious or distinguished visitors who may feel an interest in the object of the Institution. 7. The business of the Society shall be conducted by a chairman and honorary secretary, who together with five other members shall constitute a committee. The committee, including the above officers, shall be elected annually, be empowered to make by-laws and to receive through the secretary all communications. 8. The committee shall meet to audit the accounts some time in October previous to the general meeting. 9. The meetings of the Society shall be held on the third Thursday evening of the months of November, December, January, February, March and April, at the London Coffee House, Ludgate Street, at eight o'clock. The Conversazione shared the fate of its predecessors and successors in having only a brief existence.

Glass Windows.

The invention of glass has conferred such numerous advantages upon the moderns, both as regards domestic life and scientific discovery, that could any one have predicted them two thousand years ago! they would have been deemed incredible fables. We say the invention of glass because, although that material was certainly known to the ancients, it was employed chiefly, if not altogether exclusively, for articles of mere luxury, and not for purposes of real utility. Rarely does it happen that we appreciate what its very serviceableness has rendered so common as to make us forget it was once unknown. By means of this material we are enabled to make our walls transparent, open to the day, yet impervious to rain, wind and dust, and in a sufficient degree also to sound. By means of this the natives of the cold North are enabled to rear the fruits of the South and the flowers of the tropics; by means of this our apartments may be extended to interminable vistas; by means of this we explore the heavens, we trace the organisation of plants, we discover the beings that populate a drop of water, and scrutinise the texture of our own frames; and it is by means of this that the vision of the aged is renovated, and one of the most distressing of human infirmities overcome. Verily the achievements of an Alexander shrink into utter insignificance compared with those triumphs of art that have given to the modern world such a decided superiority over the ancient one. Printing and engraving, glass and steam, would have had altars raised to them in pagan times, and had tutelary deities assigned to them in mythology, who would have ranked with Ceres and Minerva. In his poem "O Polze Stekla" Lomonosov has sung the praises of glass—a singular subject, it will perhaps be thought, but the Russian bard was as much a votary of science as of the muse.

Music and Architecture.

According to Lord Lindsay, music and architecture agree together, and differ from poetry, painting and sculpture in that they are both of them expressive of emotion, not of definite ideas. The most important change that has taken place in the music of the Church was the substitution of music in harmony for music in unison. This is analogous to the most important change in Christian architecture, that from Romanesque to Pointed. The coexistence of several planes of decoration one behind another, a feature which was unknown in Grecian architecture, and received its full development only in Pointed, may evidently be compared to the effect of several simultaneous melodies so adjusted one to another as to form harmony. Secondly, though the terms high and low are used in very different senses in music and in architecture, it will not be disputed that a strong analogy exists between these senses. This being admitted, it will appear that a difference similar to that which consists in the predominance of horizontal lines in Grecian architecture and of vertical lines in Pointed exists between music in unison and music in harmony. Though a single melody consists of notes differing one from another in pitch, yet this difference is necessarily limited by the compass of the voice or instrument, whereas the prolongation of the melody is comparatively unlimited; therefore, like a Grecian building, it presents the idea of horizontal extent much more strongly than that of vertical. On the other hand, when a chord is sounded, both high and low notes are heard at once; the concord which subsists between them leads the mind to compare them, and to pass in thought from one to another, as along a vertical line, and where the organ or other instruments are employed there need be no limit to the height and depth of the notes heard at once, except that of the sounds which the ear can appreciate as musical. A succession of such chords, therefore, resembles a building in which vertical lines predominate over horizontal. Again, the Pointed arch itself has its counterpart in harmonious music. For the fundamental

distinction between circular and elliptic arches, on the one hand, and the various forms of Pointed arches on the other, is that the former exhibit only one curve, first rising, and then falling, whereas Pointed arches are formed by the meeting of two curves. An arcade of circular arches resembles, therefore, a single melody consisting of alternate rises and falls. On the other hand, a Pointed arcade, containing as it must a double series of curves, will be represented musically by a canon composed of two such melodies, one of which rises while the other falls.

Lighting of Greek Temples.

On the means adopted for giving light to the temples of the ancients there is a discussion in the introduction to the second edition of the first volume of "Ionian Antiquities," published by the Society of Dilettanti. It is a reply to the position assumed by Quatremère de Quincy, and published by him in the "Memoirs of the French Institute"—that skylights were used for this purpose. The perpetual lamp made by Callimachus for the temple of Minerva-Polias may certainly be said to throw some light on this subject; and in referring to the earliest authentic record of temple-building we find that in the Temple of Jerusalem there were ten candelabra, each supporting lamps which burned without intermission; a plan adopted for the display and inspection of the precious vessels arranged on tables placed along the side-walls of the cella. In like manner the donaria within the cella of the Parthenon were distributed, although they were protected probably by a kind of open palisade between piers or stelæ, so constructed for its greater stability. In the restoration of the ancient inscriptions found within the Parthenon and brought to England by Dr. Chandler for the Dilettanti Society, Mr. Rose has discovered frequent mention of gold or gilded lamps. We already knew that golden ewers and basins, such as are described in the Sacred Writings to have been deposited within the Jewish temple, formed the chief of the anathemata contained in the Parthenon. There is no authority whatever for the supposition that temples, excepting those of a peculiar description and of rare occurrence, admitted light from without. Rome, abounding in shrines and temples and edifices of the most princely kind, afforded no example of such a building; and Vitruvius, in order to illustrate his definitions, refers his readers to the Temple of Jupiter Olympius, situated in the acropolis or lower city of Athens.

The Parthenon.

Commenced about the eighty-third Olympiad, or about 448 B.C., the rapidity of the execution of the Parthenon is recorded by the historian, and by the comparison of historic dates and events, sixteen years is the utmost extent of time that can be possibly supposed to have been occupied in the performance of the entire works. This comprised the building 101 feet in front, 227 feet in length and 65 feet in height, wrought in the most durable marble and with the exquisite finish of a cameo, enshrining the chryselephantine colossus with all its gorgeous adjuncts. The sculptured decoration consisted of a range of 1,100 feet and containing on calculation upwards of 600 figures, a portion of which were colossal, enriched by painting and probably golden ornaments. Hence has really been verified the prediction of Pericles, that when the edifices of rival States would be mouldering in oblivion the splendour of his city would be still paramount and triumphant.

GENERAL.

Professor Flinders Petrie and **Dr. Charles Waldstein** will give a series of lectures at the University of London, South Kensington, on "Recent Excavations in Asia Minor, Babylonia and Greece," in connection with the University Extension courses, beginning October 16. Lectures on Classical architecture and kindred subjects will be given at other centres.

The Prix Chaudesaignes of 2,000 francs has been awarded by the Académie des Beaux-Arts to **M. Lefort**, pupil of **M. Paulin**. The following honourable mentions have been also made:—The first to **M. Lefèvre**, pupil of **M. Laloux**; the second to **M. Prevot**, pupil of **MM. Guadet & Paulin**; the third to **M. Broussois**, pupil of **M. Pascal**.

The Architectural League of America will hold its annual convention at St. Louis, Mo., on Monday and Tuesday, October 6 and 7. The "Code of Ethics and Competitions" and other matters of current interest will be discussed at the meetings.

The New Church of **SS. Gilbert and Hugh** at **Gosberton Clough**, near **Spalding**, was opened on Saturday last. The building, which has been erected at a cost of 1,300*l.*, will accommodate 120 worshippers, and is from designs by **Messrs. W. Bucknell and J. N. Cooper**, of **Westminster**.

St. Pancras Borough Council has referred to its permanent and general purposes committee the question of acquiring **Mornington Crescent Gardens** as a possible site for the new town hall and an additional open space for the borough.

The Cuban Congress have voted 30,000*l.* for the construction of a building for the Chamber of Representatives of Cuba. An international competition will be organised for the purpose of obtaining designs. About 1,000*l.* will be awarded as premiums.

A Special Court of the Corporation of the Poor, Vice-presidents and Governors of King's College Hospital, is to be held in the large theatre at King's College, Strand, on the 12th inst., for the purpose of obtaining sanction for the removal of the hospital from its present site to one in London.

Gresham's School, **Holt, Norfolk**, was opened on Wednesday by **Sir Evelyn Wood**. The architect is **Mr. H. C. Clarke**.

Mr. J. Thorburn Ross, A.R.S.A., died on Monday morning from injuries received through a fall in his bath at **Atholl Crescent Lane**. He was in his forty-fifth year.

Messrs. Waring & Gillow, Ltd., have been entrusted with the fitting and decoration of the **Sultan's State barge**, which was launched at **Newcastle** on Friday.

Mr. Francis W. Bedford announces that his business address in London is now 22 Old Burlington Street, W. His offices in Leeds will continue at Greek Chambers.

The Duke of York's Royal Military School is to be removed from **Chelsea** to **Dover**, and an extensive site has been secured for the new buildings, comprising about 140 acres on the high ground adjoining the **Fort Burgoyne** drill-ground. A very large proportion of the area is to be covered with new storey buildings for the accommodation of the staff and boys. It is anticipated that the present site in **Chelsea** will be sold for 750,000*l.*

A Roof Garden is to be formed at the **Philadelphia Hospital** for patients suffering from tuberculosis. The available measures 26 by 150 feet and will be covered with canvas awning.

The New American Church in **Berlin** will soon be completed. It is expected that services can be held on December 1. The plans were prepared by **Herr Otto** and the works are directed by **Herr Jäger**. The building cost about 400,000 marks.

Mr. Albert Toft has been commissioned to execute a statue to be erected in **Nottingham** as a memorial to **Queen Victoria**. Her late Majesty is to be represented in marble in a standing position wearing her crown, and with sceptre in the right hand and the orb in the left. The statue is to be from 9 feet 6 inches to 10 feet in height on a pedestal of polished red granite 15 feet in height. **Mr. Toft** expects to complete the work by November of next year.

M. Edouard Detaille has been commissioned to execute a painting symbolising "Le Chant du Départ" of the Revolutionary Troops, which is to complete the decoration of the **Pantéon**.

The House in **Commercial Road, Landport**, in which **Charles Dickens** was born, has been purchased by the Corporation of **Portsmouth** for 1,125*l.*, or about three times its value.

The Board of Trade has informed the **Marlow Borough Council** that the Board is legally advised that it would not be justified in granting a license to the Board to supply electricity within the borough.

The Archæological Society of Peterborough are endeavouring to raise funds to place a railing around the remains of **Fotheringhay Castle**, for otherwise the whole of the stones would, in a limited time, be carried away by visitors.

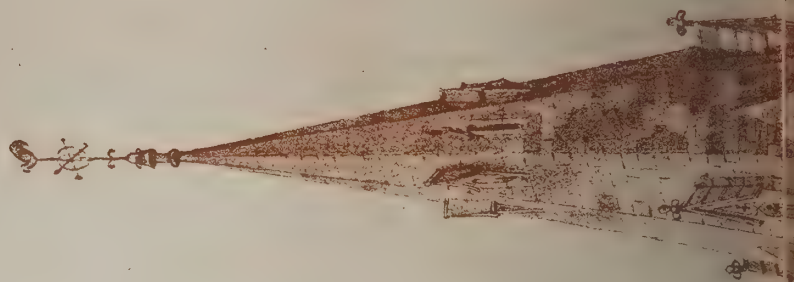
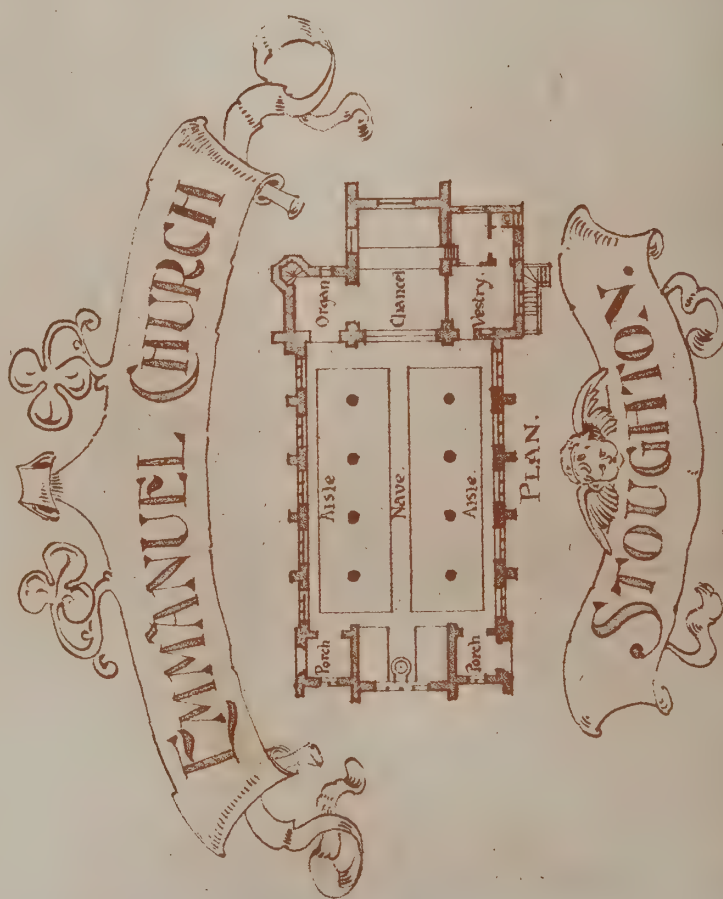
The Liverpool Cathedral Committee decided on Monday after consideration of various samples of stone submitted that local red sandstone should be used in building the cathedral. The architects, **Mr. Bodley** and **Mr. G. G. Scott**, also submitted plans of details. It is expected the foundation will be laid early in the coming year.

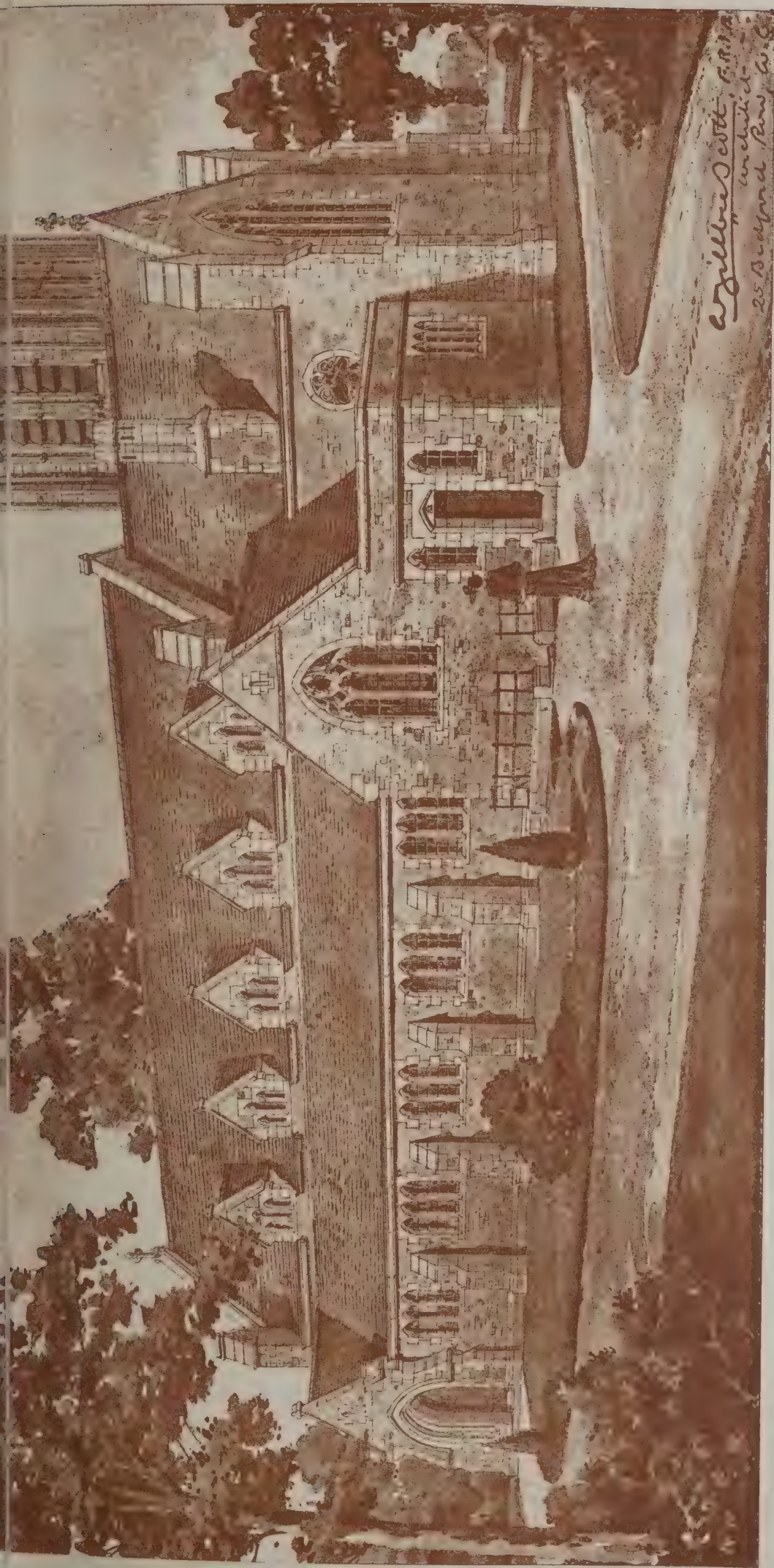
The Lord Mayor on Wednesday unveiled **Mr. J. Tayler's** picture, *The Entertainment in 1356 by the Viscount's Company of the Five Kings*. The picture is the gift of **W. Vivian**, and is placed in the ambulatory of the **Exchange**.

The Brazilian Government has signed a contract with **Messrs. C. H. Walker & Co.**, of **Westminster**, for the construction of the **Rio de Janeiro** port and dock works.

The New Church being erected at **New Malden** will have seating accommodation for about 250 people. The first stones were laid by **Mr. Thurslow Astley** on Friday last.

The Architect, Oct'r 2nd 1903.



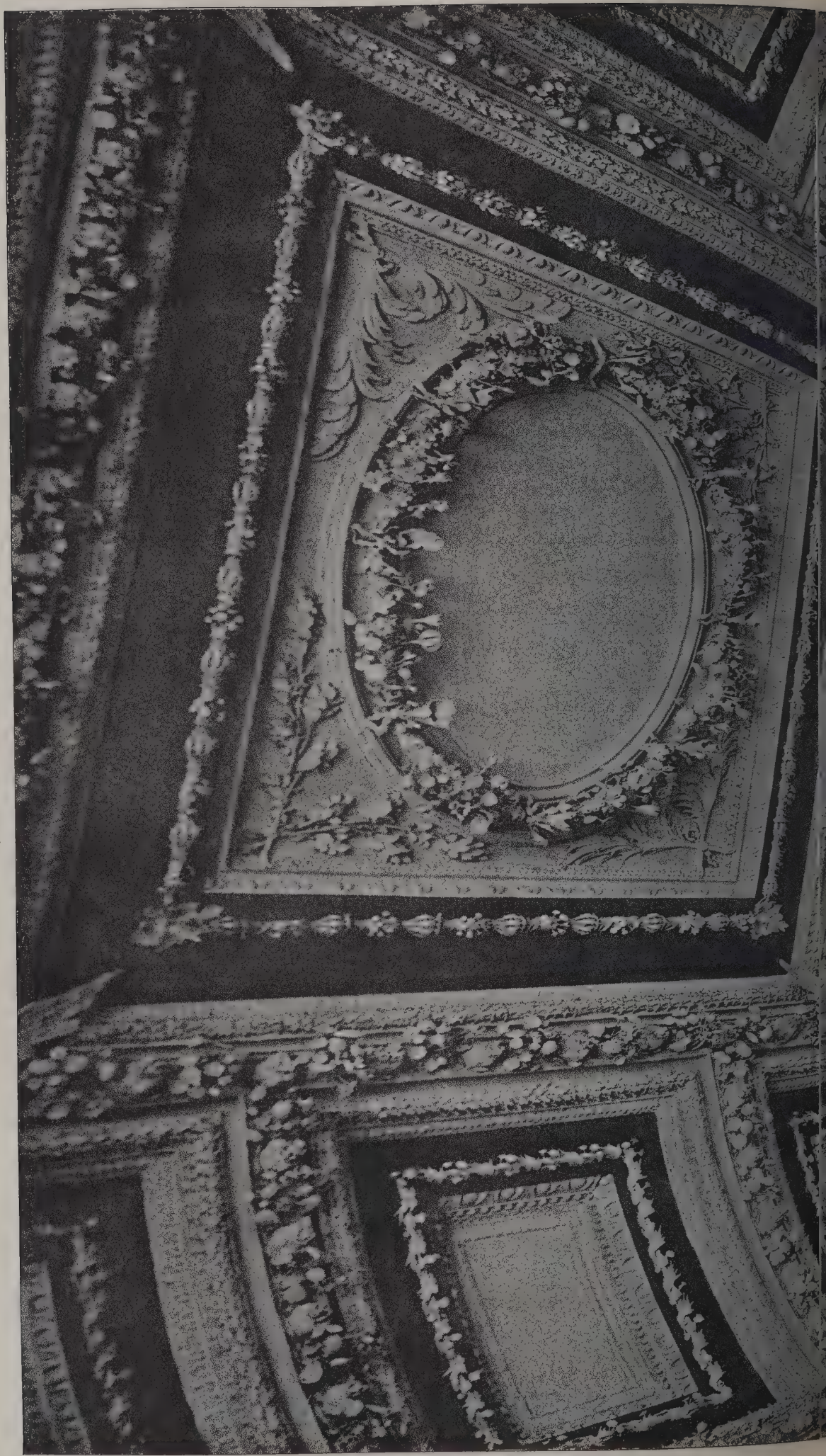


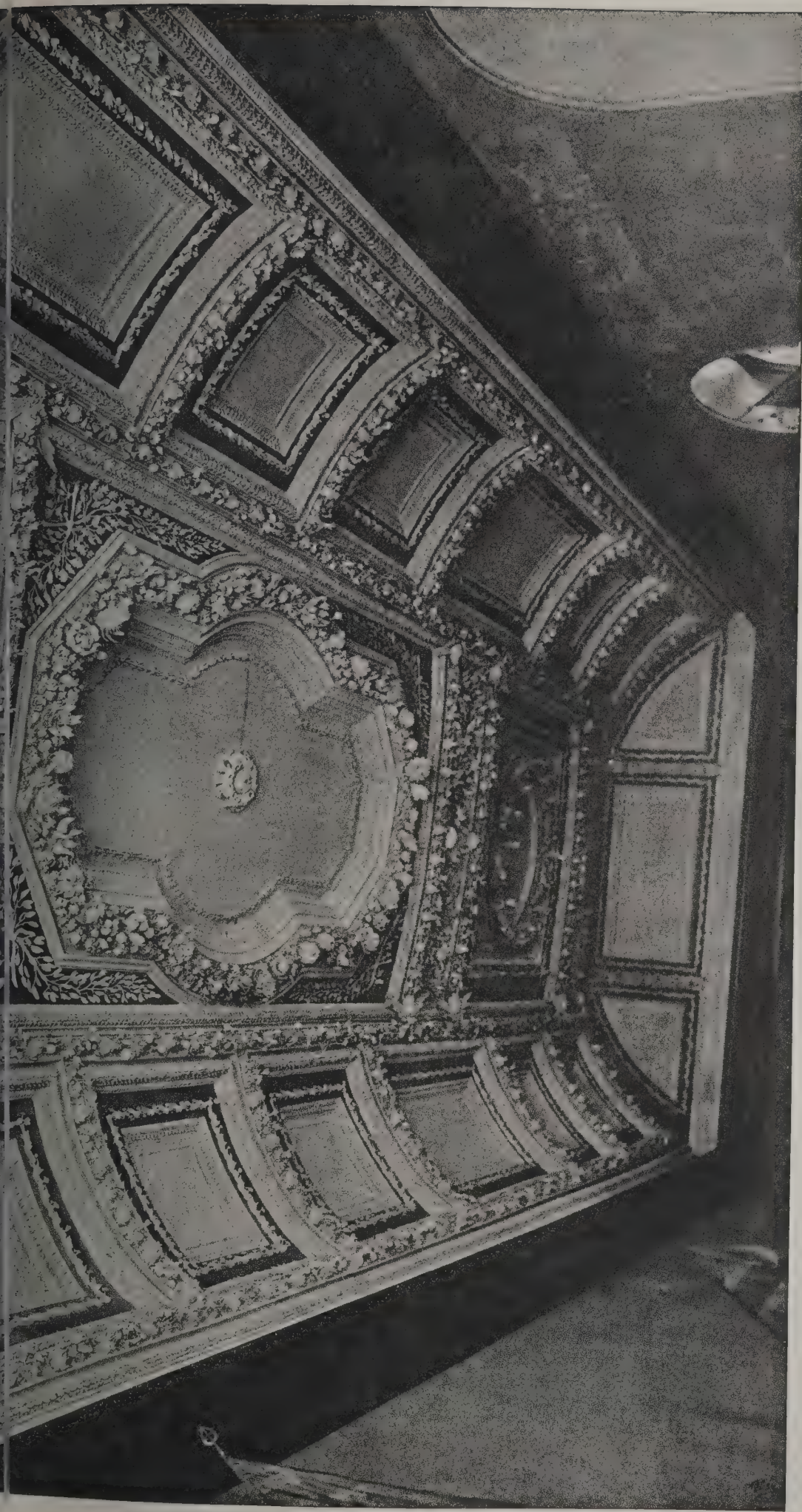
William Scott, P.M.
architect
25 Bedford Row, W.C.

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CEILING OF CHAPEL, ROYAL MILITARY HOSPITAL, KILMAINHAM.

Reconstructed under direction of ROBERT COCHRANE, F.S.A., F.R.I.B.A.

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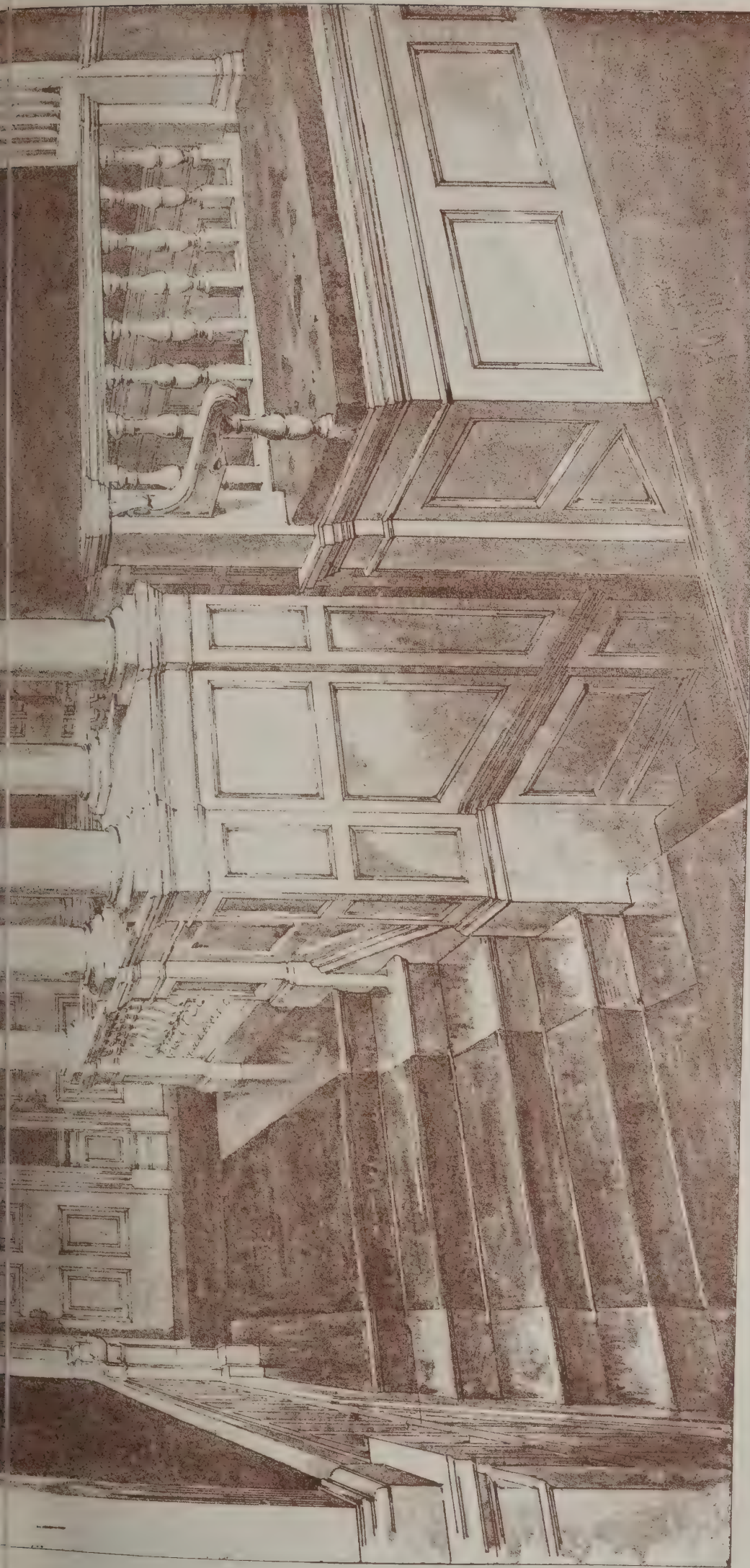


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CEILING OF CHAPEL, ROYAL MILITARY HOSPITAL, KILMAINHAM.
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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

few of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BRIGHTON.—Nov. 9.—Designs are invited for a new hospital. Premiums of 50*l*, 30*l*, and 20*l* will be paid to the first, second and third premiated designs respectively. Particulars up to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Brighton and Hove Hospital for Women, 76 West Street, Brighton.

ELHAM.—Oct. 7.—For sewage disposal of the village of Elham. Report, plan and estimate of probable cost. Premium 30 guineas. Further particulars, Mr. R. Loneragan, Heriton Place, Folkestone.

RAWTENSTALL.—Oct. 12.—Competitive designs are invited for a free library, town hall and assembly-room buildings. Premiums of 100*l*, 50*l*, and 30*l* respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Rawtenstall.

SCOTLAND.—The Glasgow Corporation are prepared to receive from architects competitive sketch plans, with estimate of cost, for the erection of a branch library for the Parkhead District. A plan of the site and a copy of the conditions of competition may be obtained on application to Mr. J. D. Warwick, town clerk, City Chambers, Glasgow.

SHEPTON MALLET.—Oct. 15.—For the erection of a hall to be used as drill hall and for musical purposes, cost not to exceed £1,200. Plan of site and copy of conditions on payment of £1 1*s*., which will be returned, from Mr. H. Charles Budd, 12 Commercial Road, Shepton Mallet.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100*l*, 50*l*, and 25*l* will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20*l*, 10*l*, and 5*l* will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WALKLEY.—Sheffield City Council invite from architects practising in the city competitive designs for the erection of a new free library. Premiums of 40*l* and 10*l* are offered. Mr. C. F. Wike, city surveyor, Town Hall.

CONTRACTS OPEN.

ALNWICK.—Oct. 6.—For the erection of a new billiard-room at the Alnwick Mechanics' Institute. The Secretaries, Mechanics' Institute, Alnwick.

BARROW-IN-FURNESS.—Oct. 10.—For alterations to the old municipal buildings. Particulars may be obtained at the Borough Engineer's Office.

BIRMINGHAM.—Oct. 5.—For the erection of a police-station in Bloomsbury Street. Mr. John Price, city surveyor, Council House, Birmingham.

BLACKHEATH.—Oct. 15.—For the erection of dépôt buildings on site at St. John's Park. Mr. Francis Robinson, town clerk, Town Hall, Greenwich Road, S.E.

BRADFORD.—Oct. 5.—For roofing stand at Valley Parade, for the Bradford City Football Club. Mr. R. Campbell, secretary, Belle Vue Hotel, Bradford.

BRIGHTON.—Oct. 5.—For internal repairs and alterations, &c., to the offices of the education committee, 54 Old Steine, Brighton. Messrs. T. Simpson & Son, surveyors, 17 Ship Street, Brighton.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CARLISLE.—Oct. 5.—For additions to the town clerk's office, Fisher Street. Mr. Henry C. Marks, surveyor, 35 Fisher Street, Carlisle.

DARTMOUTH.—Oct. 5.—For the erection of retaining walls, steps, piers and other necessary work connected with the Manor House improvement at South Town, and the pulling-down and removal of the dwelling-house and buildings now on the site, for the Corporation. Mr. Arthur Smith, borough surveyor, Dartmouth.

DARTMOUTH.—Oct. 6.—For the erection of the Royal Oak inn, Dartmouth. Mr. E. H. Back, architect, Dartmouth.

DEWSBURY.—For the erection of a warehouse in Wood and Bradford Streets, Dewsbury. Messrs Holtom & Fox, architects, Corporation Street, Dewsbury.

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EMBLETON.—Oct. 17.—For erection of farm buildings at Low Netherscales, Embleton, Cumberland. Mr. Edmund Jackson, civil engineer, Whitehaven.

FULHAM.—Oct. 7.—For the erection of two lodges, with refreshment-rooms, lavatories, &c., attached, situate in the South Park, Fulham. Mr. Francis Wood, engineer, Town Hall, Fulham, S.W.

HALIFAX.—Oct. 5.—For the erection of a pair of semi-detached villas on the Greenroyd Estate, Skircoat. Messrs Richard Horsfall & Sons, architects, 22A Commercial Street, Halifax.

HALIFAX.—Oct. 8.—For extensions to the Campbell Gas-Engine Company's works. Messrs. Jackson & Fox, architects, 7 Rawson Street, Halifax.

HARRINGTON.—Oct. 6.—For the erection of new vicarage at Harrington. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

HEREFORD.—Oct. 6.—For the slating of an iron roof in connection with the new purifier house at the gasworks. Mr. William Parlbay, gas engineer, Gasworks, Hereford.

HULL.—Oct. 16.—For the erection of thirty-two artisans' dwellings in Steynburg Street. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

ILFORD.—Oct. 26.—For the erection of dépôt buildings, stables, &c., in Ley Street. Mr. H. Shaw, surveyor, Town Hall, Ilford.

IRELAND.—Oct. 5.—For the erection of buildings of the Incorporate Belfast Maternity hospital in Townsend Street, Belfast. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

IRELAND.—Oct. 7.—For the erection of sixteen labourers' cottages throughout the rural district, Naas. Mr. D. J. Pursell, clerk, R.D.C., Naas.

IRELAND.—Oct. 10.—For the erection of seven labourers' cottages at (No. 1) Creevcannonan, (2A) Lissowen, (3) Barnamaghery, (5) Ballylucas, (6A) Ballynewport (8) Ballyvaston, and (9A) Lissoid, Downpatrick. Mr. R. L. Morrow, clerk, District Council workhouse, Downpatrick.

IRELAND.—Oct. 10.—For the erection of business premises at Ballinamallard. Mr. T. Elliott, architect, 37 Darling Street, Enniskillen.

IRELAND.—Oct. 12.—For the erection of a soldiers' home at the Fair Green, Mullingar, co. Westmeath. Mr. A. E. Joyce, architect, Mullingar.

IRELAND.—Oct. 13.—For constructing and laying floors at the new male block (in course of erection) at the asylum, Letterkenny, co. Donegal. Mr. J. P. McGrath, architect, Commercial Buildings, Foyle Street, Londonderry.

JOHANNESBURG.—Oct. 19.—For the supply alternative gas generating plant or steam generating plant, and motors or steam motors, with electric generators and accessories, to the following specifications:—Specification No. 2.—Section A: Gas producer plant, capable of gas 7½ tons of Transvaal coal per hour, with coal conveyor, ing and cooling plant and all accessories; sections B and E: Four gas-engines, each for driving a 1,350 kw. dynamo (2,000 B. h.p.); one gas-engine for driving a 675 kw. dynamo (1,000 B. h.p.); three gas-engines, each for driving a 675 kw. two-phase alternator (1,000 B. h.p.); two motor generators each consisting of a 250 kw. two-phase alternator and 150 kw. dynamos; two balancers, each consisting of two dynamos. Specifications, forms of tender, and a plan of the site may be seen on and after September 7, at the office of the Town Clerk, Johannesburg, or at the offices of the Council's consulting engineers, Messrs. Mordey & Davis, 82 Victoria Street, Westminster, S.W.

KESWICK.—Oct. 8.—For rebuilding a dwelling house at Bassenthwaite Halls. Mr. Jos. Watson, 1 Museum Street, Keswick.

LEEDS.—Oct. 10.—For the erection of wood and iron entrances and fittings at the cattle market, Gelderd Road, Leeds. Mr. Fred Mitchell, architect, 9 Upper Fountains Road, Albion Street, Leeds.

LONDON.—Oct. 6.—For the construction of an underground station at the southern end of St. Martin's-le-Grand. The Town Clerk, Public Health Department, Guildhall.

LONDON.—Oct. 6.—For the repairing and repainting of the Abbey Mills pumping station, Abbey Lane, Stratford. The Town Clerk, at the Engineer's Department, L.C.C., County of Middlesex, Spring Gardens, S.W.

LONDON.—Oct. 6.—For the construction of an underground station at Falcon Square. The Town Clerk, Public Health Department, Guildhall, E.C.

LONDON.—Oct. 19.—For the erection of a repairing shop and shops for electric rolling stock at Neasden for the Metropolitan Railway Company. Mr. R. H. Selbie, secretary, 32 Westbourne Terrace, London.

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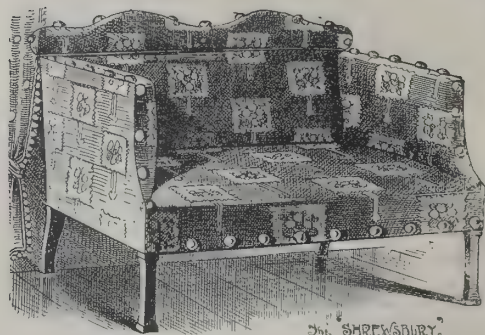
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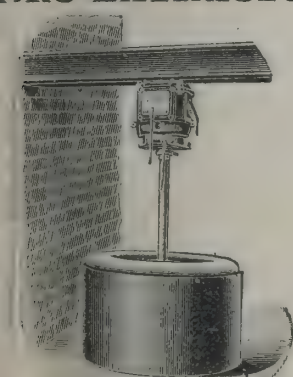
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LONDON.—Oct. 25.—For the construction at the corner of
 kwall Lane of an underground convenience for both sexes.
 Francis Robinson, town clerk, Town Hall, Greenwich
 d, S.E.
 MANCHESTER.—Oct. 10.—For the erection of the Alfred
 et municipal schools, Harpurhey, Manchester. The Chair-
 of the School Buildings Sub-Committee, Deansgate,
 chester.
 MARGATE.—Oct. 12.—For construction of a toeing wall at
 ase of a cliff at Newgate Gapway, Margate. Mr. Edward
 ke, town clerk, 18 Cecil Square, Margate.
 MIDHURST.—Oct. 8.—For alterations and additions to
 ence and stabling at Bepton, near Midhurst, Sussex. Mr.
 am Buck, architect, North Street, Horsham.
 ADIHAM.—Oct. 12.—For widening Padigham, Lancs,
 dired bridge on both sides in two skew brick arches, the
 nents, pier, wing, retaining and parapet walls being in
 nry. Plans may be seen and copies of the specification
 bill of quantities obtained at the County Bridgemaster's
 fe, Preston.
 JACKERING.—Oct. 5.—For the erection of grammar school
 ickering, Yorks. Mr. J. D. Whitehead, clerk to the
 rns, Pickering.
 PONTEFRAC.—Oct. 10.—For the erection of a free library
 alter Row, Pontefract. Messrs. Garside & Pennington,
 cts, Pontefract.
 PORTLAND.—Oct. 27.—For additions to the police station
 ortland, Dorset, including the erection of six cells and
 e, &c. Mr. E. Archdall Ffooks, clerk to standing joint-
 ntee, Sherborne, Dorset.
 PORTSMOUTH.—Oct. 23.—For the erection of a school of
 departments (boys, girls and infants) in place of the
 ent Milton school building (mixed and infants). Messrs.
 a & Cogswell, architects, Prudential Buildings, Landport.
 UDSEY.—Oct. 6.—For the erection of new shed buildings
 nion Mills, Pudsey, Yorks. Mr. C. S. Nelson, architect,
 ark Row, Leeds.
 ALFORD.—Oct. 5.—For the erection of a brick boundary-
 at Wallness electricity station, Frederick Road. Particu-
 r may be obtained from the Borough Engineer, Town Hall,
 rd.
 COTLAND.—For the erection of Ramsay's new sanatorium,
 ge of Allan. Mr. Charles G. Soutar, architect, 30 White-
 Street, Dundee.

SCOTLAND.—Oct. 5.—For the erection of a block of shops
 and houses in Portsoy. Mr. R. L. Pratt, architect, Town and
 County Bank Buildings, Elgin.
 SCOTLAND.—Oct. 5.—For the erection of head-master's
 house and janitor's house at Lumphinnans, Lochgelly. Mr.
 William Birrell, High Street, Kirkcaldy.
 SCOTLAND.—Oct. 14.—For the erection of proposed new
 generating station and tramcar-shed at Kilmarnock. Mr. W.
 Middlemas, town clerk, Kilmarnock.
 SCOTLAND.—Oct. 17.—For the erection of new gasworks at
 Eschiels, near Peebles. Mr. Wm. Buchan, town clerk,
 Peebles.
 SHIBDEN.—Oct. 10.—For the erection of a house at
 Shibden, Yorks. Messrs. Joseph F. Walsh and Graham
 Nicholas, architects, Museum Chambers, Halifax.
 SHOREDITCH.—Oct. 6.—For pulling-down and rebuilding
 5 Hoxton Square, N., to be used as stores for the electricity
 department. Mr. H. Mansfield Robinson, town clerk, Town
 Hall, Old Street, E.C.
 SOUTH KIRKBY.—Oct. 7.—For the erection of a caretaker's
 lodge at the smallpox hospital, near Kirkby Quarry, South
 Kirkby, Yorks. Mr. Richardson, architect, Hemsworth.
 WALES.—For the erection of ten or more houses, Tredegar,
 Mon. Mr. W. S. Williams, architect, Tredegar.
 WALES.—Oct. 5.—For additions to the Newtown (Mon)
 County Intermediate schools. Messrs. Teather & Wilson,
 architects, Andrews Buildings, Queen Street, Cardiff.
 WALES.—Oct. 5.—For the erection of a mixed Board
 school to accommodate 270 scholars at the Varteg, near
 Pontypool. Messrs. Lansdowne & Griggs, architects, New-
 port, Mon.
 WALES.—Oct. 6.—For the erection of a cottage at Legacy,
 near Ruabon, North Wales, for the Great Western Railway
 Company. Mr. G. K. Mills, secretary, Paddington Station.
 WALES.—Oct. 6.—For the erection of a cottage at Raglan
 Road level crossing, near Llandenny station, Mon, for the
 Great Western Railway Company. Mr. G. K. Mills, secretary,
 Paddington Station.
 WALES.—Oct. 6.—For extension of the goods shed at
 Maesteg station, Glam, for the Great Western Railway Co.
 Mr. G. K. Mills, secretary, Paddington Station.
 WALES.—Oct. 9.—For the erection of five houses and
 shops at Cwm, near Ebbw Vale. Mr. Ernest N. Johnson,
 architect, Risca.

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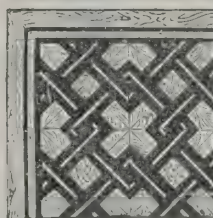
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WALTON CREEK.—Oct. 9.—For the erection of a coast-guard station, consisting of five houses, watch-room, store-room, &c., at Walton Creek, Essex. Quantities can be obtained on application to the Director of Works Department, Admiralty.

WHITEHAVEN.—Oct. 14.—For alterations to the Brow Top beerhouse, Wellington Row, Whitehaven. Mr. Wm. Carmichael, architect, Parton, Whitehaven.

WHITEHAVEN.—Oct. 14.—For alterations to the Shakespeare hotel, Roper Street, Whitehaven. Mr. Wm. Carmichael, architect, Parton, Whitehaven.

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ROBERTS & Co, Hornchurch (accepted)	471

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F. Johnson	49
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C. Ansell	29
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Lawrence & Thacker	732	0	0
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Free & Sons	681	0	0
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KEIGHLEY.

For painting the whole of the external wood and ironwork of the isolation hospital, Morton Banks (including railings, but excluding the smallpox buildings and the new scarlet fever pavilion).

RENNARD BROS., Bingley (accepted) . . . £25 0 0

KNUTSFORD.

For the providing and fitting-up of steam and other cooking apparatus at the workhouse. Mr. ROBERT J. M'BEATH, architect, Birnam House, Sale.

MOORWOOD, SONS & CO, LTD., Sheffield (accepted) . . . £378 0 0

LEICESTER.

For enlargement of head post office.

		A.
J. E. Johnson & Son . . .	£12,127 0 0	£186 0 0
E. W. Beech . . .	11,984 0 0	59 0 0
G. Dusebury . . .	11,588 15 0	176 1 6
J. Chapman . . .	11,205 0 0	175 0 0
J. H. Clayton . . .	11,198 0 0	125 0 0
O. Wright . . .	10,998 0 0	120 0 0
C. Wright . . .	10,975 0 0	125 0 0
T. Herbert . . .	10,845 0 0	130 5 0
H. HERBERT & SONS (accepted) . . .	10,780 0 0	130 0 0

A. Credit old materials

LYTCHETT MINSTER.

For street works and building new culverts at Lychett Minster, Dorset. Mr. R. T. S. SEYMOUR, surveyor, Wimborne.

T. Street . . .	£2,692 13 9
P. Tryhorn & Son . . .	2,618 16 0
W. P. Saunders . . .	2,246 10 0
G. Blaney . . .	2,235 17 6
S. Ambrose . . .	2,032 15 4
J. Wyatt . . .	2,047 9 1
G. T. Budden . . .	1,906 19 8
Grounds & Newton . . .	1,896 0 0
Gates & Gulliver . . .	1,835 3 0
H. C. BRIXEY, Parkstone (accepted) . . .	1,779 6 8

LICHFIELD.

For the construction of two settling tanks, 37 feet by 6 feet by 8 feet each; two filters, 19 feet by 15 feet by 8 feet deep each; detritus, effluent and flushing chambers, five new man-holes and sundry repairs to and cleansing of present sewer. Mr. W. E. ROGERS, engineer, Rugeley.

Langley Bros. & Tozeland . . .	£792 19 4
W. D. Oakley . . .	768 18 4
WOOD & SONS, Lichfield (accepted) . . .	689 0 0

MIDDLETON.

For the erection of a shepherds' hall at Middleton, Kilsall.

R. Wildbur . . .	£365 0 0
A. F. Forman . . .	341 0 0
J. J. Bone . . .	328 0 0
E. Knappe . . .	320 0 0
J. Spalding . . .	292 12 0
Tash, Langley & Co. . .	290 0 0
Renant Bros. . .	277 0 0

NOTTINGHAM.

For the erection of house, Sherwood Rise, Nottingham. Messrs. CALVERT & GLEAVE, architects, 18 Low Pavement, Nottingham.

CRANE, Ltd. (accepted) . . . £1,185 0 0

POULTON.

For disinfecting laundry, &c., block at the small-pox hospital at Poulton, near Dover. Mr. HENRY E. STILGEMER, borough engineer.

G. Lewis & Sons . . .	£421 0 0
Gann & Co. . .	396 0 0
J. Morgan . . .	268 0 0
G. MUNRO, Dover (accepted) . . .	265 10 0

ROTHERHAM.

For street works in Claremont Street and Pitt Street.

Pitt Street.

Hadfield & Co. . .	£215 16 6
J. Cooper . . .	212 4 2
R. Snell . . .	201 5 0
H. Wake . . .	195 9 4
C. GREEN & CO, Rotherham (accepted) . . .	162 12 9

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322 Fawcett Road, SOUTHSEA.

BRISTOL:

C. Bradshaw & Son,
Chapel Street, St. Philips Market.

ROTHERHAM—continued.

Claremont Street

Hfield & Co.	£727	9	11
Cooper	751	4	4
Snell	653	13	0
Wake	579	7	4
GREEN & CO., Rotherham (accepted)	551	14	4

SCOTLAND.

the wiring of the memorial halls in Bennoch Road, Kirkcaldy.
JANCE ELECTRICAL CO., Edinburgh (accepted) £399 0 0
Note.—Fittings to be selected later.

erection of the Renfrewshire combination poorhouses
Crookston. Messrs. MACWHANNELL & ROGERSON,
chitects, 58 West Regent Street, Glasgow.

Accepted tenders.

Anderson, 21 Oakshaw Street, Paisley,	£18,430	12	9
ter & Son, 20 Catherine Street, Stirling	7,437	10	0
ad, Glasgow, wright	3,227	15	2
& Anderson, Barrhead, plumber	2,729	12	10
aydon, 29 Craignestock Street, Glasgow,	2,364	11	4
usterer	1,293	14	1
raith & Winton, 129 St. Vincent Street,			
asgow, tilelayer			
Robertson, 31 Argyle Street, Glasgow,			
ter			

completion of the electric station in McDonald Road,
Edinburgh

Accepted tenders

Andrew, Edinburgh, builders' work	£16,829	0	0
ath, Brown & Co., engineers' work	6,591	0	0

STOCKPORT.

reet works in Harvey Street and Apsley Street. Mr.			
AN ATKINSON, borough surveyor.			
ng & Stafford	£1,266	5	2
Eva	1,235	8	6
HAYES, Stockport (accepted)	1,225	16	9

SOUTHAMPTON

For supplying and fixing at the Portswood sewage farm one
6-inch and one 8-inch high-pressure direct-acting centri-
fugal pumping engine, including all suction and delivery
pipes, steam and other connections. Mr. J. A. CROWTHER,
borough engineer.

G. Napier & Son, Ltd.	£444	0	0
Easton & Bessemer, Ltd	348	0	0
Worthington Pump Co., Ltd	330	0	0
J. & H. GWYNNE, LTD., London (accepted)	300	0	0
Tangyes, Ltd.	299	0	0

For tar paving footpaths. Mr. J. A. CROWTHER, borough
engineer.

R. Cunningham	£410	6	0
Mendip Granite and Asphalte Co.	380	15	6
A C W Hobman & Co	355	12	6
Asphalte United	352	12	6
W. Shepherd	340	11	0
E. Bradshaw & Son	331	2	9
North of England Asphalte Co.	318	5	0
F. Osman	296	11	0
J. WAINWRIGHT & CO., LTD., Shepton Mallet (accepted).	295	6	6

TONBRIDGE.

For painting the iron fencing in the parish churchyard, and
the gates and iron and woodwork at the cemetery.

Martin & Co.	£69	10	0
W. Bearn	68	7	0
Strange & Sons	40	7	4
W. BARTON, 7 Houseland Road (accepted)	27	10	0
S. Fry	26	17	6

UTLEY.

For the erection of stable, coach-house and harness-room at
Netherwood, Utley, Yorks. Messrs MOORE & CRABTREE,
architects, York Chambers, Keighley.

Accepted tenders.

E. Smith & Son, Gorden Street, Keighley, mason.			
R. Wade, 1 Kirkgate, Silsden, joiner.			
Midgley & Dinsdale, 39 Cavendish Street, Keighley, plumber.			
W. Thornton, Bromley Road, Bingley, slater.			
A. Sawley, Parson Street, Keighley, plasterer.			

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Evans Bros. £89 0 0
D. BOSSER, Bethel Road, Llansamlet, near Swansea (accepted) 85 0 0

For the construction of sewerage and sewage-disposal works at Talgarth. Mr. R. E. W. BERRINGTON, engineer.

E. Powell £6,852 0 0
E. H. Page 5,949 14 2
J. E. Evans 5,898 3 5
Johnson Bros. 5,710 0 0
W. H. Reading 5,453 0 0
A. Braithwaite & Co. 5,271 11 0
G. Holloway 5,147 0 0
J. H. Macdonald 5,054 9 8

For the construction of water supply works at Talgarth Mr. R. E. W. BERRINGTON, engineer.

J. E. Evans £7,105 0 0
J. Laing 4,857 0 0
Johnson Bros. 4,400 0 0
A. Braithwaite & Co. 4,100 0 0
E. Powell 4,095 2 8
P. Edwards 3,970 0 0
G. Holloway 3,767 0 0
W. H. Reading 3,600 0 0
J. H. Macdonald 3,430 0 0

For street works in Marlborough Road and lane at rear Cardiff. Mr. WM. HARPUR, borough engineer.

J. E. Evans £664 0 5
E. Osmond 403 5 6
T. R. Williams 389 11 0
C. DAVIES, Cardiff (accepted) 384 9 7

WOODFORD.

For street works in Claremont Grove, Woodford, Essex, and Back Hill, Woodford Bridge. Mr. WILLIAM FARRINGTON, surveyor.

Claremont Grove.
T. Adams £626 17 8
C. Bloomfield 599 0 0
J. Jackson 594 10 10
Parsons & Parsons 517 0 0
W. & C. FRENCH, Buckhurst Hill (accepted) 508 0 0

WOODFORD—continued.

Back Hill.

T. Adams £460
C. Bloomfield 398
J. Jackson 388
W. & C. French 365
PARSONS & PARSONS (accepted) 332

ELECTRIC NOTES.

THE Southgate Urban District Council have unanimously agreed to apply to the Board of Trade for a provisional order authorising the generating, storing, distributing and selling of electrical energy for public and private purposes in the Southgate locality.

A HUGE scheme has been promoted for the supply of electricity and power gas throughout Cheshire. In conjunction with the scheme it is intended to apply for powers to construct an electric tramway connecting Macclesfield on the one end with Hazel Grove and Stockport to Manchester, and to Macclesfield to Congleton, Sandbach, Crewe and Nantwich, with a branch line from Macclesfield through Broken Cross, Henbury, Chelford, Knutsford to Warrington. The scheme will comprise tramways to open out inter-communication between all the towns in Cheshire. Messrs. Rowcliffe & Co., of 100, Market Street, Manchester, who have forwarded details of the scheme to the Macclesfield Town Council and Chamber of Commerce, claim the scheme to be of the highest importance to Cheshire.

TRADE NOTES.

MESSRS. WARING & GILLOW, LTD., have secured a contract for the fittings and decorations of the Sultan's yacht, the *Albatross*.

MESSRS. JOHN OAKLEY & SONS, Limited, have declared a twenty-first half-yearly dividend on the Preference shares at a rate of 6 per cent. per annum less income-tax, payable on Monday, November 2.

ON St Michael's Day, September 29, a new clock was unveiled at the new chimes adapted from one of Dr. Wesley's anthems. Messrs. Wm Potts & Sons, clock manufacturers, Leamington, Newcastle, and first inserted in a public clock at Keighley. The set going by Mr. Joseph Greenwood, of Malsis Road, Keighley, the donor, on his seventy-fifth birthday, an engraving of the clock being fixed at the entrance bearing a suitable inscription.

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ILLUSTRATIONS.

MANUEL CHURCH, STOUGHTON, NEAR GUILDFORD.
OF CHAPEL, ROYAL MILITARY HOSPITAL, KILMAINHAM.
BROOM HALL, OXSHOTT.

MRSS. DENT & HELLYER announce that owing to their premises being required by the London County Council for the Holborn-Strand improvements, their business has been removed to 35 Red Lion Square and 75 Theobald's Road, N.C. The new and extensive premises are close to the Kingsway, the important new street now in course of construction, at its juncture with Holborn, and are within seven minutes' walk of their old works in Newcastle Street, where they have been established over a century and a half.

The tender of the Columbian Fireproofing Co., Ltd., 10 William Street, E.C., has been accepted for the steel-reproof floors, gallery and landings required for Childers House, Hants, for which the architects are Messrs Colson, Gifford & Nisbett, 29 New Bridge Street, E.C.; and they are proceeding with the work for the large mansion house of 10 Park, Winchester, for which some short time ago they secured the contract for the constructional steelwork and the construction, the architect of this work being Mr. Marshall Mackenzie, A.R.S.A., 343 Union Street, Aberdeen.

BUILDING AND BUILDERS.

The Town Council of Macclesfield have adopted the scheme of Mr. R. E. W. Berrington, M.I.C.E., of Westminster and Hampton, for the improvement of their sewage disposal works, at a cost of about 14,000*l*.

The foundation-stone of the new municipal offices in Earle Road, Crewe, was laid last week. The new buildings are on Corporation's freehold site near the Market Hall, and the estimated cost, including furnishing, is 18,000*l*.

The foundation-stone of a Roman Catholic church, to be dedicated to St. Hugh, was laid on a site in Earle Road, Liverpool, on a Sunday afternoon, by Bishop Whiteside. The church is to be built at a cost of 6,000*l*., which sum has been given by Mr. William Nelson.

THE Reading Town Council having applied to the Local Government Board for sanction to borrow 20,000*l*. for the erection of an infectious diseases hospital, Mr. W. W. E. Fletcher, an inspector of the Board, held an inquiry into the subject matter of the application at the town hall, Reading, on Thursday morning. No opposition was offered.

THE crisis in the New York building trade has reached an extreme stage, and between fifty million and sixty million dollars intended for investment in New York buildings have been withdrawn owing to the ceaseless strikes. The employers admit that the notorious Sam Parks, the labour agitator recently convicted of extorting money, now controls the situation.

THE question of securing additional office accommodation in connection with the Wallasey (Cheshire) District Council has resulted in a number of schemes being suggested, the North Meade estate, Seacombe, having been prominently mentioned as a suitable site. The works committee now recommend that a committee of the whole Council be summoned to consider and determine upon a new site and the erection of public offices.

THE Duchess of Bedford on Saturday afternoon visited Watford, where she opened a new wing added to the district hospital to celebrate the Coronation of His Majesty King Edward VII. The new portion of the hospital includes two new wards for six beds each, various offices, a dental operating-room and a dark-room for X-rays, the whole being lighted by electricity and heated on the medium-pressure hot-water system. The cost is about 4,300*l*.

CHARLES EASSON, a painter, residing in Dura Street, Dundee, met his death under sad circumstances on Saturday forenoon. Easson was engaged at work on the roof of a building in the western district of the city when his foot slipped and he fell on a glass roof. The force of the fall smashed the glass, and he tumbled into the flat below. He was picked up unconscious and died a few minutes later.

ON Saturday afternoon the Bishop of Salford laid a memorial stone at the Roman Catholic schools and chapel of St. Alphonsus, now in course of erection at Brooks's Bar, Manchester, on land given by Sir H. de Trafford. The increase of the Catholic population in the district has necessitated this further provision, and a new parish is being formed out of the existing one of St. Wilfrid's, Hulme. The accommodation provided is three classrooms on the ground floor and two for infants, with

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total space for 300 scholars. Above these is the chapel. The building stands well back from the street, and at the entrance a presbytery is being built. The total cost will be 6,000/.

ON the 23rd ult. the foundation-stone was laid of the new church for Glencraig and Lochore, Dunfermline. The building is being erected from designs by Mr. Robert Brown, architect, of Scotlandwell, at a point almost midway between the villages of Glencraig and Lochore, to accommodate 370 worshippers, and when the necessity arises and funds permit, a gallery will be introduced capable of seating an additional 200 persons. At the rear of the building, the plans provide for the erection of a hall, which will seat 100 people. It is expected that the building will cost between 1,400/ and 1,500/.

THE wall of the moulding shop of Messrs. Fairbairn, Lawson, Combe & Barbour's foundry, Belfast, one of the largest establishments of the kind in the United Kingdom, collapsed on Monday evening, the result being that several men were killed and others seriously injured. At the time the accident occurred eight men and two boys were engaged executing structural alterations at the foundry, and they all were buried in the ruins of a very high wall. It was not known for the moment what was the extent of the disaster, but willing hands at once set to work to extricate the unfortunate sufferers. It was soon apparent, however, that so heavy had been the fall of material that it was hopeless to expect to rescue all the entombed men alive, and a correspondent, telegraphing later, stated that six dead bodies had been recovered, while two men who were brought out alive were so seriously injured that but little hope was entertained of their recovery.

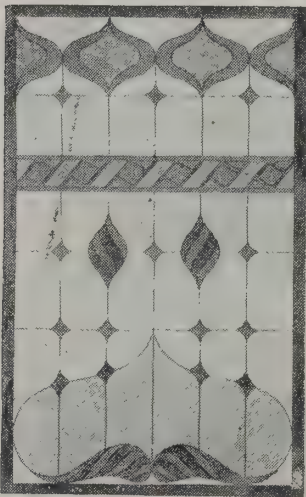
SPECIFICATIONS are being prepared with a view of calling within the next two months for tenders for the construction of the new Swansea dock, which is to cost close on 2,000,000/ and cover an area of over 70 acres, with 11,000 lineal feet of quays. The new dock is intended to accommodate the largest vessels afloat, there being a minimum depth of 12 feet of water on the outer silt at low spring tides, and 19 feet 9 inches of low water at neap tides, as compared with 15 feet at Cardiff and Bristol. Barry dock gives a depth of 21 feet 7 inches, and powers are given under the new Swansea Dock Act to lower the silt if necessary to a greater depth even than that of Barry, a deviation of 7 feet in the levels being provided for. Five important new railways will be laid down to feed the dock, the existing entrance channel is to be improved, and the half-tide

basin of the south dock is to be enlarged. The existing area of Swansea dock is 54½ acres, and that of the new entrance will give the port a total of 125 acres.

AT a meeting of the Board of Management of the Manchester Royal Infirmary on Monday, Mr. John Thomson, chairman, it was announced that it was intended to give notice to the tenants on the Stanley Grove estate, the site of the infirmary. The Chairman said communications had been received from various tenants asking when it would be necessary that they should vacate their premises. It was thought well, therefore, that the Board should pass a general resolution and leave it to their legal advisers to arrange the exact date of the resolution to which he would ask the Board to accede with the authorities of Owens College (the transfer of the estate of the Infirmary Trustees not having yet taken place) be required to give notice to the tenants to quit the premises they respectively hold on the Stanley Grove estate. The resolution was passed.

ON the 5th inst. the free library which has been presented to the burgh of Govan by Mrs. John Elder, was opened by Dr. Carnegie. The library is situated in the south-east corner of Elder Park, and is entered from the corner of Thomson Street and Langlands Road intersect. The principal elevation, which is towards the street, contains an entrance colonnade that forms a centrepiece to the building, and is mounted by a balustrade, in the centre of which is carved the Govan coat of arms, with the burgh motto, "Nihil sine laude." The style of architecture is purely Classic, and the aim of the architect, Mr. John Burnet, A.R.S.A., has been to make the library as far as possible part of the park, from which it is reached off by only a light railing. The building consists of two floors. The basement is utilised as a book store, work-packing-room and furnace-room. On the ground floor are the news-room (53 feet by 23 feet), reference library for ladies and gentlemen, librarian's room and a large common room. The lending library, which is 45 feet by 22 feet 3 inches and capable of accommodating from 30,000 to 40,000 volumes, is also situated on this floor. From the corridor a staircase leads to the upper flat, which is to be used as a museum and junior room, there being separate compartments in the latter for boys and girls. The three elevations overlooking the park are of a simple yet dignified type, with a little carved enrichment at appropriate points. From the roof and over the main entrance there rises a small dome with flagstaff.

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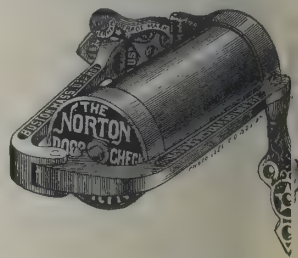
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VARIETIES.

Unitarian chapel has been erected at Selby on the old chapel, which dated from 1662. The new building formally opened on Thursday.

W. G. R. SPRAGUE, the theatrical architect, has moved to larger and more central offices at Criterion House, Jermyn Street.

A new Roman Catholic convent and educational establishment has been opened at Olton Court, Olton, by a community of nuns who have left France owing to the operation of the law.

Under the notices in the *Gazette* of the dissolution of partnerships we notice the names of Georges M. E. L. Verlyck and T. Dunn, architects, of Adelaide Chambers, Roding Road.

A new church at Gosberton Clough, near Spalding, was opened on Saturday. The building, which has been erected at a cost of 1,300l., will accommodate 120 worshippers. The church has been given the name of SS. Gilbert and Hugh.

The Corporation of Brighton mean to make a big effort to succeed for the Aquarium. After the present Building Exhibition it is their intention to run an Inventions Exhibition, starting in November next.

The issue of the *Sketch* for September 23 will be seen a new Waldorf Theatre, Aldwych, the new thoroughfare from Holborn to the Strand. The architect is Mr. W. G. R. Sprague, who is also architect for the new hotel which will adjoin the theatre.

A fire, which did damage to the extent of over 2,000l., broke out last week at the building works of Messrs Sherratt, Smith & Smallthorne, in Staffordshire. Many stacks of bricks, mortar-mill and the planing machinery were destroyed.

The King has promised to present a new lectern to Portsmouth Cathedral. The lectern will be of gun-metal, and is the only lectern made of that material in any church. The cathedral is an historic building, and is now undergoing extensive renovation.

The School Board of Croydon, which shortly ceases to exist under the new Education Act, sanctioned an application at its last meeting to the Public Works Loan Board for a loan of nearly 20,000l. for the purpose of erecting new schools in the district.

On Friday morning last a fatal accident occurred on the new buildings of the Savoy hotel, Strand. A girder was being hoisted by means of a hand crane when the jib of the crane gave way, causing the men to let go. Unfortunately one man was killed and two others injured.

THE general purposes committee of the St. Pancras Borough Council have under consideration the question of acquiring Mornington Crescent Gardens as a site for the new town hall, which would be so erected as to leave part of the site as public gardens.

THE Billinghay (Lincs) parish council being confronted by a threatened water famine, and having already expended some 200l. of the ratepayers' money in unfruitful boring operations, have decided to engage Mr. Stone, a "water diviner," of Bolingbroke, to locate a site where water can be obtained by boring.

THE Rural District Council of Wolstanton have adopted the scheme of sewage disposal of Mr. R. E. W. Berrington, M.I.C.E., for Basford, Longbridge, Hayes and Harefield, estimated to cost 5,000l., and application is being made to the Local Government Board for a loan to carry out the works.

IN addition to the 30,000l. which is being spent by the Glasgow and South-Western Railway Company on rebuilding the quay walls, raising the crane foundations, and erecting a new 50-ton crane at the pier-head berths at Troon harbour, a sum of 5,000l. is being expended on a hydraulic system of waggon haulage.

THE Oakengates Urban District Council have instructed the engineer, Mr. R. E. W. Berrington, M.I.C.E., to proceed with the carrying-out of the new sewerage scheme, and have accepted the tender of Mr. H. Holloway, Wolverhampton, for Contract No. 1.

AT the Guildhall Alderman and Sheriff Sir John Knill, Bart, was sworn into the office of Master of the Worshipful Company of Plumbers; and Dr. Robert Crawford, LL.D., and Alderman Hind, into the offices of Warden and Renter Warden, respectively, on re-election for the ensuing year.

NINE competitive designs were sent in for the new school at Gorse Hill, Stretford, Lancs. After a protracted discussion it was agreed to adopt the plan awarded by the assessor. The clerk reported that the Board of Education had approved by letters the sites for the Gorse Hill and Trafford Park new schools.

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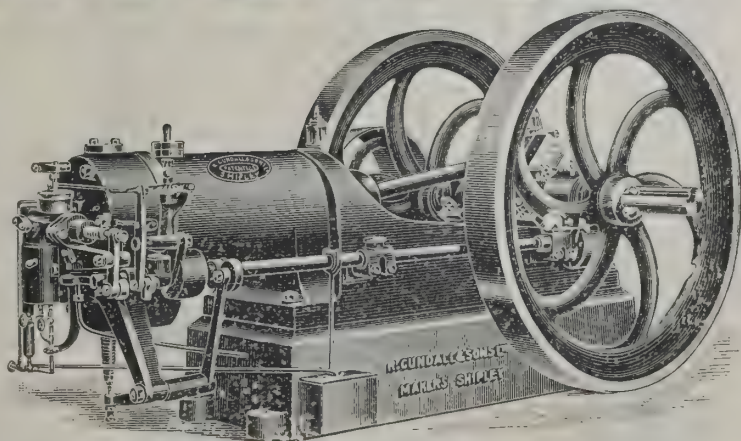
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A MASONIC hall, which has been erected at Moville, Donegal, was opened on Thursday evening. It occupies a conspicuous site overlooking the green, and it is intended that the lower portion of the building will be used for general purposes, a spacious apartment being provided there which will be suitable for lectures and meetings.

MR. CARTER, until last week the deputy engineer for Croydon, who has for some considerable time past most efficiently carried out the duties of engineer and surveyor, was duly appointed last week chief engineer and surveyor, at a salary of 800*l.*, rising yearly to 1,200*l.*; this is an increase of 300*l.* per annum to Mr. Carter. Some of our architect friends might cast covetous eyes on some of these municipal appointments.

THE Isle of Man Tynwald Court assembled last week, Lord Raglan presiding. A sum of 12,000*l.* was voted for completing the purchase of the governor's residence, and 2,433*l.* was voted for carrying out additional improvements. It is proposed to erect a new entrance hall and more adequate reception-rooms, and carry out various minor improvements, including the removal of the farmyard, which was in objectionable proximity; 750*l.* was further voted to obtain the surrender of the lease of the farm.

ON Saturday afternoon the new hall of the Airdrie Evangelistic Association, erected as a memorial of the late Dr. and Mrs. Wilson and child, who were martyred in China during the persecution of the missionaries, was formally opened by Mrs. William Service, Coatbridge, while a memorial-stone was laid in the vestibule by Mr. John Wilson, M.P., of Airdrie, Mrs. Service and Mr. Wilson being sister and brother of the late Dr. Wilson. The hall, which is seated for 700 people, has a suite of rooms, including a lesser hall adjoining. The building has been raised by public subscription, the cost being 2,800*l.*, of which about 1,000*l.* has yet to be subscribed.

THE exhibition of the remaining works of the late Phil May at the Leicester Galleries, Leicester Square, will open to the public on Monday, October 5, and will continue until the end of the month. The private view is fixed for the previous Saturday. Messrs. Ernest Brown & Phillips have arranged an interesting feature in connection with this exhibition, as they will show in an adjoining room a large and representative collection of water-colour drawings by Thomas Rowlandson, the famous caricaturist. Several of his most famous drawings, notably "Angelo's Fencing Room" and "Dressing for the

Masquerade," will be on view. Visitors will be afforded an exceptional opportunity of comparing the works of the great humourists of the eighteenth and nineteenth centuries.

EXTENSIVE changes have recently been made in connection with the Solihull Grammar School, the object being to place this educational centre on a basis of thoroughness to make it one of the most successful seats of learning in the Midlands. The old chemical laboratory at the school was provision was regarded as one of the most up-to-date in the country in connection with a grammar school. Behind the times, and a modern laboratory has been erected in addition to science and art rooms, rooms for the physics, lecture-hall, reading-rooms, workshop, dormitories have been increased so as to provide accommodation for an additional number of boarders. The new buildings, together with furnishing, &c., is estimated between 4,000*l.* and 5,000*l.*

MAJOR J. STEWART, R.E., Local Government inspector, held an inquiry in the Burslem council into the application made by the Town Council to borrow for the purpose of public sanitary conveniences to be erected under the Butchers' Market. In reply to the inspector, the town clerk stated that the rateable value of the borough present time was 145,751*l.*, the amount of the council loans 56,660*l.* and the population 40,000. The Major went on to explain that the suggested improvements become necessary owing to the inadequate and antiquated character of the present accommodation. The borough surveyor submitted plans and a description of the proposed improvements, upon the thoroughness of which the inspector was fully satisfied. A vote of thanks was accorded to the Major on the proposition of the Mayor, seconded by Alderman.

THE recently completed extension of St. Mary's Catholic College, Blairs, N.B., was opened on Friday. The new block occupies three sides of a quadrangle, connected at the south-west by the old buildings. The extension has been carried out at a cost of 33,000*l.* from plans by R. G. Wilson, architect, Aberdeen. A striking architectural feature of the new building is a high square tower at the front surmounted by four turrets, each bearing finials in the shape of arrows, while on the top of the central crown dome is a representation of a golden mitre. The internal appointments have been arranged with admirable taste. The class-rooms and students' quarters are spacious and comfortable.

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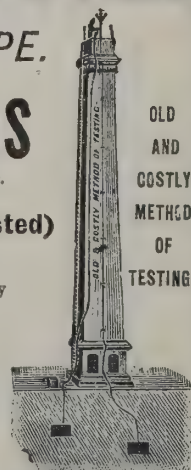
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For Index of Advertisers, see page x.

apartments and in the corridors the woodwork has been decorated with rich artistic effect.

Week the new warehouse erected at New Cross, London, was opened by Mr. J. W. Sankey (chairman of the Board of Guardians) in the presence of a large gathering. The site occupies about 50 acres of land. The contract for the building was mounted to 156,870*l*, and this is exclusive of the cost of the site, road-making and boundary walls, nor does it include professional fees, which are stated to amount to about 10 per cent. The total cost of the gigantic undertaking will be about 200,000*l*. The area occupied by the buildings is 100 acres, and provision is made for 1,246 inmates, and sixty other officers—a total of 1,326. The building presents the appearance of a village, and is fitted up with an almost lavish style, with maple wood paneling, mosaic tiled corridors, Doulton fireplaces and other appliances in every room. In the grounds is contained an immense rain-water reservoir.

Sanitary works, on the septic tank system, which have been carried out in connection with the new sewerage system in Linlithgow, have now been set in operation. The works are situated about a mile and a half from the town, on an area of about four acres. The process of filtration is carried on by means of contact beds, and the Stoddart patent distributor. A portion of the filter is composed of porous sand and gravel through which the effluent passes from the contact beds and empties itself into a running stream which has its outfall in the river. The septic tank is in two divisions, so that even when one may be undergoing cleaning or repair the other can be in operation. The process is the first of the kind introduced in Scotland, and the patent distributor is also used for the purpose in connection with such works in this country. The system has given every satisfaction. The engineers are Messrs. Warren & Stuart, C.E., Glasgow, and the contractors, Blair & White, of the same city.

The next quarterly meeting of the Royal Society of Antiquaries of Ireland has been fixed for October 6 at 8 o'clock P.M. in the lecture rooms, 6 St. Stephen's Green, when a paper on the convent in the county Limerick will be submitted to the eminent members, and will be illustrated with lantern slides. The usual social gathering for those belonging to the society and their friends will be held at 7.30, tea being ready at 8, and Mr. Garstin, the president, will on the same

evening exhibit "two Irish political medals and two eighteenth-century views of St. Stephen's Green." The Society's dinner club will meet also at the Shelbourne hotel at 6 o'clock, and the usual business and election of new members will form part of the work of the evening. On the same day, however, an excursion has been arranged which should prove most enjoyable to all who are able to join in it, and as it is confined to places within easy distance no expense is entailed on any members residing in Dublin or the vicinity. St. Patrick's Cathedral will be inspected by permission of and under the guidance of the Dean, Dr. Bernard, while Sir Thomas Drew will discourse on the recent alterations made in the sacred edifice, and the cross lately discovered there. The famous library of Narcissus Marsh, adjacent, will next be visited, and its curiosities shown by permission of the librarian, when doubtless many citizens will for the first time realise what an uncommon "King's treasury" they own in this old library, founded in the seventeenth century by the learned Archbishop, and which is always called by his name, although its right title is "The Public Library, St. Patrick's." Next the members will make the short journey to Kilmainham, and will be received at the Royal Hospital by Major Fielding, and here this interesting home for old soldiers, with its beautiful rooms and chapel, will be inspected, and all the objects of importance drawn attention to. Altogether a very pleasant programme has been put together for the benefit of the members, and although the places to be visited may sound familiar, the knowledge of them will be rendered more complete when accomplished under such favourable circumstances as above indicated. Another evening meeting will take place on November 24.

THE BUILDING TRADES.

BUILDING operations are, despite the supposed stagnation in the building trades, proceeding throughout the country, although possibly the larger jobs are noticeable by their smallness of numbers. Croydon Council passed plans at their last meeting for some 250 houses. The fact is that a spirit of nervousness and unrest is in the land, and it has become fashionable for our manufacturers to grumble at the state of trade. Evidences are, however, to hand that, although matters are far from brilliant as regards the building trades industries, yet, generally speaking, trade is not so bad as might be understood by the grumbling which is so frequently heard.

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MODERN ELECTRIC LIFTS.

THE problem of deciding whether the electric or the hydraulic lift is best is one which frequently confronts architects in planning new buildings, with the result that owing to the absence of data concerning electric lifts, and probably some

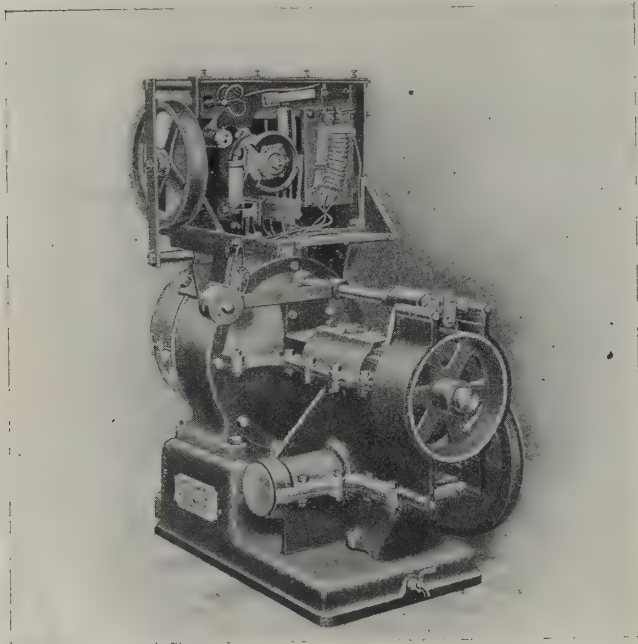


FIG. 1.—MOTOR AND GEARING FOR PASSENGER LIFT.

suspicion as to their reliability, the choice most often goes in favour of the hydraulic lift. This decision has also no doubt been influenced by the somewhat greater first cost of electric lifts, without taking into account the fact that the cost of running the latter is much less than in the case of even high-pressure hydraulic lifts. It seems to be a strong argument in

favour of the electric lift that nearly all makers of lifts have turned their attention to electric lifts, advocating them against their former specialties. It is impossible for the advocates of the hydraulic lift to deny the fact that in most, if not all, forms of hydraulic lift the power expended per stroke is the same whether the lift is fully loaded or almost empty, whilst with the electric lift the energy taken is nearly proportional to the actual work done.

Amongst electrical engineering firms who have paid special attention to liftwork, Messrs. Penrose & Co., of Farringdon Road, E.C., have been exceptionally successful in avoiding the troubles and breakdowns which are so often regarded as incidental to electric lift installations. Immunity is no doubt due to the careful design of the mechanism and gearing, which possesses points of novelty compared with some other types as to render the same worthy of notice. In the designs we illustrate, the leading idea is to insure not only absolute safety of the lift and its operation but also thorough reliability in working, coupled with the utmost possible economy in the consumption of current.

It will be seen that an important feature is that the controller and winding gear are all on one bed-plate, lined up, fitted and rigidly bolted down. This arrangement is not only good from the point of view of eliminating absorbing friction, but it brings all the mechanism into one place, where it can be carefully inspected and well looked after. It is moreover exceedingly compact and can easily be fitted with in planning the position it should occupy, as it takes up little floor space.

The whole of the working parts are enclosed, but the illustration the cover of the controller-box is removed to show the contents visible in the view.

The provision of a suitable motor is one of the most conducive to the economical and efficient working of a lift. Here Messrs. Penrose & Co. have wisely adopted a special motor which is at the same time fitted with some heavy starting gear which increase the torque at starting, and so enable the lift to be got rapidly under way.

The shaft of this motor carries on its outer end a large wheel shown, and between this brake wheel and the motor is a worm gearing with worm wheel keyed on to the motor shaft as the lifting-rope drum shown on the extreme right. The normal position of the brake is "on," the necessary pressure being secured by the weighted lever shown. The mechanism is controlled by a rope passing round the rope-wheel shown.

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he shaft on which this wheel is mounted carries a cam, when the wheel is rotated to start the lift raises the brake through the chain and lever shown, thus leaving the free to revolve. The motion of this rope-wheel shaft in each direction by a stop. At its inner end this is carried by bevel wheels with a switch shaft on which are two switches. One of them is the reversing switch the other is the actual circuit closer. The arrangement is that the reverse switch is closed in the desired direction the other switch completes the circuit, hence the action of the reverse switch do not suffer from sparking, they are never opened or closed when current is passing. In switch, however, at which the circuit is broken is provided with a magnetic blow-out which effectually prevents. Above the switch shaft will be seen an arm pivoted to the switch casing, and carrying at its other end a piece which can pass over the starting-resistance when in the position shown in the illustration the current is held up by a small roller connected with the rope wheel. As the latter is turned round the roller comes under the arm, leaving it free to fall by its own weight. A dashpot, however, causes the rate of fall to be so slow, no matter how abruptly the starting switch is flung, the rate at which the starting resistances are cut out is controlled, thus making it practically impossible to burn out the fuse or blow the fuse by too heavy a starting

flux of the whole difficulty of applying motors to lift is the provision of a really efficient electric controller, one which can be operated with the hand-rope from the cage, and Messrs. Penrose & Co. have met the requirement fully and satisfactorily in the above-described arrangement, which works with the greatest possible smoothness and precision.

Goods lifts the firm make a motor and gearing which has some particulars from that already described, the design is chiefly tending towards greater simplicity, durability and ability of withstanding rough usage, and the brake is held "on" by a spring instead of a weighted lever. An electro-magnet, through which the armature current is arranged to counteract the force of this spring. Starting "up" with a heavy load the current is large, consequently the electro-magnet is able to take off the pressure of the brake pressure. In starting "down" with a heavy load on the other hand, the current required is small, and the

brake accordingly remains partially on, thus preventing the load getting out of control. The throwing out of the starting resistance is automatically controlled by a dashpot on the same principle as that already described, but the details are worked out in a different manner.

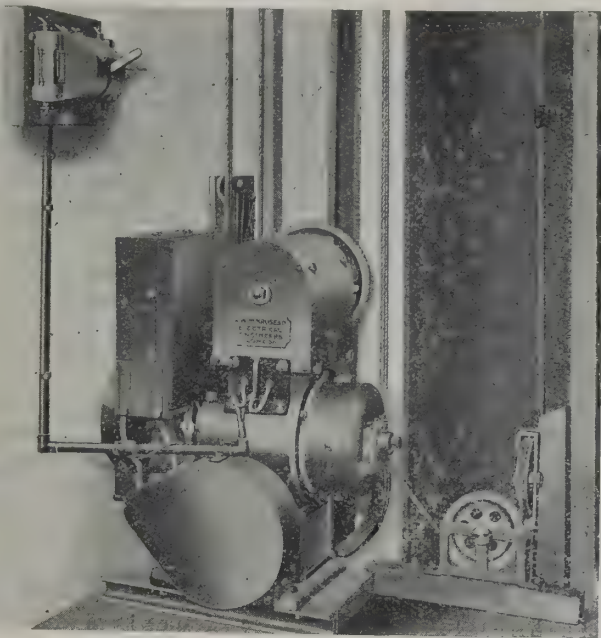


FIG. 2.—MOTOR AND GEARING FOR GOODS LIFT.

Another pattern which Messrs. Penrose & Co. adopt is provided with a winding drum for chain, and is adapted to warehouse cranes, forming equally as satisfactory an arrangement as those previously described.

A word must be said as to the safety gear on the cage itself, this being of an entirely new design, but thoroughly tested for reliability under all conditions.

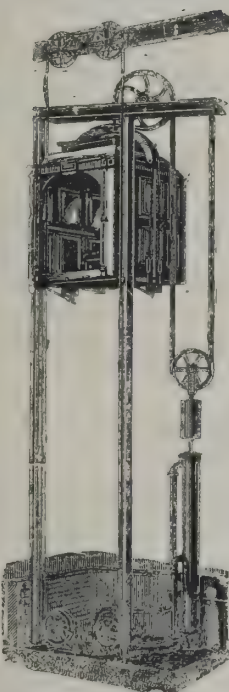
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NEW CATALOGUES.

WE have received from Messrs. S. Clark & Co., of Compton Works, Canonbury Road, N., a copy of their new and attractively got up price list of "Syphon" stoves. The heating and hygienic qualities of these stoves are so well known as to require no special description. We may, however, remind our readers that, owing to the system on which Clark's patent "Syphon" hygienic stoves are constructed, the heat produced is pure, equable and agreeable, and no fumes or smell are given off. The stoves consequently require no flue-pipe, and the whole heat generated is retained in the apartment. The utmost economy in consumption of fuel is thus secured, and an ordinary room can be efficiently heated for an expenditure of 8 cubic feet of gas per hour, which at $3s.$ per 1,000 would cost $1d.$ for $3\frac{1}{2}$ hours' burning. These stoves are manufactured in a variety of styles and sizes, and range in price from $38s.$ to elaborate and highly-decorative specimens up to 10 guineas or more.

MESSRS. W. F. STANLEY & CO., of Great Turnstile, have issued a new catalogue (G) with fully illustrated and priced descriptions of the numerous optical, surveying and drawing instruments, for the manufacture of which the firm has a world-wide reputation. This business, which, by the way, has now reached its jubilee, working under the same management of Mr. W. F. Stanley, has made advance in many branches. Drawing instruments have been improved in detail, the working parts being now made by exact machines. Machinery for dividing surveying instruments and scales has been increased by two very perfect engines, driven by power. By increase of premises at Norwood (1897), greater time is now allowed for the seasoning of all woods and ivory used, which is only possible with a very large stock of material cut to size, such as is kept by no other firm. The finished stock, as now extended, embraces every article for use in office or field, as far as known, for the architect, engineer and draughtsman. Over 2,500 of such articles are given in this catalogue.

THE MOMENTUM ENGINE.

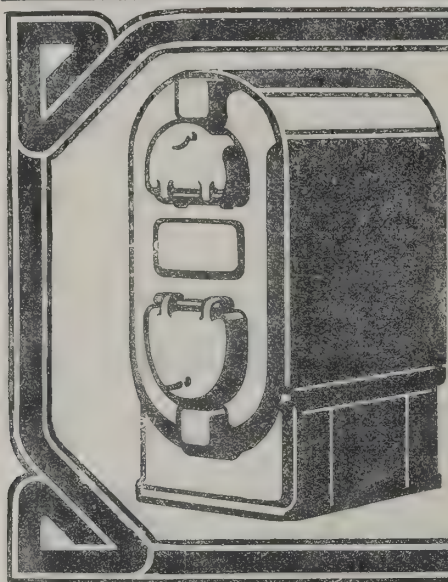
THE Momentum engine can be seen running every night at the Alexandra Palace. Among the many strange features appertain to this engine, it is particularly interesting that the same has been proved to more than double its capacity in power in consequence of a change and alteration in the automatic device, so that from seventy-five lights in the house—all the engine was expected to do—it made a total of 150 lights in the central hall of the Alexandra Palace. The engine is regarded as a wonder in engineering.

Another point is that the electric light made by the engine is perfectly steady, and yet notwithstanding the steadiness of the light, it is really brought about by the working driven shaft, that owes its revolution to the successive action of a series of fly-wheels, so that fly-wheel after fly-wheel is connected to the working shaft, and it would be supposed that such a series would make an irregular output of electricity; but it does not do so, for although one wheel one after the other takes a turn of three, five or seven revolutions connecting the shaft, and nine, twelve or twenty-one disconnecting the light is perfectly steady.

Another of the strange points in the engine is that the motive power of the little driving engines is connected to the working driven shaft. Like Radium, this possesses, we are told, the creative law of power, simply due to this fact, that a free racing fly-wheel in motion (revolution) at 20 lbs. to the ton, but when connected to the working driven shaft it throws out that full force in proportion of that ton by the square of its velocity, so that the machine's powers are doubled by merely doubling the speed of the fly-wheels. In connection with turbine engine machine is destined, according to the inventor's plan, to revolutionise motive power both in power-houses and in connection with steam marine. The experiment is in progress and about to be tried.

ELECTRICITY AT ASTON.

THE electric-power and lighting station, which has been erected and equipped by the Aston Manor Urban Sanitary Council, was formally opened on Tuesday. Mr. Frederick Smith had invited a number of ladies and gentlemen interested in the district to inspect the station.



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Mrs. Smith switch on the current, while the residents were given a share in the demonstration by reason of the fact that several important places in the district, such as the open space at Aston Cross, were illuminated by means of arc lights and by devices. This novel spectacle, so far as manner is concerned, attracted crowds of spectators. The power and light station is in Chester Street, adjoining the brigade station. It follows almost as a matter of course that the station is entirely modern in design and equipment; in fact, to an expression already used, "You have simply to turn on a switch and a host of things is set going." The engine-house is a large lofty room, 45 feet wide and at present 80 feet high, with a view to extensions the end is a temporary iron structure on wheels. Within this hall are three compound engines coupled to the dynamos. Two of the engines are of 1,000 horse-power each, while the third is of 400 horse-power, making a total of 2,400 horse-power. Notwithstanding the fact that they run at the rate of 290 revolutions per minute, the engines possess that most striking characteristic of modern high-speed engines—almost entire absence of vibration. The dynamos, which are also of modern type, are calculated to produce 1,250 kilowatts. This provision, however, is but the minimum of the undertaking. The power-house is so arranged that the demand for energy and light grows extensions may be made with a minimum of inconvenience. The engine-power, for instance, can be increased to 20,000 horse-power. The switch-gear is also a most impressive contrivance, but far too technical to be described. Quite as interesting as the power-house is the boiler-house. It contains three pairs of tubular boilers, with automatic feeders attached, and a conveyer which brings coals back from the canal side some distance away, deposits them in bins above the boilers, from which it is ultimately fed to the boiler feeders. The conveyer buckets then descend at the side of the building, and passing along beneath the boilers, just in front of the fire-holes, automatically carry off the refuse. The Council have also sunk an artesian well 100 feet deep, for the provision of their own water-supply. The water is raised by electrically driven pumps to a tank of 20,000 gallons capacity, which is on the roof of the building. From the tank the water passes through a filter, is then heated in an economiser in which waste gases from the furnaces are used, and finally is fed into the boilers by electric pumps. From this very general description it will be seen that Aston has secured a thoroughly up-to-date power

LEEDS AND LIVERPOOL CANAL.

AT the last meeting of the Leeds and Liverpool Canal the Chairman said the memorandum recently issued in connection with the half-yearly statement of accounts showed some of the difficulties they had to contend against, one of which was great increase in local rates. He dated the decline of the Canal Company revenue from the leasing of the canal by railway companies, who neglected the waterway which, when handed back, had suffered greatly and had never since recovered. The canal also required great improvements which were costly, and they had to face an increasingly keen competition. Without large expenditure in improvements, the canal would have ceased to exist as a carrying company. The outlook for the coming year was more encouraging and the financial position of the company much improved. Replying to questions, the Chairman said some land in Liverpool would probably be sold in the coming half-year, and would provide funds for further improvements. Subsidiences cost nearly 6,000,000 a year, which was cheaper than buying the coal beneath, and this would continue indefinitely. They would not issue any more shares nor borrow further for the present.

NEW CENTRAL HALL, BIRMINGHAM.

A BUILDING of considerable architectural importance, which has been erected in Birmingham by the Wesleyans for the accommodation of their Central Mission, was opened on the 16th inst.

It is situated in the upper part of Corporation Street, in close proximity to the Law Courts and General Hospital, with the architecture of which it harmonises in a very satisfactory manner.

The elevation is mainly in red terra-cotta, and is designed in free Renaissance style, which is well adapted for a composite building, and is the prevailing fashion in Birmingham. The frontage to Corporation Street is 224 feet, to Ryder Street 113 feet and to Dalton Street 275 feet. The tower is 180 feet high, and is utilised for ventilating purposes. The main frontage is distinctive and imposing. The entrance under the campanile is adorned with bas-reliefs in buff terra-cotta representing incidents in the life of John Wesley. From the spacious entrance hall two grand granolithic staircases lead to the first floor, the greater part of which is occupied by the great hall. This splendid chamber has no less than twenty

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doorways, so that it could be instantly evacuated in case of fire. It is surrounded by roomy and well-lighted corridors, and is constructed in the form of an amphitheatre. There are tip-up chairs to accommodate over 2,000 people. The dimensions are:—Extreme length, 146 feet; width, 80 feet; height, 48 feet. The hall is beautifully lighted and decorated, and the oxidised silver electroliers, supplied by Mr. Henry Bisseker, are of most artistic design. The platform affords plenty of scope for a peripatetic orator, and behind it is the fine Walker organ, which has been removed from the old building and enlarged. Probably the Gothic case will give place to one more in harmony with the Renaissance building when funds permit. Mr. Wiseman, who is an enthusiastic musician, is also hoping to secure an organ for the Synod Hall, which is also on the first floor. It is a lofty, cheerful room, about 40 feet long and 45 feet wide, suitably furnished to seat about 450 people. On the same floor are the church parlour, in which the ladies will meet; the library, in which the teachers will study; the offices, in which the staff will work; and the large schoolroom, where 400 children will assemble. The second storey contains a roomy gymnasium with a semicircular roof, and rooms set apart for clubs and committees too numerous to mention. The ground floor and basement are to be let for shops and warehouses, with a view to raising the amount of the ground rent, which is about 1,500%. The cost of the building is about 65,000%. Mr. Ewen Harper is the architect, and the work was carried out by Messrs. John Bowen & Sons.

ASSOCIATED PORTLAND CEMENT MANUFACTURERS, LIMITED.

THE third annual report of this company was submitted at the ordinary general meeting held at Winchester House, Old Broad Street, London, E.C., on Wednesday, September 23.

Mr. F. A. White, chairman, presided, and moved the adoption of the report and audited accounts. The report stated that an interim dividend on the preference shares was paid March 31 last, amounting to 59,442*l.* 7*s.*, being at the rate of 5½ per cent. It was now proposed to pay a final dividend of a like amount (59,442*l.* 7*s.*), which would equal a total dividend of 11 per cent. The profit of the company's third year shows an increase over those of the last financial year of 33,586*l.* 15*s.* 5*d.* This increase would have been very much larger had it not been for the continued fall in the selling

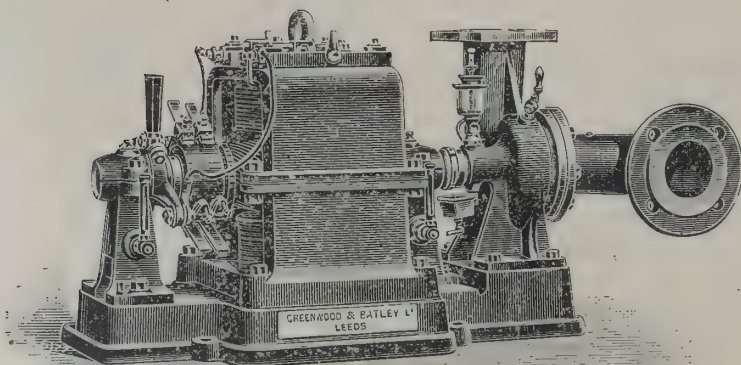
price of Portland cement. Had there been no such fall, it would have been a further addition of over 100,000*l.* to the company's net revenue. The reason for this fall is to be looked for, as before, chiefly in the importation of cheap foreign cement, a problem which has received the directors' constant attention, and to the solving of which they will continue to devote efforts. The economies in manufacture have been considerable, and are not only due to cheaper fuel, but are also the result of a substantial extent of expenditure incurred in the object of diminishing cost. During the year 117,879*l.* has been spent on extensions and improvements at the works. The directors are confident that these outlay have been wisely made, and that they should result in still further savings in the cost of manufacture.

It is well known that cement plant cannot be maintained except by large annual expenditure, and the sum of 137,574*l.* 19*s.* charged against revenue for the year represents what is necessary to keep the works in a high state of efficiency. In addition to this charge against revenue, it is recommended that a further sum of 210,000*l.* be carried to the general reserve and depreciation account, which will then amount to 45,000*l.* If this recommendation is adopted, the total charge on revenue for the year for depreciation (exclusive of bad debts reserve) will have been, including the amount written off in the previous year, 48,642*l.* 0*s.* 10*d.* Upwards of 220,000 tons of cement have been produced by the new rotary kiln plant at Arlesey since its erection. This cement continues to be of the highest quality. It conforms to the most stringent specifications, and gives complete satisfaction to customers. An installation has just been completed at the Arlesey works, and the erection of another plant is in progress on the same site. In addition to the 50,000*l.* paid off one of the mortgages the previous year, a further reduction has been made of 16,800*l.* partly by sales of surplus property and partly out of revenue. The actions against the company which failed to convey their businesses to this company under their respective contracts are proceeding. It was mentioned at the meeting last year that the action as to the price of Portland cement used at one of the company's works had resulted in the company's favour in the Court of Appeal after a judgment in the Court below. The directors are glad that the case having been carried to the House of Lords, the tribunal has affirmed the favourable judgment of the Court of Appeal. The report was adopted unanimously.

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The Architect.

THE WEEK.

ING on the report of Sir R. ROWAND ANDERSON, D., which recommended the plans prepared by Mr. D. CARÔE, F.S.A., the council of the University College of South Wales in Monmouthshire on Monday adopted them. The buildings are estimated to cost 224,355 $\frac{1}{2}$ l. The site has been granted by the Corporation of Cardiff and is in Cathays Park, in which public and municipal buildings stand. There will be a court having an area of 200 square feet. The blocks are arranged about it for accommodation of the arts department, the VIRIAMU memorial research laboratory, public health department, library, physics wing, women's department and a hall to seat 1,190 persons. The whole is designed to be architecturally in harmony with the other public buildings in the vicinity. The scheme permits of the erection of buildings in sections, and the proposal is to proceed on as possible with the arts department and to postpone the building of the remaining blocks, estimated to cost 140,942 $\frac{1}{2}$ l., until funds are available. The college has a fund at present amounts to 70,000 $\frac{1}{2}$ l. If the works are commenced within three years the successful contractor is entitled to a premium of 200 guineas.

THE city of Nancy being so close to the border, it has the French Government as well as the municipal authorities to keep it in a condition which will make it a pride of the whole country. Since the war its population has been almost doubled. Several new buildings are evidence of increased prosperity. But time is pitiless, and old buildings erected when Nancy was the capital of France manifest its operations. A great many of the inhabitants, whatever may be their religious belief, must be made to see workmen engaged in taking down the tower and belfry which surmounted the sanctuary of the town of St. Léon. The operation should have been performed some years ago. But in a case of that kind it is considered unwise to wound the susceptibilities of the public. The structure was made the subject of a careful examination by architects from Paris and elsewhere, and they were unanimous in concluding that it must be removed within a limited time. The period was extended to the utmost, and the demolition now in progress was not delayed until signs of a collapse were too manifest to be resisted.

In descriptions of storms in cities and towns in England it is usual to confine the attention to the effects on the parts of buildings. But owing to the weakness of the metropolitan main drainage system the truest account of inconvenience suffered on such occasions would be derived from an exploration of basements if any one could be induced to have the courage to attempt the task. Kensington is supposed to be a Royal borough, an old Court suburb, and people at a distance may imagine it to be exceedingly picturesque in all parts, but no inhabitant of it can anticipate what injury he is liable to suffer from the drains. The basements may now be considered as of monthly occurrence. There were floodings in June, July, August and September. We shall notice only the last. According to the report of the medical officer of health storm-water and sewage were forced visits into 881 houses, and it is not certain whether the number was not much larger. In thirty-four of them laundry-work was carried on; fourteen basements were flooded, sometimes to the depth of 10 feet. The living-room in a lodging-house was inundated to the depth of 2 $\frac{1}{2}$ feet. The owner of a house says that although the boards may be removed and cleaned the walls remain saturated with water. He adds:—"I, with workmen at my disposal, have been a fortnight trying to get the house fit to allow me to see it, and habitable, but feel that I am not fit at present in trying to get anyone to live in it. That of others more helpless, and who are living in the midst of it? . . . If the sewage does not happen to stop the drain of a favoured house, it pours through

the party walls from the next." But Kensington, it appears, is not the greatest sufferer. The cause is undoubtedly owing to the inefficiency of the main drainage, but whether the pumps, or the pumping station, or the main sewers or all combined originated the misfortune, is known only to the County Council. It was anticipated that additional pumps would be in operation at the end of September; but, judging by experience of the Council's operations, it is reasonable to imagine that the damage of the October floods will be unprecedented in extent. Perhaps the main drainage committee have assigned their responsibilities to the works committee, for then it would be easy to comprehend how catastrophes arise.

IN June 1900 the Corporation of Glasgow granted permission to the Caledonian Railway Company to carry the station buildings across Argyle Street, on the understanding that the roof was not to be more than 18 feet above the rail-level of the bridge. When the usual character of railway structures is considered, that was a generous concession. It is now found that the requirements of traffic need a more colossal mass, and a majority of the members of Council have agreed to the roof-line being 68 feet above the rail-level, or as high as the chimneys of the buildings on each side. The prospect in Argyle Street will be undoubtedly changed for the worse, but on the other hand the vast number of citizens who use the Central Station will find more convenience through the alterations which can be carried out. It is also said that the perspective of Argyle Street was doomed when the railway was allowed to pass over it. The railway company when erecting the station and hotel showed a desire to avoid any diminution of the amenity of the city, but the exigencies of traffic must be met, and there is no other solution except that agreed upon between the company and the Corporation.

WAGNER was a native of Leipzig, and although he lived in several cities he appears to have avoided Berlin as if it were uncongenial to him. It was, however, right that the capital of Germany should have a memorial of a composer who gained renown for the Fatherland. Although his fame is almost universal, it is possible his countrymen alone are fully able to understand the full meaning of his works. It is on that account, we suppose, they are somewhat disappointed with the memorial by Professor EBERLEIN, which was unveiled a week ago. WAGNER's figure, which is seated, with the right hand clenched on a piece of music while the forefinger of the left beats time, does not correspond with the ideal which was derived from the master's compositions. The original arrangement with a throned muse inspiring the musician is now supposed to be more suggestive. The subsidiary figures are preferred. They are WOLFRAM THE MEISTERSINGER, TANNHÄUSER, BRUNEHILD, SIEGFRIED, a Rhine maiden and ALBERICH. But the diversity of attitudes distracts the attention, although after a time there may be a more general acceptance of the necessity of so much variety.

SOME surprise was felt by archaeologists when it was announced that the University of Chicago had obtained the requisite authority to carry on explorations in Babylon. To their simple minds the news seemed to be equivalent to a conflict between Germany and the United States, for it was well known that German explorers had been digging in or about the spot assumed to be Babylon in a systematic manner. It now appears that the error arose from confounding the word Babylonian with Babylon. Representatives of the University of Chicago have obtained the privilege of carrying on excavations in the Babylonian territory. But the site will be at some distance, and in a southerly direction, from the ancient city. The circumstance that American archaeologists are seeking after antique cities in so remote a district is creditable to their enterprise, and everybody will hope for their success. What makes their effort more remarkable is the contrast offered between the enthusiasm of the people of the United States to take a foremost position in researches of the kind and the general indifference shown to antiquity in England.

ENGLISH ROADS.

WE suppose it is owing as much to education (using the word comprehensively) as to any other cause that people in England have become more exacting than their predecessors. There is dissatisfaction with most things, for we have vague notions about the possibility of their improvement, and hence so much grumbling arises about the condition of English highways. Not so many years have elapsed since they were supposed to be suitable for the purposes of travel. Perhaps no roads in Europe were so often made the subjects of pictures as those in England. Now we find discontent among the people who use them, and it is doubtful whether any officials lead less enviable lives than road surveyors.

The true cause of the discontent is the insufficiency of the expenditure on repairs. If we assume that the average outlay is about 70*l.* per mile a year (in some places it reaches ten times that amount), that sum might seem to the inexperienced to be adequate to all requirements. With a continual increase in the price of labour and materials a larger outlay is however necessary. Rates and taxes are already so high, alarm is excited by the thought of adding to them. It is therefore supposed that the money could be applied more wisely, and there is a demand for a change in the authority controlling the repair and maintenance of roads. The county authorities are believed to have an excess of duties and cannot be aware of the defects of roads which may be far from the county town. Accordingly it has been proposed that the responsibility should be handed over to district councils. In that way it is possible a more exact local knowledge would be applicable. But the question must arise whether, on the other hand, the increased proportion of superintendence and plant required in a small area might not exceed the economies in labour.

In order to arrive at some general knowledge about the true condition of the roads and to discover if possible what amendment in the law and administration is desirable, a departmental committee was appointed by the Local Government Board last March. The inquiry was of twelve days' duration, and a large amount of information was elicited. In the first place, it became evident there is some difference of opinion about the character of many roads and the responsibility for their upkeep. Main roads and bridges are supposed to be maintained and repaired by the County Council. But an urban authority can claim to retain the powers and duties of repairing many roads within their district. It thus happens that in the majority of cases urban authorities look after roads, while county councils supply the funds. The consequence is the existence of 1,855 highway authorities in England and Wales, exclusive of twenty-eight for London. In one instance in an area having a radius of less than five miles there are no less than twenty-five authorities. What is known as the Great North Road is operated on by seventy-two authorities, each, no doubt, holding a separate theory of the most efficient and most economical method of maintenance, and with the fullest liberty to exercise it at the cost of the inhabitants.

The departmental committee could not fail to realise that when the work is on a small scale, as in the undertakings of some rural and urban councils, it cannot be accomplished as efficiently and economically as with the authorities of large districts, who have qualified road surveyors, steam rollers and expensive plant. The conclusion should be inevitable that the duty of dealing with roads had better be withdrawn from the smaller councils. But such is the love of power in this country and the fear of the results of vigorous opposition, the committee have not the courage to recommend any change of the law which would be displeasing to local sentiment. The more important roads in the country, they are compelled to admit, should be considered as outside local sentiment. It is therefore suggested that county highway boards should be appointed, who would be responsible for county roads. Some, however, are of such general importance, being trunk roads, they ought to be regarded as of national concern, and be under the supervision of a central department in connection with the Local Government Board. It is considered that the new officials would also serve as an advisory body in case of dispute between highway authorities. The committee add:—"If it were empowered to devote part of the funds at its disposal to

the payment of a portion of the salaries of surveyors engaged in the work of maintaining main roads, it might well be invested with the right to approve the appointment of such surveyors." But that would mean the withdrawal of a privilege which is esteemed by all who exercise a life brief authority in urban and rural districts.

Originally most roads were made too narrow. The initial error entails a penalty, for in the neighbourhood of many large towns there is a frequent congestion of traffic. This is due partly to the increase of traffic, but also to the absence of alternative routes, the appropriation of space by tramways and light railway lines, the tearing up of roads for repair of pipes, and want of authority to regulate traffic. To provide a remedy by widening existing roads, or providing alternative routes, would be costly. The inclination of district councils to undertake the expenditure which would fall on a limited number of people, it is believed, could be removed to a considerable extent if the matter was in the hands of county boards. In other words, few improvements are to be considered as local. The question is complicated to some extent by the vagueness of what is presumed to be a line of frontage which is adopted. Buildings are erected as nearly as possible to the existing road, and their presence adds to the costliness of widening. In a colliery village there may be as many as 150 cottages appearing suddenly as an exhalation, and the road authorities cannot prescribe the line they are to follow. The committee consider that 20 feet from the centre of a county road would be a reasonable minimum, and any additional width required to increase that distance could be obtained by payment of compensation. It may here be remarked that there appears to be no evidence to suggest how the width of English roads was originally determined. To avoid duplication of authorities to whom building plans would have to be submitted if the proposed changes were approved, district councils should be required to report to the county highway authority whenever plans appear to show that buildings are to be placed too near the centre of the road. On the subject of alternative routes, or, as some will call them, "by-pass" roads, the following suggestions are offered:—Where new roads for the development of building estates are being constructed in the suburbs of such towns much could be done in the provision of alternative routes if the makers of such roads were required to comply with the matter of the direction and levels of their roads without reference to a general plan. At present, except in certain localities, there exists no power to compel such compliance. It is obvious that compliance with a general road plan would in many instances prevent the owner of a building estate from developing his land to the fullest advantage. In such cases full compensation should be provided for. The plans should be submitted to the highway authority. In other cases, where authorities should have power to acquire land for a road. Excellent as the by-passes would be in theory, in practice, the attempt to alter the course of traffic would be sure to lead to revolts by the inhabitants of the old-fashioned streets. In Brussels we see an object-lesson of a similar kind. Some hundreds of plans have been proposed to obviate the inconvenience of the Montaigne de la Woluwe, but neither the municipality nor the Government have the courage to interfere with the shopkeepers.

It is held that permission to lay railways on main roads has been granted without sufficient consideration. The committee recommend, except in very special circumstances, that no tramway or light railway should be laid down upon any road which has not, or will not have when the works are completed, a minimum width of 33 feet for a double line of rails of ordinary gauge, and 27 feet in the case of a single line. Where roads are narrow or congested with traffic the railways should be laid in lands prepared for the purpose instead of on roads. To put a stop to the indiscriminate opening of roads for the laying of pipes, it is said that notice should in every case be given to the highway authority. The restoration of the roads to their original condition should be done by the highway authority, and the cost not only of the restoration, but also of any additional repair of other roads rendered necessary by the diversion of traffic, should be recoverable from those who are responsible for the opening.

Traction engines occasionally cause harm to road faces, especially in certain conditions of the weather. The witnesses suggested that they should not be allowed to pass at times when there is risk. But the committee say there is a difficulty in finding officers capable of deciding such a point. They think, however, that damages ought to be recovered for any injuries to the roads. Questions often arise about roadside wastes which frequently mar picturesqueness to roads. The suggestion of the Monuments and Footpaths Preservation Society is adopted,—"That the county courts should be empowered to settle the question of what land forms part of a highway or waste of such highway, on the application of the highway authority, or of a specified number of ratepayers. The judgment of the county court should be subject to appeal on points both of law and fact."

The majority of English roads cannot be said to owe their manner of construction to any definite system. They present no doubt a series of improvements from the primitive track over the ground, but it is now realised that roads which will be equal to modern requirements—and some of the future are sure to be more exacting—should be more than a superficial consistency. What TELFORD in Wales is not too elaborate. Colonel CROMPTON, explained to the committee that in South Africa he had better roads than those commonly found in England. They had to sustain heavy traction engines and waggons. Therefore was careful in his foundations. The principle, he said, "is to distribute the load conically over the mass of subsoil; you do not want all the strains to go particularly down so as to punch a piece right out of the pavement, but you want to spread it over as wide a base as possible." To adapt English roads to correspond with that principle is no simple task, and the expense is to be reckoned. But with so old a country there must either be a succession of difficulties or extraordinary expenditure.

THE GROTESQUE IN ART.

THE limitation of human capacity is in one class of work exceedingly remarkable. Great wonder was excited when CUVIER and OWEN out of a few bones were able to indicate the character of the animal to which they belonged. Their success was due to their recognition of the principle of unity observed in the construction of beings of different classes. The bone of a colossal sloth of an ant type having some analogy to a corresponding bone of a sloth, it was easy to conclude that the remaining parts of the skeletons and the external appearance of the animals must have had some resemblance. Although they possessed such marvellous powers of identification and comparison with all details required for comparative zoology, neither CUVIER nor OWEN tested their abilities in creating on paper or in modelling-clay any new variety of animal life.

They were of opinion, we suppose, that science was to interpret nature and not its rival. If they failed in producing a new animal that would appear to the general public to be consistent in all its parts, their reputation would be damaged and their reproduction of wholes from fragments afterwards be accepted with diminished confidence. There was less restriction on artists. From a very early time they tried their hands in creation. Sphinxes, centaurs, griffins, human-headed lions and bulls and other compounds of diverse animals are evidence of their efforts. In a popular sense the figures may be considered as expressive, but in a scientific sense the figures may be considered as ridiculous. The experiments in physiology they are ridiculous. The Greek artists looked on combinations of human heads with the necks of horses and the wings of birds by the painters of the time as absurdities which corresponded with those admitted by poets and other writers whenever they departed from nature. A comic subject, as he said, should be treated in tragic verse nor the feast of THYESTES should be treated in a familiar metre. When poets, painters and sculptors failed to keep nature before them they surrendered to a bad sense and, as HORACE thought, made themselves ridiculous.

The Greek artists in Rome continued to play with grotesque forms in spite of his and similar censures. The

Assyrian and Egyptian monsters were offensive because of their seriousness; but when it was made evident that the artist was in a playful mood then the creation or combining passed into a different category. Living beings furnish the most beautiful lines which exist, and it would be a loss if they could not be employed because of the opposition of experience. A dolphin is an embodiment of force and agility. It surely was not a great offence to lengthen it by the extension of the tail into an ornamental form more or less in keeping with the lines of the head and body. Mr. RUSKIN once pointed out the superiority of a Lombard griffin to the ancient Roman one. While the latter placed its talons on a flower in such a way as not to ruffle a petal, the Lombard beast was rending into pieces whatever it encountered. It would be an error perhaps to say that the more modern sculptor did not realise the object of ornament, for there may be occasions when a suggestion of tragedy is permissible. But the old Roman or Romano-Græco sculptor was indifferent to tragedy, so he pleased himself as well as the spectators by introducing an animal manifestly harmless. It surely is allowable to occasionally look on life as if it had other aspects besides those which were tragically earnest, and, whether rightly or wrongly, that has been the effort of ornamentists in all ages. To afford pleasure being their aim, they left serious subjects to artists of other classes. Some of them might, like NICK BOTTOM, possess ERIC'S vein, and at times could make their lions roar like a cataract, but in ornament their lions roared as gently as any sucking-dove or any nightingale.

There came a time, however, when it seemed to be impossible to make the world believe that lions and other animals could be without cruelty even in a representation, and that serpents could form fine curves without any suspicion of danger. It appeared as if the earth were invaded by enemies who arrived from some remote planet. Rome, which had once been mistress of the world, was falling, and the tributary cities were wasted by pestilence, or the sword, or famine. If we are to believe some contemporary records, nature herself assisted in the destruction by earthquakes. We have then a long period of ornamentation which seemed to express terror. The serpent was taken as the most fitting emblem, and from the south and east of Europe to the north we observe suggestions of it in the convoluted lines, of which some of the developments are supposed to be peculiarly Celtic and Scandinavian. When in course of time the invaders were partly civilised, we see grim figures with enormous mouths and fangs feeding on lambs; griffins like those which Mr. RUSKIN admired, and much else which suggested that it was inspired by nightmares, but became indicative of what the world had passed through. Is it any wonder that sometimes amidst the darkness which seemed to be the downfall of all civilisation the figure of the Sun-god was used as if it were an augury of a brighter state of affairs? The disturbed condition of men's minds is evident when we find it recorded that ANTHONY THE HERMIT, in seeking for a brother solitary, encountered a genuine centaur who threatened him with his arrows, but was converted and served the stranger for a guide. There was a revival of the old grotesques, for they appeared to be fitting denizens in a world which was out of joint. The centaurs held possession of the imagination for a longer period, for DANTE describes meeting with them in his adventurous voyage.

To whom are we indebted for a restoration of the belief in grotesques as decorative elements in which an artist's imagination could be exercised without being subjected to severe criticism? A painter might take up an impossible task if he attempted to represent the story of ANDROMEDA, for human powers, at the time at least of the Renaissance, were not capable of creating a sea monster which would excite terror. The age had become sceptical, and was likely to laugh rather than tremble. VASARI gives the credit to MORTO DA FELTRO, a man of a melancholy temperament who seemed to find a congenial pleasure in wandering among ruins, and especially those which might be considered as almost subterranean. Evidently he had formed an idea of his own about ancient ornament. But until he had painfully copied innumerable examples he did not feel justified in making an attempt at working in the same style. He thought he had not the genius

requisite for a painter as the word was then understood, and never, it is believed, attempted the figure unless on a small scale in medallions. The praise which VASARI gives him deserves to be perpetuated:—

Morto da Feltro restored the practice of executing arabesques more nearly to that of the ancients than any other painter had done, and for this he well deserves enduring praise, the rather because it is to the commencement made by him that we are indebted for the beauty and perfection to which these works have been brought by the hands of Giovanni da Udine, and by other artists now distinguishing themselves in that branch of art. For although it may have been by Giovanni and others that these decorations have been brought to their ultimate perfection, yet it is not to be forgotten that our first thanks and commendations are due to Morto, who was the first to discover and restore the kind of painting called arabesque and grotteschi, seeing that they were for the most part hidden among the subterraneous portions of the ruins of Rome, whence he brought them, devoting all his study to this branch of art; we all know, moreover, that it is not difficult to make additions to and improvements in a thing once discovered.

The word "grotesque" appears to have had in VASARI'S time, as in our own, a suggestion of absurdity or comicality, and therefore "arabesque" is used as if it were an equivalent, which, strictly speaking, it is not. Mr. RUSKIN would prefer phantasmal. There is no doubt the revived mode of ornamentation was quickly employed not only throughout Italy, but in other countries, and to some extent in England. But the influence of HORACE had not been without its effect. GAUTIER, when describing the works of certain of his countrymen who were representative of the grotesque in literature, says that Frenchmen who are so fond of perilous situations have always conserved the most profound respect for rules in literature and, he might have added, in art also. The great struggle between romanticists and classicists in which he was one of the foremost combatants was simply an effort to determine whether the maxims observed at one time were to be binding on future generations as long as the world lasts. It is therefore easy to realise why the grotesque in ornament, which sanctions liberty often to a considerable extent, has received much opposition from French authorities.

The grotesque is supposed to be only capable of pleasing the eye for a moment but cannot secure the attention. It is a capricious dealing with men and animals and an indifference to nature. It is difficult to be always following nature without becoming formal and, as we said at first, creative powers are denied to us. There is no other course open to man but to make combinations possessing at least the attraction of novelty. It may be that occasionally French cleverness was anxious to perpetuate itself and grotesques have been formed by them on a scale unwarranted by Roman or Italian practice. There is no doubt also that arabesques have been executed in carving, and in such a way as to obtain a reality which seems to be contrary to the intentions of the ancient designers.

We may, in fact, imagine with a good deal of reason that the use of arabesques is founded on a misconception, a fallacy. The Egyptians covered their columns, walls and other objects with hieroglyphics which became eloquent of history and purpose. When the Romans saw the strange signs it was natural to conclude they formed no more than a remarkably varied and fantastic surface decoration. There is a remark in PETRONIUS which would suggest this. He sneers at contemporary artists for imitating a style similar to that of the Egyptians. We are not able to realise from actual examples how far the Roman grotesque when used as wall decoration resembled the multiplicity of figures employed in Egypt. But on looking at decoration like GIOVANNI DA UDINE'S in the Vatican, there is so amazing a variety of forms and so little coherence between them as to recall the peculiar character of the painted and carved language of the Egyptians. We do not see representations of similar objects, but rather a translation into another kind of symbols; the difference being that whilst the Egyptian examples can be interpreted, no YOUNG or CHAMPOLLION

has been discovered who can impart meaning to the grotesques we see in the Loggia of the Vatican and elsewhere.

We know from the severe judgment passed upon them by VITRUVIUS that grotesques won favour in Roman times and were introduced not only for the decoration of walls but in various other ways. Columns were employed which were of the form of reeds with capitals, showing papyrus twisted and turned in an unnatural manner. There were candelabra which carried little buildings from which branches issued, and on the branches were figures. Sometimes the branches bore flowers, out of which sprang the figures, some with human heads or with the heads of animals. VITRUVIUS said it was contrary to experience that reeds should sustain a roof, that a candelabrum should produce buildings and delicate branches carry figures. However, he adds, there is nobody to condemn these absurdities. They please people who never ask themselves whether such things are possible or not, and he adds, if he were acquainted with the Horatian precepts, that on his part he could not find satisfaction in anything that was not true, and he was indifferent to execution so long as the design was contrary to good sense.

If VITRUVIUS or HORACE could have taken a journey eastwards he would have found the further he advanced that the grotesque was more in favour. The Chinese were then admirers of art, and they found delight in weird representations, in which common sense was violated as much as in the new works which gratified the Romans. Is not the grotesque also prevailing among the works of the Japanese? Some of the figures may be derived from nature, but it must be acknowledged that a great deal of liberty is taken with the original models. Art of art which has afforded satisfaction to people over a wide area of the world's surface and for so long a period cannot be entirely evil.

A BIRMINGHAM ART SCHOOL.

A DESCRIPTION of the municipal art school appeared in the *Birmingham Daily Mail* of Friday. It says—life of the classrooms varies. There are students who attend in the morning only, others who attend in the afternoon, many more who attend only in the evening, after their work in the manufactory, studio, office or school; whilst a considerable number devote for a few years practically their whole time to the work of the school. Many of the present teachers and lecturers are former students. Mr. Charles Morley, for instance, the second master, was, with his brother, an engraver to the United States Mint, a student years ago in the elementary room are placed not only plants and animals but casts from horses, dogs and fishes, and geometrical objects, and there is a print from six blocks cut on cherry wood throughout the work of Mr. John D. Barten, the well-known illustrator of fairy tales. In the adjoining room Mr. J. H. Meteyard, the painter of figure subjects, teaches the application of flat surfaces, gesso, leatherwork, &c., and supervises the execution of working drawings on paper, mornings, three afternoons and five evenings a week.

When we have left the lecture-room, what means the cooing of pigeons in our ears? It means that living birds and rabbits are placed—alas! inevitably, in cages—for student work from. A student once lent her horse for a similar purpose, and before now a tree has been dug up by its roots and brought wholesale to the school. When the Japanese wishes to introduce into his design an animal or a bird or a fish, he forthwith draws one from nature, if practically possible; any rate, finds, if he can, a drawing of one which he has previously made from nature; it is the practice, as far as possible, to give to students in Birmingham the opportunity of doing the same thing.

Mr. F. G. Garrett teaches bookbinding on four evenings a week. He teaches his students how to carry their books through from sewing to finishing. Next we go to a room in the daytime by free admissioners from public elementary schools. Here they are taught to draw and model; the young craftsmen trained in the school usually experience difficulty in obtaining suitable situations. The metalwork drawing-room and the rooms for metalwork and enamelling are on the same floor. Gas stoves and other appliances are provided for enamelling; benches, vices, brazing hearths, other requisite materials are here for carvers, chasers, engravers, mounters, setters and repousse metal workers. The metal worker of Birmingham is

portunity to learn not only how to give to buttons, cups, caskets, vases, brooches, hatpins, trays and pans grace and glimmer of romance, but to go further if he possesses the taste.

The work of Mr. Benjamin Creswick, who teaches the morning and evening classes in modelling and modelled work, long ago attracted the attention of John Ruskin, who urged for him to work at Coniston under his own eye. Mr. Creswick's best known works are, perhaps, Heath's, the sign in Piccadilly, London, and the frieze at the Arts and Crafts Hall in Warwick Lane, London. He also modelled the panels on the new wing of the Art School in Cornwall. He is, too, a modeller for metalwork and other purposes. Students are taught to model in clay and wax, from photographs, casts and other examples, and from the living model. They are also taught casting in plaster and in bronze.

In the practice of stained glass it often happens that one does cartoons, another traces them on the glass, a third makes the pieces together. In the room for stained-glass work students are enabled to learn the whole of their craft. This room contains a series of drawings made by Mr. Henry A. Gurney, the teacher, of famous windows at Fairford, New College, Oxford, the Priory Church, Great Malvern, and All Saints Church, Brighton, specimens of Ford Madox Brown's windows, and three stained-glass windows, on loan from Mr. F. Holliday, designed by Sir Edward Burne-Jones, and executed by Morris & Co. Mr. Payne painted the panel "The Visitation" next to the organ in the town hall, Birmingham. He also one representing Leland's visit to Birmingham. Recently he has supervised the redecoration of Earl Beauchamp's private chapel at Madresfield.

The room for writing, illumination, and heraldic drawing is used in the morning, afternoon and evening. Ruskin says:—"The right use is the foundation of the art of illumination. Perfect illumination is only writing made lovely; the art passes into picture-making it has lost its dignity and its beauty. But to make writing itself beautiful—to make the use of the pen lovely—is the art of illumination." The work in this class is especially useful to the painter and bookbinder, but knowledge of lettering and heraldry is valuable not only as well as in many local trades. In the study of antique and antique rooms are casts from famous heads and figure subjects, including the "Hermes," "The Venus de Milo," Donatello's "St. George," Lucca della Robbia's "Singing Boys"; there are also reproductions from the portraits of Holbein, and now at the Art School. Morning, afternoon and evening classes meet in this room. Most of the rooms in the schools are used for various purposes in the daytime and evening.

The room with the oriel, which one can see from Edmund Street, is used in the morning and afternoon for needlework and in the evening for architecture and kindred subjects. It is hoped that, in these days of architectural eccentricity, architectural students of the school may continue to catch the spirit of quietude and thoroughness which characterizes the study of needlework. Miss Mary J. Gurney, the teacher of needlework, is well known as a member of the Arts and Crafts Exhibition Society. Ladies may here learn how to make articles for personal or domestic use. Embroidery, including Church work, is also taught; and a G. McKeon attends specially to assist in teaching needle-making. In this room are kept the examples of work received on loan from time to time from the Victoria and Albert Museum, the photographic reproductions of needlework, and some careful water-colour drawings by the late F. Hunter, of well-known examples of needlework, drawings in which she has so caught the texture of the work that we may at first imagine that we are looking at an example of needlework instead of at a water-colour drawing. The other end of the room are casts and photographs of the history of architecture—the mother of the architect. During the past decade no lecturer has done more to raise the credit of the school than Mr. W. H. Bidlake, M.A.,

the room for drawing and painting from the life is at the end of the building. Mr. Edward S. Harper, the portrait painter, teaches here in the morning and evening classes, and gives lectures on anatomy. On the walls are exhibited some reproductions of Burne-Jones's figure studies, some photographs from paintings in the National Gallery, and, in the foreground, a figure painting by Mr. W. A. Breakspere, and some drawings by Mr. Arthur J. Gaskin, done whilst at the school.

The work of the art school thus embraces many subjects and many experts. A young lady may study there in the morning, drawing and painting, and thus add to her powers of expression, and enhance the interest of her work, or she may learn a craft—say needlework—and thus acquire useful things; in either case her taste may be improved, and she may become at least a discriminating purchaser. A

young architect, manufacturer, or craftsman may work there under men whose business it is to study and to teach the best that has been, and is, thought and done in their respective arts and crafts. A craftsman or modeller may attend there in the evening and develop his skill. Anyone with a gift for an art or craft may cultivate that gift. Teachers in the elementary or secondary schools may continue their studies, and thus keep in touch, as many of them do, with the advancing requirements as to art teaching in public schools. "The main object of the school," according to the programme, "is to make workmen better workmen." In making them better workmen, it undoubtedly helps at the same time to make them better men. It is, indeed, in the local workshop or studio or office that the student usually finds his lifework. Some names of ex-students have, however, been in the foregoing notes. Mrs. Allingham, the water-colourist, and the wife of William Allingham, the poet, was for a time a student. Amongst painters, Miss Myra L. Bunce, Miss Kate E. Bunce, Messrs. Walter Langley, R.I., W. J. Wainwright, A.R.W.S., Charles M. Gere, Oliver Baker, A.R.C.A., R.E., F. W. Davis, R.I., Edwin Harris and Joseph E. Southall may also be mentioned. In book illustration and decoration the school has trained workers in varied styles, including Messrs. Edmund H. New, J. Finemore, R.I., R.B.A. (of the *Graphic*), and H. R. Millar, Miss Gertrude M. Bradley, Mrs. Arthur J. Gaskin, Mrs. Charles S. Green (née Miss Winifred Smith, niece of Alderman Sir James Smith), Mrs. Percy Adams (née Miss H. Isabel Baker), and Mrs. E. P. Nicholson (née Miss Cecilia A. Levatus). Mr. Arthur J. Gaskin, the metal-worker, and the late Mr. G. W. de Saulles, until recently the engraver to the British Mint, were also students, the latter in the evening classes after his ordinary day's work. Many of the best known local architects have been students, including several winners of honours at the examinations of the Royal Institute of British Architects; the architect (Mr. Bidlake) and the builder (Mr. Pitts), of the Moseley Road Branch School of Art, are both ex-students. Several ex-students are now headmasters of schools of art in various parts of the country; at least two have been assisted in their preparation for high office in the Art Department of the Indian Civil Service; others are teachers of drawing at the King Edward's High School for Girls, at the King Edward's Grammar Schools for Girls at Aston, Bath Row, Camp Hill and Summer Hill, at the Edgbaston High School for Girls and at the Church of England College for Girls, Edgbaston; and still more are teaching at Harrow, Charterhouse and other public schools. Altogether, the present students, day and evening, have much to encourage them in their work, under the able headmaster (Mr. R. Catterson-Smith), himself an artist and craftsman, who was in constant personal touch with two of the greatest art workers of the nineteenth century—William Morris and Burne-Jones—and whose teaching experience has been alike varied and successful.

TESSERÆ.

Early Scene Painters.

ENGLISH artists, having seen the capabilities of scenic representation as executed by French painters introduced by Sir William Davenant, sedulously endeavoured to render the British stage comparable with that of Paris. Streater, a landscape-painter and a great favourite of King Charles, subsequently designed many of the scenes for the theatre in Dorset Gardens. Robert Agas also, a contemporary landscape-painter of repute, both in oil and distemper, and well skilled in architectural design, painted several scenes for the same stage. The most able scene-painter that England had produced up to the period of the early part of the eighteenth century was the celebrated George Lambert, then denominated the English Poussin. This lively genius, the founder of the Beefsteak Club, was employed as principal scene-painter to the Lincoln's Inn Fields theatre, under the management of his friend Rich. It was on the removal of Rich's company to the new theatre in Covent Garden, erected in the year 1733, however, that the effect of stage scenery and machinery was first beheld in full splendour; for the pantomime was there, for a succession of years, brought out in scenic glory. Lambert, who had a dispensation from Rich to render the stage as imposing as the collateral aid of painting, machinery and costume could raise it, wrought day and night in his vocation; and such was the interest which his ingenious operations created, that the scene-room became the favourite lounge of noblemen and men of fashion; and the Beefsteak Club was instituted therein for the pure whim of eating a relishing steak hot from his German stove, and the enjoyment of his lively conversation and his wit. Lambert, who was candid and open, having the interest of his friend Rich always prominent in his thoughts, proposed to unite Signor Amiconi, a celebrated Italian painter and decorator, with him in the scenic department. The union was beneficial to all parties, and Covent Garden stage, through the spirit and

liberality of the manager Rich and the talent of his scene-painters, acquired the reputation of being the most splendid in Europe. At this period the Opera House, Haymarket, which had been erected by Sir John Vanbrugh, and opened in 1704, occasionally exhibited a rich display of scenic representation. Foreign artists, however, were principally employed in all the internal decorations of this theatre. Whatever merit the scenery department might exhibit, certainly that of the costume was woefully deficient both in propriety and taste, which subjected the management to the formidable joint attacks of the satirists who wielded the pencil and the pen. Hogarth, in his treatise "The Analysis of Beauty," exposed the absurdities and anachronisms of the Opera wardrobe with much graphic point, and was not sparing of his sarcastic humour upon the same management in many of his satirical etchings. The scene-painters in succession, from the period when Garrick appeared at the theatre Wellclose Square, were Ald Oram, in his day a landscape-painter of some repute, who designed for that company, and also a Monsieur De Voto. Jack Laquerre, the son of the painter of that name, who assisted Verrio on the plafonds at Windsor Castle, was an adept in his department of art. Servandoni an Italian, Monsieur French and others, were of coeval date, and were employed alternately at most of the metropolitan theatres. Amongst other foreign artists who practised scene-painting in the British metropolis, Signor Novosielski deservedly obtained public applause. He was also an architect.

The Spires of Salisbury and Bow.

The quality of Grecian architecture is a stated regularity of parts and proportions. Does this render it exclusively Classical? Surely the term may be comprehensive in its application, and equally suitable to every first-class effort, whether its beauty originates in a strict adherence to certain laws, or in a free obedience to the unrestrained workings of nature or imagination. Sir Christopher Wren was insane on one point. He thought lightly of Pointed architecture. And yet in his Grecian steeple of Bow Church and his Gothic spire of St. Dunstan's, what has he done? In his numerous Classic towers at London, as compared with his Gothic tower of St. Michael's, what has he proved? Why he has proved, in spite of himself, the superiority of what he condemned. The truth "would j out." He designed to do wrong, and unintentionally did right. Like other great men, he was open to prejudice—blind to this simple fact that the Grecian style is horizontal in its character and the Pointed perpendicular. The one has its origin in artificial erection, the other in natural growth. The former is a compilation of several principles, the latter an extension of one. To build up a Grecian superstructure beyond a certain relative height is no less at variance with the nature of the style than would have been the action of Bucephalus with the nature of a horse, if he had galloped on his hind-legs only, and had carried Alexander on his head instead of on his back. Let any one examine conjointly Salisbury spire (not the most beautiful of its kind) and the steeple of Bow Church, justly lauded as first of its class. Does not the spire spring from its base of clustered pinnacles like the flower from its leafy stem—a different feature of the same plant? Beautiful now, it seems, as it were, aspiring into a condition of greater beauty—its finials appear like so many thriving buds of promise? In turning to the tower of Bow Church, we acknowledge it as handsome in its parts, but unharmonious in its whole. Imperfect now, it promises nothing better—for its growth is effectually stopped—the sap of the tree is intercepted in several places. The entire composition exhibits four distinct pieces of architecture, which might be separately situated, and with good effect, on the same level in Stowe Gardens. First, we have a quadrangular pilastral tower; secondly, a peripteral temple; thirdly, a polygonal temple; fourthly, an obelisk. These are united it is true, but the union is an especial instance of that harmony which would be produced by striking at once the three adjoining keys of a pianoforte. In short, a Grecian steeple must ever appear a compilation—a thing which, like an old-fashioned spice-box, may be unscrewed and taken to pieces.

Veronese as a Colourist.

Veronese painted with astonishing lightness and certainty of hand; and his colouring was always clear and powerful, because he hit off the tints at once without stopping to perplex himself. Neither did he employ glazing so much as was the custom of the rest of the Venetian school; on which account his pictures are not so liable to receive injury in the cleaning. Like Titian at his best period, Paolo preferred a full display of light and avoided deep shadow; notwithstanding which, owing to his careful observation of the effect of colour and light upon the eye, his figures possess a striking degree of relief. All the parts of a healthy human body upon which sunshine falls directly have a reddish-yellowish hue, which is precisely that which, while it excites the eye, produces the most grateful impression upon that organ. Hence whatever parts are so illuminated and coloured acquire relief and seem to project,

while others which do not receive the rays of light do but are situated obliquely to or turned from them are either by reflection from the surfaces of other objects or light received from the atmosphere, and these reflexes light the parts on which they fall with the hues of the surface rebound from. As such lights are of a blueish cast when they are derived from the atmosphere all objects that are but slightly lighted, or surfaces not immediately exposed to the sun, take of this tint; and this when mixed with the carnation of the flesh produces a light grayish green. But as this latter is a weaker tone than the other, and therefore makes less impression on the eye, such parts seem to retire and appear in demi-shadows, even when really of no darker hue than the parts lighted by the sun. It is this opposition of colour between retreating and projecting surfaces that gives relief to the picture, and as both Titian and Veronese carefully attended to this effect, they were enabled to make their figures appear as tangible without having recourse either to strong or violent contrasts of light and shade. Frequently figures seem quite surrounded with luminous brilliancy, and they are detached from the canvas. Those painters were particularly attentive to bring together such colours as assist each other—such as yellow, blue, red and green—whenever a vivid effect was required, and avoided combinations in subjects that demanded softness and delicacy. Even light objects appear in some degree shaded when placed against a brilliant ground.

Influence of Cathedrals.

The modern architect who has been commissioned to build a church for 300, and, having prepared his ground plan and elevations, is afterwards informed that it will have to accommodate 600, would too often make no further change than by proportionally increasing his plan. But Poore, and Wyke, and Waynflete, and Islip would have gone very differently. They knew that an elevation suitable to a large church would be absurd in a small church. Imagine the sublimity of the front of Peterborough caricatured in a small country church. Or again, look at Tewkesbury and think of its towering arch imitated in a similar manner, or contrast the choir of King's College Chapel with Christ Church, Barnwell. On the other hand, that Early English gem, St. Andrew, Northampton, would, if expanded into a large church, become an unsatisfactory. There are arrangements, too, which are not only a comparative but an actual size to produce a noble effect. In that noblest of human temples, Glastonbury Abbey, the effect of the rise of six steps right across the building, some little distance west of the "Holy Doors," is inconceivable. Yet in a parish church such an arrangement, in proportion to its size, would be absolutely unnoticed. There are, no doubt, examples of the modification or imitation of a church in another, executed on true principles, and frequently occurring in the best ages of architecture. The front of Beverley sprung from that of York, and we must decide between them? They have the same magnificent same peculiarities, namely, the great prominent buttresses. Again, the tower of Gloucester was evincing the prototype of the glorious towers of the West of England. How beautifully is the idea modified in them. Look at St. Mary Magdalene's, Taunton, St. Decuman's and St. Andrew, Lydeard. The latter we think imitatively beautiful, and the same resemblance to Gloucester that the femininity of a daughter might do to the manly beauty of a father. Who can doubt that the Lincolnshire spires had their origin in the spires of the cathedral church, so ruthlessly and partially destroyed? We are bound, however, to say that this was, even in the best times of architecture, not always a good thing. The position of the towers of Exeter Cathedral, awkwardly repeated in St. Mary, Ottery; the reversal of the Wells in Finedon Church. Western façades are more imitated than towers, because their size depends on the church, while that of the tower does not. And yet the portion of the building which is sure to be fixed on by an "idea"

Landscape Sketching.

In the selection of a subject from nature, the student must ever keep in view the principal object which induces him to make the sketch; whether it be mountains, castles, trees, corn-field, river scene, or any other object; the principal of this leading feature in the piece should be duly emphasized throughout; the character of the picture should be derived from it; every other object introduced should be subordinated to it, and the attraction of the one should be the attraction of the whole. The union of too great a variety of parts tends to destroy, or at least to weaken, the predominance of any one. It ought to be the principal in the composition, and the student, when he proceeds to the colouring, should endeavour to characterise by throwing upon it the strongest of his attention to this rule, however, the student must be particular not to fall into the opposite extreme, and

leading object of his composition so fully to engross his
er as to render him neglectful of the subordinate parts.
e they are not to be exalted into principals it does not
that they are to degrade into superfluities. All the
n a picture should be composed of warm tints, except
ll on a glossy or reflective surface, such as laurel leaves,
utensils, &c., which should be cool, and the lights small,
them a sparkling appearance; but care must be taken
ntroduce a cold colour in the principal light, which, as
mentioned, should be thrown upon the leading feature
cture, as it conduces to destroy the breadth, which
be preserved; while, on the contrary, the opposition or
ity of a cool to a warm colour assists greatly in giving
y to the lights. If the picture, for instance, should
cool sky, the landscape ought to be principally com-
of warm tints, as contrast of this description tends to
ental improvement of the general effect. All objects
re not in character with the scene should be most care-
oided, as the introduction of any unnecessary object is
be attended with injurious consequences. This must
e necessity of becoming thoroughly acquainted with
taining a proper feeling of the subject. The picture
be complete and perfect in the mind before it is even
upon the canvas. Such force and expression should be
ad as would render the effect at the first glance
ible to the observer. Merely to paint is not enough,
e no interest is felt nothing can be more natural than
ne should be conveyed. Finally, it may be observed
s only by due attention to each distinct part, and by a
ombination of all, that the whole can be effective.

St. Paul's Cathedral.

ts defects are those of its style and period, but its excel-
are its own. A certain nobleness of conception and
ss of manner prevail throughout, redeeming its
ies and almost overpowering all criticism. There is a
ness in the cupola and fine Corinthian peristyle forming
our that may be pronounced truly classical; the latter,
most happily managed, its contour being preserved
n, while the piers placed within the colonnade itself
an agreeable diversity of plan, of form and of light and
e without cutting up the general outline or interrupting
continuity so essential to simplicity and repose. If we
be the circumstance of the building being divided into two
he coupled columns of the two loggias of the west front
en more objected to than anything else in the exterior,
er hypercritically. Granting that a similar arrange-
columns would undoubtedly be a solecism in the
style, it can hardly be alleged as one in a structure
e harmonises so well with the rest, particularly as the
for adopting it are sufficiently obvious to reconcile us
even had not the width of the large door and window
such an extent of intercolumn, and consequently the
themselves to be placed in pairs, still a conformity
rest of the front and with the other elevations, where
e necessary for the windows rendered wide inter-
a and coupled pilasters inevitable, would have recom-
it as the lesser of two evils. It is true the columns of
semicircular porticoes and of the peristyle of the cupola
paired, but then the difference of the plan in those parts
e of that variation without affecting the ordonnance
reavels elsewhere; in this particular, therefore, justice
een done to the architect.

Boxgrove Church.

sssex, when a church was half-destroyed, they seem
oly to have pulled down the nave and left the choir; else-
s at Waltham, Leominster, Malmesbury, Fotheringhay,
al, Usk, Chepstow, &c., the contrary process was more
ly employed. Of the two evils the South-Saxon one is
ey the lesser, as naves are much more like one another
byteries and lady chapels; even at a west front one can
re readily than at the arrangement of eastern apses
like. Of Boxgrove we have the eastern limb, the tran-
el tower, perfect and considerable ruins of the nave and
ventual buildings. The ritual choir included the two
ays of the nave, and probably the space under the
a solid wall, just like St. Cuthbert's screen at St.
divided it from the nave or parochial church to the
is being carried up to the roof now forms the barrier
e the existing church and the ruins. This last portion
a plain Transitional work, and the nave has no north
ept in a part recently excavated at its extreme west
cloister fitting in, so to speak, into the recess between
and the north transept. The transepts and the low
tower are contemporary, but the original eastern limb
place to a magnificent structure in the Lancet style
uch grander scale, which the tower barely overtops.
peculiarity is in the arrangement of the vaulting,
supposed to be unique in England. It is not easy to
it, but it is something of this kind. All the bays are
e hose of the central space being double the width of

those in the aisles, so that there are four bays in the one and
eight in the other. Consequently, in the clerestory there are
four bays; in the pier range there are eight, which is managed
by making the principal piers much more massive, and throw-
ing each pair of bays into the form of a couplet, just as is
usual in triforia. The principal remains of the conventual
buildings consist of the fragments of a Norman chapter-house
and the residence of the Prior, a Decorated structure, which
was perfect till it was unroofed and mutilated.

Italian Polychromy.

From the beginning of the fourteenth century, polychromy
in Italy may be said to have divided itself into three styles—
the arabesque, the pictorial and the architectonic. The first
was, as we have every reason to believe, in a great degree
originated by Perugino, and was especially affected by his
pupils and their followers. This style, of which the celebrated
Loggie, the Sala Ducale, and the bath-room of Cardinal
Bibiena at the Vatican, the Villa Madama, and some apart-
ments in the castle of San Angelo at Rome, together with
some of the walls of the Palazzo del T, at Mantua, are the
most remarkable examples, was copied closely from the antique.
It consists generally of an arrangement of colour in which a
white ground plays a most conspicuous part, serving as a field
on which are painted, on a small scale, every variety of objects
that can be imagined—figures, fruit, flowers, animals, birds,
fish, landscape, shells, curtains, marble and bronze panels, &c.,
directly imitated from nature, interwoven with scrolls and
patterns of a completely conventional character. Ornament is
heaped up with an apparently boundless profusion, and yet
breadth of style is preserved by keeping such coloured grounds
as are introduced firm and solid in colour, and by so diminish-
ing every object in bulk, as contrasted with the unoccupied
area of the ground colour upon which it is painted, as to allow
that colour to predominate, and at a little distance to appear
rather fretted with a diaper than covered with ornament
demanding attention. The balance in the best examples, as at
the Villa Madama, is so happily maintained that no one
portion of the wall attracts attention more than another, no
one ornament or portion of the wall starts forward before the
rest, and the eye, pleased with a universal richness and
intricacy, as in regarding the decorations of the Alhambra,
wanders delighted, neither oppressed nor confused. Shortly
after the death of Raphael, this beautiful style which, under
his direction and influence had been carried to such successful
lengths, degenerated, and although freely and skilfully
executed by the Zuccari, Tempesta, and other masters down to
the present day, we look in vain in any of their works either
for the same purity of drawing, point and meaning in the
selection of materials for ornament, or breadth of treatment in
colours; in fact, arabesque painting thoroughly degenerated
into mannerism, and the lamp of life was quenched.

Alan de Walsingham.

When sub-prior of the Monastery of Ely in 1321, Alan de
Walsingham laid the first stone of St. Mary's Chapel. The
falling of the great tower of the church afforded an opportunity
for the display of genius in architecture. His idea of a lofty,
spacious, octagonal tower, crowned with a dome and lantern,
in place of the old tower, was novel. He had no model to
facilitate the difficulties of erecting such a structure. The
difficulty did not, however, deter him from attempting it; and
his success in this undertaking is a proof of his superior skill
and an existing monument of his great abilities as an architect,
for that he alone was the deviser of the work, and acted
throughout as principal architect, is clear from the account
that is given of it, and is moreover confirmed by his epitaph.
This celebrated tower was finished at the expense of the con-
vent in 1342, and cost 2,406*l.* 6*s.* 4*d.* Although there is no
direct proof that he designed the plans of St. Mary's Chapel,
Ely, and also of Bishop Hotham's new buildings, yet it is most
probable that these two works are of his hand. The oversight
of St. Mary's Chapel, while it was building, was given to John
de Wisbech, one of the monks of the monastery, who was also
overseer to Alan of Walsingham. That the choir of Ely
Cathedral was begun by Alan while he was sacrist and finished
in his lifetime is known from an eulogium written on him when
he was prior. Besides the great works about the church,
including a most elegant set of stalls for the choir, Alan was
continually making improvements in the monastery, both while
he was sacrist and prior; he nearly new-built a residence for the
sacrist and added to it several apartments. This building, as
a specimen of the Domestic architecture of that period, is well
worthy attention, it having, with two others, undergone but
trifling alteration since its erection. The doorway has a retic-
ulated tympanum, and the transom stone so highly charac-
teristic of the Saxon era; it was the north doorway of the
church. Having enclosed the sacrist's office within a strong
wall, he erected, in the north-west corner, a square building of
stone covered with lead; part of this house he appropriated for
the use of the goldsmiths' work and for other purposes con-
nected with his situation.

NOTES AND COMMENTS.

ON Wednesday Professor F. M. SIMPSON delivered his inaugural lecture in University College, London. After a generous recognition of the services of his predecessor in the chair, Professor T. ROGER SMITH, he spoke about the efforts of the Council to provide a systematic course of education for architects. They were pioneers, and their example would be followed not only in various parts of England, but in America and the Colonies. Professor SIMPSON then traced the development of architecture, and asked what chance had we of a return to the principles of the Renaissance? The principles established by INIGO JONES and WREN were superseded in the last century, but their buildings still remained in evidence of them. As long as architects did not generally recognise some things in common it would be difficult to have progress. The public in consequence of the variety were likely to conclude there was no standard of architecture. The contest between Mediævalists and Classicists was over, but the latter were at war among themselves, and there were still two camps. It would be necessary to have a compromise, with less of pedantry on one side and less playfulness on the other. The difficulty was, however, to find a common basis. Then it would be possible to add another definite chapter to the history of architecture. Mr. ASTON WEBB, R.A., who presided, said he believed in the necessity of harmony to which systematic education was likely to lead.

THE love of competitions seems to be extending on the Continent. Superior artists are eager to have a share in them. Some months ago the city of Berne being desirous to commemorate the foundation of a system of universal postage by a group in a public place decided to organise an international competition among sculptors. No less than 125 models were sent in. After deliberation the authors of six of the designs were invited to take part in a second contest, which is likely to require several months to accomplish. Among the selected artists are M. RENÉ DE SAINT MARCEAUX and ERNEST DUBOIS, whose works are familiar to Frenchmen.

READERS of "Trilby," although they may not have visited Paris, must remember the description of the courtyard of the Grand Hôtel, with its marble steps and magnificent old man in court dress, with a large metal chain, who looks down like JOVE on the coming guests. The author gave a drawing which was to suggest the "atmosphere of bank notes and gold." TAFFY, "the Laird," and "Little BILLEE" shared the common experience of Englishmen and Americans by meeting unexpectedly with friends who were thought to be elsewhere. The court, which is so widely known, is to be transformed, and the directors, recognising the character of the establishment, have decided to open the competition to strangers as well as Frenchmen. The conditions are to be obtained on application, and plans must be sent in on December 15. Prizes of 3,000, 2,000 and 1,000 francs will be awarded to the authors of the three designs considered most suitable.

COUNTY surveyorships are earnestly sought after, as it is supposed the advantages of the office are not to be measured by the amount of salary offered, which is generally moderate. A vacancy having occurred in West Sussex a county surveyor was advertised for, the salary being 250*l.*, with travelling and office expenses. There were no less than 119 applications received. The roads and bridges committee invited the following gentlemen to an interview, viz.:—Mr. ALBERT E. BROOKES (33), assistant county surveyor for Worcestershire; Mr. F. T. JOHNSON (30), surveyor to Ticehurst Rural District Council; Mr. W. MCINTOSH (32), engineer and surveyor to Cuckfield Rural District Council; Mr. C. R. K. NEWINGTON (34), assistant county surveyor for East Sussex; Mr. RICHARD PARDOE (34), main road inspector for southern division of Warwick-

shire; Mr. H. FARR SIMPSON (30), county surveyor Northern Division of Isle of Ely. It will be observed that all have had experience in a similar office. Eventually it was decided to appoint Mr. MCINTOSH.

ILLUSTRATIONS.

HER MAJESTY'S THEATRE, SYDNEY.

For description see page 233.

FENTON (STAFFS) LIBRARY.

THIS design, submitted in the recent competition by Messrs. W. SUGDEN & SON, of Leek, provided the accommodation required and otherwise conformed to the conditions. On the first floor a large committee room with lavatory accommodation were provided with a large square landing over the entrance. The materials proposed to be used were thin Wall Grange pressed facings, with Roche stone dressings to be sparingly used and to portico and upper part of tower roofs to be covered with WILLIAMS'S (Basford) red made sand-faced tiles, which quickly lose their new appearance, in varying shades of green and deep red. We understand the first and second premiated designs were selected by the committee and a local practitioner appointed to carry out the work.

GROVE PLACE, HANTS.

THE beautiful Elizabethan building of Grove Place, situated four and a half miles south of Romsey on the Southampton main road, has had many vicissitudes. Built about 1564, it has sheltered Lord BACON and the Virgin Queen herself; later it was converted into an asylum, and at the end of the last century was used as a farmhouse, sacks of corn occupying the fine old hall. Happily it has now fallen into hands which appreciate its beauty, and the present owners have very carefully restored it as far as possible to its former glories. It possesses panelled rooms, plaster ceilings and stone fireplaces. The two octagonal towers on the south front, built of red bricks weathered to a deep orange tint, contain spiral staircases of English oak, black with age, of which the west tower shows one; the stairway in the corresponding tower is a miniature lift in the well, probably one of the earliest existing. These staircases measure 42 feet from floor to top landing in tower and have three landings, 10 feet being the internal width of the towers. The weight on the bottom newel must be enormous, and stand to-day, massive and boldly moulded, as they were when fixed nearly 340 years ago, a masterpiece in the hands of an Elizabethan carpenter. The illustration was made and drawn by Mr. CHARLES M. C. ARMSTRONG.

THE NEW LODGE, ASHORNE HILL, WARWICKSHIRE.

THE original plain farmhouse at Ashorne Hill, Leamington, has been turned into a small residence by alterations and additions, whilst the original has been cement rough-casted throughout. Old tiles were largely used in roofing the new additions. A vault runs round part of the new work, from which a good light is obtained south and south-west. Parts of the farm buildings were converted into hunting stables. Mr. C. M. C. ARMSTRONG, of Warwick, was the architect.

THE PARK FARM, KIRTLINGTON, OXON.

THE alterations and additions to the Park Farm at Kirtlington, near Oxford, were carried out in 1900. Local stone from an adjacent quarry in the parish was used to match the existing, with red brick arches, and stone facings to the window openings and chimney. Stonesfield slates cover the roof. Mr. THOMAS GRAY, of Bicester, carried out the work under the direction of the architect, Mr. C. M. C. ARMSTRONG, of Warwick.

CATHEDRAL SERIES.—EXETER: SOUTH AISLE, LOOKING EAST.

HER MAJESTY'S THEATRE, SYDNEY.

(See Illustration.)

EN Sydney's leading playhouse, Her Majesty's, was destroyed by fire on Palm Sunday, 1902, after a performance of "Ben Hur" on the preceding evening, it was for no doubtful, in view of the existence of several other in the city—the Royal, Lyceum, Palace, Criterion and whether the place would be rebuilt, especially as it involve an expenditure of between 30,000*l.* and 40,000*l.* ly the trustees of the family to which the property decided on the construction of a new playhouse ng all the latest British and American improvements, use being spared in making it the finest theatre in the wealth. The Hon. William Pitt, of Melbourne, who the Princess's Theatre in that city, was selected as, and instructed to have only three floors, instead of n the old building. This was for the purpose of doing h steep flights of stairs, and increasing the facilities e in case of fire. The approaches to the stalls, dress d amphitheatre are now superior in every way to any in Australia. A magnificent vestibule, with marble leading to the crush-rooms, is one of the main in connection with the entrances. The staircase is ed of solid marble, varying in colours, secured locally, l to any imported. On each newel are two elaborate rs, made expressly by Mr. J. Marriott, Melbourne, igns of the architect. Each electrolier stands 6 feet he pedestals are surrounded with artistically grotesque ads and wings, and the lights are becomingly shaded and graceful perforated stag-horn flowers of beaten The stairway is considerably in advance of any other ate.

h architect has laid down the theatre on different lines many others he has erected by dropping the whole t, thus making it easier of access to the dress circle and iatre. Special provision has been made for all the t the back of the stage, and the dressing-rooms are with the very latest improvements. The paint-room w large paint-frames, each 46 feet in length by a height et, which run the whole length of the stage. Under large scene-dock, capable of holding all set scenes in e on with any production that may be staged. The um has the largest opening of any in Australia, and is d by an asbestos fireproof curtain of latest design, ar: those now used in London theatres. This makes uitorium from the stage absolutely fireproof. Mr. Pitt duced the sliding-roof, of which he was the original r, but which has undergone many improvements since tduction at the Princess's Theatre, Melbourne. The is thoroughly ventilated, and is provided with all y, hydrants and fire-appliances to meet the require- f the city authorities. The blue-plush curtain and icht velvet in which the upholstering is executed and shings of the boxes and crush-rooms lend a very fine nce to the theatre. The whole of the plush and velvet ially imported and made up, together with the fine rs on stalls' floor and circle, by a Sydney firm.

he theatre is capable of accommodating 2,000 people, and e has a full view of the stage. Ample exits in case of provided, which have met with the approval of the horities. The auditorium and stage are lit up with lectric lights, all being controlled by large switchboards mers on the prompt side of the stage. The whole of icular work has been carried out by the Brush Com- Sydney. The decorations have been carried out in nce with the general architectural features of the and in strict accordance with best models of 'the ance style of work adapted to modern ideas, the pre- colours being cream, biscuit, warm brick colour and arying from light robin's egg shade to turquoise, this rading into a soft stony green.

gether the effect is most pleasing and soft, no strong s breaking the general harmony. The sliding portion eome is treated as a curtain, with sky-blue background i: between the sections, having bunches of flowers to e whole together. The dome is divided into sixteen having a raised ornamental rib at intersection. Upon ernate panel are painted groups of musical instruments al colours; four other panels have cupids in centre, g the elements, earth, air, fire and water; while the ng panels represent the four seasons. Underneath e shells picked out in suitable colours. The large arch e proscenium has panels treated to represent tapestry, r the frame enclosing the opening the same idea is out in a rich brocade pattern distributed over the

At the springing of the arch are four large 5 feet in diameter, upon which are painted figures, representing ancient actors, art and litera- usic and dancing. The same delicate treatment inued down the face of the private boxes, the

panels at bottom of pilasters being filled in with fruit and flower subjects upon a gold ground. The framing of the proscenium is intended to represent chased metalwork; this gives a fine solid look to the openings. The ceiling of the circle is panelled out in the same delicate tones of colour, having ornamental cornerpieces, lines and centre flowers. Upon five main panels are painted groups of musical instruments grading from earliest ancient to modern days. The crush-rooms are also carried out with the same careful regard to details in the style and finish of the work. The vestibule at the main entrance is one of the main features of the building, and is executed in tones of straw-vellum cream and blue, having scrolls in high relief upon backgrounds of silver, while the principal projections are etched up in gold leaf. This has a very rich and chaste effect, the colour and workmanship blending very harmoniously with the marbles of the staircase and the rich tones of the various metals used in manufacture of electroliers.

THE ARCHITECTURAL ASSOCIATION.

THE opening meeting of the session 1903-4 was held on Friday evening last in the Rooms of the Royal Institute of British Architects, Mr. H. T. Hare, president, in the chair.

Mr. A. Keen was elected by acclamation.

The PRESIDENT proposed the election of Mr. Sudsuki, a Japanese subject sent to England by his Government to study the methods of architectural education in this country, and he purposed afterwards visiting other foreign cities, taking in all about four years to complete his investigations.

Mr. SUDSUKI, who was elected by acclamation, briefly replied and thanked the Association for the honour they had conferred upon him in being made a member of their Society.

The PRESIDENT distributed the medals and prizes to the successful students of the classes and day school, and delivered the following

Address.

When we met together in this room a year ago you may remember that I expressed the hope that I should shortly be in a position to make an announcement that the pressing question of our new premises had at last reached a solution, after having constantly occupied the attention of your committee for many years. Session after session allusion has been made to the subject in the presidential address, and it may well be that your patience and hope have become well-nigh exhausted.

The anticipation is, however, now happily fulfilled, and after long negotiations we have been able to take possession of the Royal Architectural Museum, for so many years located in Tufton Street, Westminster, and formerly housed at the then Brompton Museum.

This fortuitous consummation being reached, your committee forthwith proceeded to the consideration of many proposals for the adaptation of the premises to our needs, were able to instruct their architect, Mr. Leonard Stokes, one of our past-Presidents, to proceed without delay with the work, and to accept the estimate of Messrs. Holloway Brothers. To-day substantial progress has been made, and there is no doubt we shall be able to move into our new home at the end of March next.

I have no intention of wearying your patience with the long and deeply interesting history of the Royal Architectural Museum; that has already been written in part, and now, no doubt, the time is at hand when an authentic and detailed account of its origin and progress will become an obligation posterity may demand. It will be enough to say that it has had a long and brilliant past, and that it is a tangible evidence of the potency of the Gothic revival. Some may here be led to remark that that cult had become effete, that the institution had fallen upon evil days, and was passing away in senile decay. If such were the case it is but a surface truth, which accomplished events have abundantly disproved. True, the Museum had become out of sympathy with its environment through the trend and evolution of architectural progress, in which it had held such a pre-eminent position and exerted such a wide-spread influence.

It is the fashion, in looking back on the Gothic revival, to speak slightly of the enthusiasm which possessed its leaders or to regard that enthusiasm as worthy of a better object. The direct effect, however, is with us to-day in our emancipation from the artistic paralysis of the first half of the last century. The heaven is still working with full and perhaps increasing potency, and the wonderful renaissance is yet only emerging from its shell, and there is promise of such glorious developments as may, perhaps, eclipse the greatest triumphs of the past.

Beneath the apparent desolation of the museum was a latent vigour, based upon our indigenous architectural traditions, destined to successfully receive the graftings of such a

vigorous constitution as that of the Architectural Association, whereby to renew its strength, and with regenerated powers to influence for lasting good our noble profession.

This sketch, I venture to think, is not overdrawn, and while we are accepting new responsibilities we are also investing ourselves with a heritage in delightful associations and replete with potent possibilities.

The interests centred at Tufton Street are one thing, the collections are another, and without going further into that it may be said that the study and contemplation of the contents of the museum and of the cognate studies there represented have had no small part in the great renaissance to which I have just referred.

It will be impossible to adequately refer to the long roll of honourable names linked with the history of the museum, but I cannot refrain from reminding you that among those in the past have been H.R.H. the late Prince Consort, Earl de Grey, Ruskin, Donaldson, Sir Charles Barry, Beresford-Hope, Scott, Cockerell, Penrose, Pearson, Brandon and a host of others; while in the living present we have John P. Seddon, Mr. Aston Webb, Sir William Emerson and Mr. Maurice B. Adams, who for so many years has acted as honorary secretary, and through whose enthusiastic interest the idea of fusion has been translated into a reality.

These are names which, I venture to think, will be for ever connected with the Royal Architectural Museum.

We see to-day noble blocks of Government buildings rising in Whitehall, which strangely seem to recall to memory the hot controversies and battle-cries of the styles which raged when the Foreign Office designs were prepared by Sir Gilbert Scott in a manner alien to his sympathies. In all of this, no doubt, Tufton Street exercised a not unimportant influence. Scott is generally supposed to have vindicated in St. Pancras station what he would have done in Whitehall had he been so permitted by the powers that then were.

The past year has not only been significant and epoch-making by what may be designated as the great departure, but it has been rendered notable by the successful completion of the first year's working of the day school. This is a matter for sincere congratulation, and this fact is important enough in itself to have taken precedence of everything else. However, these two events have come together side by side; the school demonstrating beyond all dispute the inadequacy of our present premises. This climax may well encourage us in the highest anticipations for the future progress of our Society under the more favourable conditions which we shall enjoy in our new home.

After two years of ungrudging labour Mr. Arthur Bolton has, greatly to everyone's regret, relinquished the post of headmaster of the day school, which he has filled with unequalled distinction, and the success which has attended the school is doubtless due in a very large measure to his devotion. To undertake a mastership is one thing, to organise and originate is another. Mr. Bolton has done both. Our ideal has been to give definite and systematic instruction by a one year's course of training preliminary to office work, and, when desired, to supplement this by a second year's course of more advanced study. This instruction is partly intended to enable the student to gauge in a measure before life is too far advanced his capacity, and to test practically his inclination for entering the profession. The latter consideration need not be present, but had it been possible for many now alas! in practice, perhaps some careers would have been happier and architectural repute more unsullied.

The instruction which our day students receive at the hands of the master and his assistants is based on principles which are intended to enable an intelligent interest to be taken in what they will see going on around them when they enter an office, and to assist them to assimilate the knowledge which will be at their disposal if they can but seize their opportunities.

Some of us can recall happy days of long ago, when enthusiasm was high and zeal, often misdirected, outran knowledge. This spirit Mr. Bolton has been able to foster and to direct to sources of wise inspiration. I cannot do better than invite you to inspect the results evidenced by their work, and to come and see the schools in operation for yourselves. The progress so far has been most gratifying, and we shall watch with signal interest the subsequent careers of those students who have had the good fortune to pass through the school. This success is all the more remarkable as having been attained under the very difficult restrictions which the present premises imposed upon us. When we enter upon our new home next year we shall confidently expect to see corresponding developments.

To fill the vacant mastership has been a difficult and anxious duty. I am certain that the selection of Mr. Maule has the full approval of the Association. The responsibilities of the post are by no means light, and whatever the new master's opinion of his own fitness may be, all will agree that no better choice could have been made.

In connection with these two topics, before leaving, I have two appeals to make. First in regard to the day school I take this public opportunity of commending it to the consideration of parents, guardians and heads of public schools as affording an excellent means of testing the aptitude of a coming man for his future profession. Should experience within twelve months that he is unsuited for the calling of an architect, he will have been no loser thereby, but will have gained much information useful in other walks of life, and will have been spared the drudgery of an uncongenial occupation.

The other appeal I have to make is to a wider circle than that represented within this room. I refer to the public at large, which still requires to be largely augmented before we can hope to be free from debt. The work on which we have embarked at Tufton Street is one which is in the interest of every member of our profession; indeed, I do not think I am guilty of exaggeration if I say that it is of national importance.

In every other great country it would be under the heavy subsidised by the responsible government. Here, however, it is left to private effort, and the greater need is therefore for every member of the Association and every person of artistic profession at large to afford the utmost support which the means will allow.

We are honoured by the presence of His Excellency the Japanese Minister, and we have just elected as a member of our Association Mr. Sudsuki, who is visiting many of our members for the purpose of studying the various systems of architectural education and reporting to his Government. This clearly shows the determination which exists in that far distant land to be left behind in the promotion of the arts and sciences, and it appears to me to be an example which our own countrymen well take to heart.

One cannot help hoping that in the extraordinary success which the Japanese Government and people evince to-day in late all that is good in nations foreign to them they will lose sight of the delightful arts which are traditional with us, but that these may be fostered and promoted rather than superseded by the importation of extraneous methods.

The Association numbers nearly fifteen hundred members, and one might reasonably expect that each one of them should contribute to an object which is so much in their interest to the present time, however (although we have to thank the generous donors), less than one-quarter of our members responded to the appeal. I feel that some great effort must be made to bring the general body into line, and I hope every member to follow the example already set by your committee, by doubling the amount of his yearly subscription for this session only. This should be within the means of all, and produce a community of interest which would be for the benefit of all.

The provincial societies have also an interest in this, and very welcome have been the contributions sent to us. I commend the good work heartily to the others, and I hope all persons interested in the progress and advancement of architecture (and who should not be?) as a national art, and ask them to show their practical sympathy by forwarding to assist us to complete the provision of the facilities necessary for the adaptation and enlargement of the Architectural Museum to the purposes of the Association.

We have had to undertake certain financial responsibilities relative to and contingent on the acquisition of the new building and its extension, while in addition to this there will be a considerable outlay in the rearrangement and exhibiting of the valuable collection of casts, which will be open free to the public as heretofore. In regard to the latter we hope to make the collection as far as possible representative, chronological, and useful in every way to students at large.

Many have laboured for the Association in the past, and given ungrudgingly of their time and means. We to-day rely on their labours and continue them. I feel sure I am not appealing in vain, and that the provision of these highly indispensable facilities will not be left to become a burden on the Association and a drag upon its work and progress.

I may perhaps be pardoned for making a very brief financial statement in respect of our new premises. The contract which we have entered into for the remodelling of the Architectural Museum amounts to 8,400*l.*, and it is expected that a further sum of perhaps 1,500*l.* will be required for equipment and furnishing, making a total of about 10,000*l.* Towards this we have donations and promises amounting to about 3,700*l.*, and it is proposed to transfer 1,000*l.* from the capital account of the Architectural Association, making a total of 4,700*l.* We have therefore still to collect more than 5,300*l.* before we can hope to be free from debt.

Death is ever too busy about us, and to-day we lament the loss of some valued colleagues whose suggestions and counsel have helped us in the past. The late Mr. Penrose was associated with the early days of the Association under Edmund Sharpe. We also deplore the loss of Mr. Roger Smith, twice president of this Association, ever

and the friend and learned instructor of all young men under his helpful influence.

Coming to a conclusion, I have a few reflections which I offer to our student members. I might again advise the enthusiastic pursuit of the study and delineation of ancient architecture, or the fruitful results that await the diligent student of architectural literature, without enlarging on either, which I leave before. I would again heartily commend both to you, that I want to do is to venture to suggest the deliberate adoption of such studies as are the outcome of demonstration, experience, observation and research, rather than the study of books and the abstract theories of mankind. Sir John Lubbock, in his illuminating address before the British Association, made this pregnant statement, "From neglect of the study of architecture, and a small output of new inventions and new knowledge to reinvigorate our industries." There is some danger that in the prominence which is being given at the present time to the establishment of the day school and to our new premises, the valuable work which is being done in our studio and other evening schools may be lost sight of. I would wish to urge the study of young architects continuing their studies in their own homes, and to point out that there is no better means of learning and directing those studies than joining the various schools, which we open to them, and which have worked so well in the past.

This year I made more than a passing reference to the study of brains in the active evolution of architecture, and the younger members will pardon me if I beg them to do what I then said in connection with what I have to say now. Now it seems to me that much of the deplorable process which we unfortunately see abounding in the affairs of our cities and towns is the result of (to put it in words than mine) "old rule-of-thumb processes, which are opposed to new developments"—a conservatism too often arising from the master's own lack of knowledge. This may be hard saying, but it should be our object as much as lies in our circumscribed and limited powers to develop and to use the abilities with which we are all more or less endowed. We are to be young, and all possibilities lie with youth, in a way it may be said that to be young is to be successful.

To secure our well-being as a profession it is highly important that we see to our organisation and equipment, the conduct of which is to us personally as important as the conduct of "battleships and big battalions." It is brains that we want, fortified by the experience and research of the past, and it is the practical personal study of the design and execution of modern work by modern masters, reinforced by the rich heritage of art which has come down to us.

As has been recently said, "It is a great thing to learn to know from people's experience, and to get it first hand, not entirely to books. Knowledge obtained from men is mentally nourishing and the most easily assimilated." What I would leave with you is the picture sketched by Browning:—

Here, work enough to watch
The master's work, and catch
Hints of the proper craft, tricks of the tool's true play.

G. H. FELLOWES PRYNNE proposed a vote of thanks to the President for his address, which, he said, was characterised by the definite announcement of new premises for the Association. Every member would welcome the time which he brought them to the move, knowing the immense value of the new premises to their work. The announcement was one of the most important made in the history of the Association, and with the knowledge of the past and aware of the success gained in the present, they could go forward with hearts in the belief that the change of the museum in the Strand would not be lost either to the nation or the Association. The change meant that the work of the Association was progressing with true life and energy. The work, the staff and their excellent lecturers had inspired many of them, and they owed a great debt of gratitude to them. It was arranged that the number of subscriptions to the new premises fund was comparatively small, and members should be heartened by the fact that only one-fourth of their number had contributed to the appeal for funds.

J. S. GIBSON, who seconded the motion, said the work of the Association was of such importance that it might be said that it was the nation, and therefore members should do all they could to influence the Government to help them in their need.

His Excellency Viscount HAYASHI thanked the meeting for the reception given to him and his countryman. He referred to the erroneous statements made by tourists who had said that Japan as to the construction of Japanese dwellings. The active architect had great difficulties to encounter, as earthquakes were of frequent occurrence. There was, however, a desire to make their dwellings more stable, and Mr. Sudsuki was the pioneer of a movement which might establish an im-

provement in the native art of construction. The impression of travellers was wrong when they described Japanese houses as tent-like structures supported by poles and posts pasted over with paper to serve as walls. He had been asked if a Japanese house could stand a heavy shower of rain in summer or a snow storm in winter, and it was natural for such questions to be asked after the descriptions of their dwellings by tourists. Japanese houses were strongly built and statements of instability were not exactly true, and this was proved by the fact that there were many old buildings existing several storeys high. Many pagodas had lasted, in spite of earthquakes, 200 or 300 years, and the older capitals possessed buildings of such sound construction that they had stood their ground for 1,200 years.

Mr. ARNOLD MITCHELL, Mr. H. LOVEGROVE and Professor BERESFORD PITE supported the vote of thanks to the President, which was passed with acclamation.

PARIS HOUSES.

THE last number of the *Architectural Review* (Bates & Gould Company, Boston) is devoted to the subject of apartment houses in America and Paris. A large number of plans and illustrations are given. The article on "City Apartments in Paris" is by M. Jean Schopfer, from which we take the following extract:—

During the last decade, very great advances have been made in the city of Paris in the construction of apartment houses.

In the first place, the municipal regulations put a limit upon the height to which houses can be carried in Paris. Several important consequences result from this. One of them is that there is a certain outward uniformity about the houses, according to the wealthiness of the district in which they stand. The maximum height of the fronts on the widest thoroughfares is 20 metres, and the part of the roof above being set back according to a given formula, architects manage to quarter five average storeys, plus the ground floor, and sometimes a sixth storey, set back under the roof. In short, they can give their storeys a height varying, as regards the first storey, from 3m. to 3m. 80, and from 2m. 80 to 3m. 20 as regards the other storeys. In very luxurious buildings the architect only puts four storeys in the 20 metres allowed him. Thus French architects are confined to extremely close limits—even more so than their American brethren—and are prevented from indulging in any fanciful flights.

The same regulations fix a limit to projections on the public ways, and hence another difficulty. They also lay down rules as to the dimensions of the large and small courtyards and the prospect of the windows giving thereon, which varies from 4m. to 6m. 66 minimum. These regulations have been made in the interest of public health, and I, for my part, find them excellent, but they certainly limit the landlord's rights and hamper the architect—all, it is true, to the great advantage of the tenant.

The new regulations in regard to public health are still stricter than the old ones. They insist upon more air and light for both street and courtyard windows. These regulations only came into effect on January 1 last, so that the houses we are about to deal with were erected under the old ones.

In the matter of construction and of materials the progress made is substantial. In Paris houses have always been built of stone, and they have been built well. This is a matter of ancient tradition and trade practices which, thank goodness, are long-lived. In the case of houses constructed twenty years ago, only the luxurious ones were built with iron joists; the rest had all their joistwork in wood.

Wooden joists are, as I have myself observed, still held in favour in America. I have seen private houses in New York, on Riverside Drive and in the districts inhabited by the wealthy, which cost from 60,000 to 80,000 dollars, and the whole joistwork of which was in wood. The great danger involved in this system in case of fire has been sufficiently proved by innumerable examples. In Paris, on the other hand, apartment houses, even those of the most modest type, with rentals not exceeding 1,500 francs a year, have all their summers in iron. From top to bottom there is no wood in the house as far as the building itself is concerned. This is a considerable step in advance. Thanks to this system Paris is spared such terrible fires as those that take place in America, where houses are entirely consumed. In Paris one room in a flat is burned out, or at worst all the rooms of the flat where the fire occurs, but it is exceedingly rare for a whole house to become a prey to the flames.

As is well known, steel beams have the drawback of allowing sounds to be heard from one storey to another. Architects have tried different methods of remedying this trouble, such as spreading thick layers of tan between the ceiling and the flooring, or a bed of cork or mineral wool or some other bad

conductor of sound, but as a matter of fact the problem has not yet been solved. The noise has been lessened, but its transmission has not been altogether prevented. Moreover, there are serious objections to leaving vegetable substances in places where no air circulates, owing to the fact that they are liable to decay.

In a few modern houses the floors are separated by means of ciment armé (cement with bundles of iron wires embedded therein), which has come into current use in building. These experiments have been very satisfactory. The new material is strong enough to withstand the heaviest strain, and it is absolutely fireproof. Some apartment houses have even been built entirely of ciment armé.

Everybody is aware that all apartment houses in Paris have a janitor. In the evening the street door is shut, and it can only be opened by the janitor, who pulls a wire leading from his room to the latch. It is an excellent way of guarding the house.

In the case of most large houses the entrance is made wide enough for vehicles to pass, which enables the tenants to get in and out of their carriages under the archway and at the very foot of the stairs. This is a convenience with which few American houses, even amongst the most luxurious, are provided. The stables are generally situated in the courtyard, but not so in most of the newest houses. At present it is the custom, when space allows, to have two courtyards. One of them, with the windows of the dining-room, inner corridor and bedrooms looking thereon, is called the courtyard *de luxe*. It has a small lawn, a fountain, and, if possible, a few trees in it. No kitchen window is made to open upon this courtyard. In the second one there are the stables, and it is from this yard that the kitchens, servants' rooms, water-closets, &c., get their light. There is room for great improvement in this direction in the United States, where nothing could be uglier than the yards inside the blocks. There are houses which cost 100,000 francs, with a handsome front on a wide street, but whose courtyard front is dreadful to behold. Landlords ought to agree amongst themselves for the proper laying-out, at their joint expense, of the space left empty behind the houses.

As regards the interior, all new houses, even the most modest—I mean those with rentals not exceeding ten or twelve hundred francs—are provided with two staircases: one for the masters and the other for the servants. In high-class houses the principal staircase is very luxurious. It is built either in marble, stone or wood, and is provided with an abundance of light and air.

The elevators are of various systems as regards their motive power—water, water and electricity, or, in the most up-to-date houses, electricity and compressed air; but all of them are planned in a very practical manner, which is only just beginning to be known in America. I mean by this that the tenants themselves work them, and without any danger. Inside the elevator there are five or six buttons, each one bearing the number of a storey. One pushes the button corresponding to the floor one is going to, and another button to start the lift. On no floor can the elevator door be opened while the elevator is in motion, nor can any door be opened unless the elevator is at a standstill in front of it. Another button rings a bell in the janitor's lodge, to call him when the lift gets out of order. It is a good and safe system; in fact, there are never any accidents, and it abolishes the lift-boy, who, so far, is a necessity in American houses.

As regards the distribution of the rooms, the point aimed at is to separate the servants' part of the flat from the reception-rooms. Adjoining the kitchen there is now always a scullery, which was not the case formerly. Formerly also—I refer to houses erected twenty years ago—the bath-room was usually located near the kitchen, whereas nowadays it is always placed close to the principal bedroom. In many instances there are two water-closets for the use of the family, and always one for the servants.

Great progress has been achieved in Paris with regard to dressing-rooms. Almost every bedroom has a separate dressing-room provided with hot and cold water taps and a waste-pipe. The hot water is supplied from a small boiler placed in the cellar. In houses where the flats are rented at 4,000 or 5,000 francs and have four bedrooms, the hot-water costs the landlord 100 francs per flat per annum. In many cases the dressing-rooms contain cupboards for hanging up garments.

Modern apartment houses have a telephone. The wire is led into the janitor's room, whence connections lead to instruments placed on each storey. The janitor receives the calls and switches the line on to the proper apparatus. Each tenant pays 50 francs a year for this joint service. The reception-rooms consist as a rule of a spacious corridor, on which give two or three drawing-rooms and the dining-room, all having

wide four-leaved doors, which are often glazed with panes. On reception days these doors can be thrown open and in this manner the occupants have a fine set of rooms.

The internal decoration is now quieter and in better taste than it was a few years back. It is still done in some of the old style—Louis XIV., XV. or XVI.—but more discreetly and more gracefully. The ceilings are no longer invaded by elaborate mouldings.

In new houses the incoming tenant is allowed to choose the manner of decoration in which the flat shall be finished. A refinement in taste has come about, and this is shown by the abandonment of overloading. I am glad to say that the habit of painting and decorating ceilings after the Italian fashion has been abandoned.

Outwardly, the latter-day Parisian apartment house differs from that of twenty or even ten years ago by the large windows and the bays. This feature alone would suffice to characterize a modern house. The liberal dimensions of the windows in Paris are only rendered possible by the temperate climate, which enables one to enjoy, without extremes of either cold or heat. The large size of the windows allows light and air to reach every corner of the apartment.

WALKER ART GALLERY.

ARTISTS who have exhibited in Liverpool have been much struck by the remembrances of Mr. Dyall, the curator of the Walker Art Gallery. Owing to the belief that his strength was failing, to the duties, he has resigned. The announcement of Charles Dyall's resignation and approaching retirement from the curatorship of the Walker Art Gallery, says the *Chronicle*, will be sincerely regretted by the public. He has been intimately connected since its commencement with one of the most popular institutions of the city, and under his care it has grown from comparative beginnings into a position of unequalled importance in the provincial art world. His disappearance from his position (in which he has become one of the best-known and best-liked men in Liverpool) will be felt with a personal loss by very many.

Mr. Dyall entered the service of the Corporation in 1877, on the opening of the Walker Art Gallery. His record since that date has been one of continuing success and progress in the work which he had at heart. Twenty-two autumn exhibitions have been held, and to each of these a veteran curator can look back with satisfaction as a personal success. He has been fortunate in the several chairmanships of the gallery, and among those whom he has worked, and whose confidence he has won, are Mr. First, Alderman Edward Samuelson, the unflinching champion of the orthodox in art; then Alderman Philip H. R. First, the brilliant eclectic; and now Councillor John L. First, who worthily wears the mantle of his distinguished predecessor. Mr. Dyall is growing yearly in love and enthusiasm for his chosen work, and his civic work as well as in experience and expertism. It is not to be forgotten that to Mr. Dyall is due the admirable original system under which the complicated business of the autumn exhibitions is managed—a system that has since been widely copied.

In addition to the autumn exhibitions, there have been many others held in the Gallery—notably the Naval Exhibition of 1892, which was greatly successful. Memory records a splendid exhibition of old and recent masters, gathered together from local collections, and other pleasant spring exhibitions of which applied art, photography and the like had produced. Mr. Dyall is zealous in his work for all these transient events, and has been no less earnest in his care of the permanent collection, which during his tenure of office has produced a new collection into existence. Only those who know the Art Gallery can best have any idea how much loving thought its management has expended on the care and display of its treasures.

Although for the most part bound up in his official duties, Mr. Dyall has occasionally given evidence of possessing a versatility of talent which peculiarly fitted him for his responsible post. As a lecturer, chiefly on art topics, he is well known at the Picton Hall and elsewhere; his friends have seen some excellent landscape-paintings from his easel, and he has made occasional literary efforts in prose and verse bearing witness to his possession of a ready pen and a graceful, humorous fancy. A volume of poems published in 1877 had an excellent place in many Liverpool private libraries.

The feeling of regret at a severance of old ties is mitigated by the fact that although entitled by his years and long service to step aside from a life of full activity, Mr. Dyall enjoys that health of body and mind which will enable him to find much happiness in the evening of life—a happiness which is insured not only by the consciousness of a life well done, but by the possession of a life companion with whom a full share of the general esteem and affection in which his husband is held.

NOTE.—The author apparently is not fully informed as to the development by the Otis Elevator Co. of automatic elevator service in the United States.—[E.D.]

BUILDING LINES ON ROADS.

the subjects inquired into by the Departmental Committee on Highways was the line of frontage. Several of the witnesses gave evidence, the most answers were those of Mr. E. T. Gardom, clerk to the Devonshire County Council, who aided in drafting the Bill to Amend the Law for the Administration of Highways, and by Mr. Henry Hobhouse, M.P. The following is

now come to Clause 7—power for county councils to make improvements of main roads to be executed in certain cases that propose to give the county council power to urban district council, "You must widen the street through your town?"—No; it is to provide that, and fronting, adjoining or abutting on any main road any main road repairable by the county council is in being or is about to be developed for building purposes, application to such roads is required in order to make it or the probable increase of traffic, the county council is to level, pave, or metal, channel and make good it, and may apportion the expenses incurred by doing on the owners of the land fronting, adjoining or abutting on such addition or part thereof, according to the respective frontages, with power to recover expenses, primarily or by action in any court of competent jurisdiction."

At present the county council have no such power. It is considered that, as they are the road authority, they should have such a power in case of the desirability of widening the main road in consequence of building, and adjoining owners should be compelled to give up the land and for the purpose, and should pay the cost of the frontage in the same way as frontagers can be compelled to pay by an urban district council under Section 6 of the Public Health Act or Section 6 of the Streets Works Act, 1892, with regard to strips given in main roads in urban districts which become new streets in consequence of building. This is in accordance with the law in the case of the Property Exchange Company v. The North District Board of Works, 1901 (65 J.P. 407), upheld on appeal March 29, 1902 (L.J. 176). In the highway repairable by the inhabitants at large was the adjoining owner adding a strip of land to it on which houses were built on land abutting thereon. It was held that the strip of land so added, together with the land abutting on it, formed a new street, and the expenses of the new street were rightly apportioned by the local authority on the owners on that side of the road. This case approved the decision in *Richards v. Kessick* (57 L.J.M.C. 48), in which the owners of a field adjoining a highway repairable by the inhabitants at large used it for building land, and threw a strip of highway a strip of land in front of the houses, and so that the houses with the strip of land in front of them formed a "street" within the meaning of Section 150 of the Public Health Act, 1875, which the urban sanitary authority of the district it was situated could compel the frontagers to level, pave, channel and kerb to their satisfaction. Rural district councils which have obtained urban powers have also the right, but county councils have not, so that county councils have to rely on the action of district councils, and have to compel the latter to exercise the right. This is not so.

In other words, you propose to take certain powers out of the hands of the district councils and give them to the county council. As regards land abutting on the main roads.

It is not the person who has a frontage on the road who is developing the property for building purposes, and yet he is to make him pay towards the cost of a widening of the road which is of no benefit to him?—It is the same in laying out a new street. This Bill proposes to give the county council the same power as urban district councils now have in urban districts, and can exercise upon owners of buildings abutting on the main road. We want the same powers for the county council outside the urban districts. There are certain powers in the neighbourhood of towns, but in rural districts the main roads repairable by the county council, where the county council has no power to make by-laws, and in the rural district council has no such power.

There is already a main road repairable by the county council, and this is apparently a proposal to throw the repair of the road in respect of through traffic upon the person who is adjoining it?—Not the repair of the road, but the

of it. A man build up to the side of a road, you could not repair it, but if he sets back a bit you could make the front portion into the road at his own expense?—The county council should make by-laws defining the width of the street, and a man who is building should be compelled to set back in order to extend the road to the width defined by the by-law.

It would make him give up some of his land to the public,

and by another clause you would make him put it into the road?—Yes.

He gets an improved frontage to a better road.

Many authorities now define the width of a street before there are any buildings upon it.

But I can conceive the case of a frontager, if he is a private resident, not wanting a wider road or more traffic brought past his house?—It is only when the road becomes a street that this would apply. I do not think that Clauses 7 to 10 of the Bill go quite far enough, as since the decision in the case of the Devonport Corporation v. Tozer (1902), approved on appeal (1903), it appears to be necessary to compel an owner who is developing a building estate abutting on a main road to give up such land as is required to make the road adequate for the consequent probable increase of traffic. In the Devonport case an owner of a piece of land abutting upon a main road erected several houses upon the land without altering or interfering with the roadway or removing the fences, but making necessary openings for entrance and exit. Under the by-laws of the Corporation, any person laying out a new street was required to make it of a specified width of 36 feet. The highway in question was less than this width—24 feet, and in one case less. It was held, however, that the defendants were not, in fact, in what they were doing, laying out the highway as a new street. In all these cases it is a question of degree as to how far an adjoining owner is in what he is doing by building or otherwise laying out or intending to lay out a new street, and what appears to have weighed with the Court of Appeal was that in the Devonport case the owner had not removed the fence, but only made openings through for access to the houses, and had not attempted to alter or interfere with the roadway. The decision seems to lead to a remarkable result that the owner may build a row of houses behind a hedge, and if he does not pull it down he has not infringed the by-laws, whereas if he does pull down the hedge and erect a row of houses he is so infringing. The question in this case appears to be whether the owner of the land shall give up the necessary land for the widening of the street without payment, or whether the road authority shall pay for it either by agreement or after compulsory purchase. To quote Mr. Macmorran's words in his argument in the Devonport appeal:—"The question in all these cases is whether a corporation cannot compel persons to make the road of a necessary width. If they cannot do that then there is no doubt that the builder is entitled to build to the very edge of the road, and then if it is ever necessary to widen the road for a necessary purpose you have the fact that you have buildings to deal with, and what is an enormous and costly thing is thrown upon local authorities without any necessity at all. Why should they be called upon to widen a road like this? It is quite sufficient as it is now for all purposes of traffic, and when it comes to be converted into a new street the traffic is altered. You have not only the traffic, but all the services to the houses, bringing up the pipes and everything else. All these things have to be considered, and the local authority have a duty to perform towards the public. If a man is doing for his own purposes something which amounts to the laying out of a street for his own purposes, and the public do not want it, why should they have to pay if there is an obligation upon him, as we contend there is, to do it?" And again, Mr. Macmorran says:—"Take the case of a man having an estate; he cannot make a new road there without conforming to the by-laws, and in that case he is bound to make it 36 feet wide, or whatever the prescribed width may be. There is no hardship there really. He has to set back his building there, just as if he is using the old highway as part of the new street which has to be formed. There is no hardship in that at all. Just as in the one case he has to find the whole of the width out of his own land, so if he finds an old way which he can utilise he has to find the difference sufficient to make it the necessary width. It is true that the rateable value of the district is enhanced by the building; on the other hand, the road was of sufficient width for the traffic before the erection of the houses, and the obligation to increase the width should be borne by the owner. Of course, the road authority would take over the road and its future maintenance." Referring to the Devonport case, I may say that I have ascertained that the town clerk considers it a most detrimental decision for local authorities, and as an illustration of the inconvenience and even possible danger to the public resulting from the decision, he mentions that poles for an overhead equipment of electric tramways are being constructed along the road in question. The footpath in front of the houses, which was the subject of the action, is so narrow that when the space taken by the base of the electric poles is deducted there will only be a width of 2½ feet for pedestrians.

This clause would not cure the difficulty under the Public Health Act or the Private Streets Works Act, but would only cover the case of main roads not in urban districts?—Quite so.

It seems to me that Mr. Gardom has in his mind the case of a man turning what was a country road into a street by

building houses up to the edge of the road. If you have a by-law you can make him set back a certain distance from the centre, so that when it becomes a street there is sufficient for a footpath.

Everything would turn on what the man built. Suppose he built a lodge at his park gates?—That would not be a street.

It would be laying out the site for building?—Where a man proposes to build a street, and so develop his land for building purposes, we think he ought to pay for widening the road for that purpose.

I think the committee understand. We may now go on to the next clause, namely, the power of county councils to make by-laws as to new buildings on and width of main roads. That only refers, I suppose, to roads outside urban districts, or do you propose that the county council should make by-laws as to the width of road in urban districts as well as those outside?—Only with reference to roads repairable by the county council.

Section B seems to provide what I think a good power, namely, that the county council may make by-laws with respect to the level and width of any such main roads wherever land fronting, adjoining or abutting thereon is in process of being or is about to be developed for building purposes.

I was afraid that there was a suggestion of a dual authority inside the urban districts. I do not propose that here. If we did take over the main road in any urban district the by-laws would have to be approved by both parties, and they would have to be subject to the approval of the Local Government Board.

I am satisfied so long as it is perfectly understood that this does not affect urban district authorities exercising their own powers in their own districts?—All we ask for is a power to make by-laws relating to roads. We do not want to interfere with sanitary or public health matters.

Do you want to have power to compel the district councils to widen their own roads?—No, I am referring to main roads.

You know the word "building" is a highly technical one, and in some cases has been held to include the throwing down of a division between two cottages—the lateral division—or putting a storey upon one of them?—I think it would not matter much what the building was if it encroached upon the fixed building line.

Would it not be undesirable in a Bill of this kind to alter definitions already existing?—Quite so.

You surely would not propose that a house standing, say, 30 feet—or whatever the prescribed distance may be—from the centre of the road, should have to be pulled down and set back if it required to have a new storey put upon it, although it might then be a "new building" in a technical sense; or take the case of two cottages thrown into one. The throwing them into one is considered as technically the erection of a new building; would the proprietor in such a case have to set back?—All I want is that we should have the same powers in this matter as urban district councils now have. If they have not the power that you describe, I do not ask for it. I think this clause follows the wording of the Public Health Act.

The Public Health Act has caused much trouble with regard to what is a new building?—Our idea was not to interfere more than possible with the language previously used.

I think that phrase has been almost a more fruitful source of legislation than any other expression.

You propose to compensate any person who is damaged?—That is not in accordance with my own individual view, but it was put in at the suggestion of some of the members of the county council. I do not see why a person should be compensated outside the urban districts who would not be compensated inside such districts. I understand that in Liverpool compensation is paid.

So it is everywhere.

Where you pull down houses for the purpose of widening you pay compensation; but if a new street is being laid out under these by-laws the owner would have to give the land himself.

It is only in cases where the street is being laid out at a greater width than is required under the by-laws that compensation is paid.

I think the Public Health Act contemplated the payment of compensation for all land taken away from anybody.

I see that Clause 9 proposes to give further power to the county council to regulate the line of buildings in main roads. What further power besides the by-laws would you suggest?—The powers under the Public Health Act are insufficient, as they are limited to the line fixed by the front main wall of the building on either side of the proposed building in the same street, and it is essential that in some parts of the county the line should be fixed of the first house erected which abuts on the main road; the clause should be extended to cover this. This is an omission in the Public Health Act.

It does not cover such a case at present?—No, I think not. The clause is supposed to give us the same powers outside the urban districts as the urban district authorities now have

within those districts as regards regulating building.

The proviso certainly seems to contemplate a district council, viz. provided that the county council shall not exercise power hereby conferred in any case where the district council have already put in force their power under the mentioned section in respect of such houses and land. Does not that proviso contemplate the power being exercised in the district of any urban district council?—The proviso refers to roads in rural districts where the council have obtained urban powers. Rural district councils in urban districts have no bye-laws, or, at any rate, have not exercised them. There are in many instances buildings placed near to the frontage and at awkward corners to the street which ought not to have been allowed, and would not have been allowed by the county council if that proviso had been the necessary power.

In my opinion the proviso restricting the powers of the county council to cases where the district council have powers in force should be omitted, first, because the county council as a road authority is the proper authority to fix the line of building, and the district council should not do so; and, secondly, because, as before pointed out, the powers of the district council do not extend to the line of the first house built. I consider that the county council, as a road authority, should deal with all these matters—road, line of building, &c., which affect the highway. The district councils, where not the road authority, should be restricted to matters which affect sanitation and public health.

As you have just pointed out, under the extension of the powers which you propose a house may not be brought forward to the front of the line of the house on each side of it. In a country road—a main road—there may not be a distance of a mile or a mile and a half. Do you think no man may build a new house or put forward his house throwing out a bow window in front of the line of a farmhouse two miles off on the same road?—No, so far as that.

Yet you would have that power under that clause?—I do not think the section goes so far as that.

I think the witness wants to enable the county council to prescribe a line of frontage for new houses where there is development on each side of the proposed house.

I think this committee well might recommend that the county council should be some power to fix a line of frontage, together with a statutory provision that a new house should vary from the line of a house which may be two miles off on a country road.

It would seem unreasonable if one man built a house more back from the roadway, and that was made everybody else doing the same.

But probably you do not wish to urge anything more than that the highway authorities in a main road should have some power to fix a building line?—I think that is the point.

Does not the witness advocate the granting of powers to county councils in respect to their roads to be enjoyed by urban authorities with regard to urban districts?—I should like to go a step further than this clause in the Bill and to propose that we should be able to fix the line of the first house.

What is the first house in a road 20 miles long?—I do not have to say what section of the road you refer to. I should leave that to the county council, so that if they thought there was a chance of a road having to be closed they could fix a line to enable that widening to be carried out.

There are considerable lengths of road—of miles—where there is not a house within a distance of a mile, but what you call the first house is already there.

Probably the witness means the first house built under the passing of the Act.

The first house in the development of the building estate.

Where there is a definite scheme of building more than one house.

Possibly a rigid regulation would be impossible, and the deal might have to be left to the discretion of the county council.

To whose discretion would you leave it?—To the county council.

You would not recommend the rigid provision in the Public Health Act?—I would so far as existing buildings are concerned, but in the development of a new building I should like the county council to be able to fix the frontage of the first house.

Do not the by-laws of local authorities provide that a road must be so many yards wide; would not such a provision point as to the frontage line of the first house?—Not.

On a subsequent day Mr. Gardom again appeared.

hing further on the subject of the roadway, making
ing to the width of the road and relating to build-
Yes, there has been some question as to there not
ontrol. I do not intend to say that there should
ontrol, but what I would suggest is that the road
ould have the power to make the by-laws with
ghway matters, and that the district council should
-laws as regards sanitary matters.
ou would have a dual control to some extent. Do
ish to press upon this committee that inside an
t which has claimed to maintain its main roads
ouncil shall have a right to make by-laws?—No,
ng to roads as under the clauses of Mr. Hobhouse's
which are repairable by the county council. I
de urban main roads repairable by an urban

ould leave the width of the road and the line of
outing thereon to the county council as the road
Yes.

o sanitary matters, you think the district council
e authority?—Yes.

gest that a building line is a matter of highway and
n?—That is my point.

as it does not come within the minimum width,
not allow them to overstep that minimum width.
—There is no statutory minimum width, and I
the width should be in the discretion of the road
I do not believe that a statutory minimum width
tisfactory.

l be a widening and not a narrowing?—I do not
ow the width, but there is an erroneous impression
a statutory minimum width, and I contend that
such thing. All that there is in the Highway Acts
y remedy in the case of encroachments within a
ance of the centre of the road. But that must be
way itself or on the sides of the highway, and not
land. It is only a summary remedy, and that
ly useless, because it is only available for six

upport the contention that the local authority should
power to go within any minimum width fixed by the
ity?—Certainly not. My argument is in favour of
ot minimising.

ou wish to add something to clause 9 of Mr.
Bill, which is now before us?—That is the same
by-laws being made by the road authority. I do
at the proviso to that clause ought to apply to a
t.

ther have you to say as to the width of roads?—It
regard to what the last witness stated. I want to
point that there is no minimum width. There is a
s to the planting of trees within a certain distance,
s Section 64 of the Highway Act of 1835, and there
on in the Turnpike Act of 1824, to which reference
y the last witness, and I do not know that I need go
t. There again no minimum width is fixed, but simply
hall be no encroachment on lands which form part
way except as to common waste land. It includes
waste land which is not included in the Act of
there is really no minimum width.

wish to add anything on the subject of compensa-
lening roads?—I want to make that quite clear. I
ree with compensation being paid except where
s required beyond the limit fixed by the by-laws. If
ouse to be pulled down for the purpose of widening
compensation should be given, but if land is re-
the making of a new street then there should be no
on paid. There is no compensation paid now in the
urban district, and I suggest that outside the urban
e same principle should apply.

ave you any further reference to make to the Devon-
oration *v.* Tozer case?—In that case I said the
ight possibly be overcome by a new by-law, and
ated by counsel during the argument; but since then
orran's opinion has been taken, and he considers
law that could be devised would apply to the road in
eeling that it is held that it has not become, and is
ing, a new street; and also that the only alternative
isolation, and unless this is done it will be impossible
o interfere with any building in any road, however
t may be—except at a very heavy cost to the muni-
hat is to say that they must pay compensation; and
e main objects of the Public Health Act will be

ou give us any practical suggestion as to how a case
rt is to be met?—It ought to be considered that if a
s within a certain distance of the centre of the street,
ad has become a new street, he ought to give up the
e made to make the road up as in the ordinary way
iger.

is to say it ought to be laid down by law that an old

road may become a new street by the fact of building, and
that if any building is put up, whether within or without the
fence, within the limits of a by-law, it should be an illegal
building?—I would not say an illegal building.

Your proposition is that it may be a street, which is very
obscure, but an old road may become a street, and then if
buildings are put up within a less distance of the centre of the
road than is permitted by the by-law, whether on private ground
or behind a fence or not, would you say they are being put up
illegally?—Yes, contrary to the by-laws.

HOUSING REFORM IN GERMANY.

A CORRESPONDENT of the *Times* writes:—The pressure
of the housing difficulty has been felt and the necessity
of dealing with it widely realised for a good many years. The
problem has been attacked in many ways and by various
agencies—by the State and the local community, by building
societies, building companies, philanthropists and manu-
facturers—and in the aggregate much has been done. The
Germans are not the people to sit down before a difficulty and
wring their hands or call for help; they tackle it individually
and collectively. The subject is very large, and I must confine
myself to Prussia, and particularly to the Rhineland and West-
phalia, where the need and the activity have both been
greatest.

1. The State has provided housing for its own servants, and
principally for the subordinate classes of railway men. In
October 1901 there were built or building in the two provinces
473 houses, containing 2,231 dwellings and 7,009 rooms, at a
cost of 451,160*l.*, including sites. The interest on the total
outlay comes out at 3.65 per cent. These houses are prin-
cipally situated in the railway districts of Essen and Elberfeld,
where the need is greatest. Further, in the Saarbrück coal
mines, which belong to the Prussian Government, a system of
helping the men employed, who numbered over 40,000 in 1900,
to build their own houses by means of gifts and loans has been
developed on a large scale. The gifts are to the value of from
37*l.* to 45*l.*; the loans are free of interest up to 75*l.*, and at
3½ and 4 per cent. beyond that. The conditions are that the
recipient shall be married and the owner of a building plot free
of debt. The houses so built are, as a rule, single cottages for
one family. The loans are repayable in ten years. Down to
1901 the amount provided in gifts and loans amounted to
767,725*l.* In addition the administration itself erected houses
for 441 families.

2. Local Communities.—Some municipalities provide houses
for their own servants and for needy families; but a number of
local authorities have gone beyond this and have built houses
for the lower classes at large. This has been done in fifteen
Rhine districts and five Westphalian. The earliest was the
Merzig district, which was stimulated to the step by a housing
investigation in 1894. Among the most active is Düsseldorf,
which had in 1901 built dwellings for 141 families; eighty of
the tenants were in the service of the municipality. The 141
dwellings were thus classified—43 of two rooms, 85 of three
rooms, 13 of four rooms. Local authorities have further pro-
moted building by lending money from the public savings
banks at low interest, and by co-operating with building
societies in various ways. They provide cheap building sites,
take over shares, guarantee interest on loans, facilitate the
laying-out of streets, and reduce the ground and building
rates.

3. Charitable Endowments.—These are rather scanty. The
most considerable is the Aders fund at Düsseldorf. The
testator, a judge, left about 100,000*l.*, of which half was to be
applied to educational purposes and half to the provision of
dwellings at moderate rentals for factory workers, or others of
the same class who were not in receipt of Poor Law relief. The
town took over the fund in 1890, and in 1902 had provided out
of it dwellings for 257 families, while the fund itself had risen
to the value of 82,100*l.* As it increases, in the course of time
it will play a correspondingly important part in the matter of
housing. Other endowments in the district are the Krupp
fund of 25,000*l.* at Essen, the Guillaume fund at Cologne, the
Hösch fund at Düren, and the Simonson fund at Godesberg.
The aggregate number of dwellings provided from these endow-
ments in 1902 was 364 at a cost of 107,300*l.* They are only
for rent, not for sale.

4. Building Societies.—These are numerous and active.
They claim the character of public utility and the merit of
providing unexceptionable housing at the lowest cost for
persons of small means, and thereby raising the standard of
life. Details from 109 societies in the Rhine province were
furnished to the Düsseldorf Exhibition in 1902. The 109 con-
sisted of 20 share companies, four limited liability companies,
83 registered societies and two others. To these may be added

37 unions in Westphalia, which also furnished details. Putting them together we get the following:—

Houses.	Dwellings.	Rooms.	One-family houses.	Two-family houses.	Three-family houses.	Four or more family houses.
3,877	9,714	32,467	748	2,155	377	567

Three-fourths of the houses, therefore, only contain one or two families. They are, in point of fact, semi-detached, and with gardens in the majority of cases, and are obviously a great improvement on the tenements of the speculative builder. The total expenditure on sites and building was 1,657,602*l.* Of the houses 2,631 were sold and 1,216 were let; the amount paid off on those sold was 231,863*l.*

5. Employers.—I have referred in several previous articles to houses built by manufacturers. Employers have indeed done more for housing than all the other agencies put together. In 1902 the two provinces could show the following remarkable record pretty evenly divided between them:—

Houses.	Dwellings.	Total Expenditure.	Loans and Gifts for Building.
22,269	62,539	10,466,960	268,896

Of the total number of families so housed more than half belonged to the mining industry. Their distribution, according to the census classification, was as follows:—

Mining, 32,396; iron, 16,471; textiles, 6,659; quarrying, 3,987; various, 3,026. Naturally the housing provided for the mining population is chiefly situated in Westphalia, where about 19,000 dwellings have been built; and the same industry accounts for 110,000*l.* of the loans granted for building. The other industries preponderate in the Rhine province.

It is hardly necessary to add that savings banks, whether public or private, play an all-important part in the building and acquisition of workmen's dwellings.

GENERAL.

Dr. Friedrich Lippmann, the director of the section of engraving in the Berlin Museum for twenty-seven years, died in that city on Friday last in his sixty-third year. He was a native of Prague and always retained the Bohemian dialect in conversation. He was recognised as the principal authority on the work of Albert Dürer.

The Faviours' Company have made awards in their recent competition by essays, drawings and models on "Subways or other means of placing and maintaining without interference with the surface the main pipes and services of gas, water and other undertakings below the carriageways or footways of cities, boroughs and towns." Twenty-six competitors took part. The awards were made as follows:—First premium, 105*l.*, to Mr. R. M. Parkinson, 93 Lincoln Road, Peterborough; second premium, 31*l.* 10*s.*, competitor's name at present unascertained; third premium, 21*l.*, Mr. F. M. Royle, A.M.Inst.C.E., Third Avenue, Sherwood Rise, Nottingham. The drawings will shortly be on exhibition at the Guildhall.

The Foundation-stone of St. Aidan's, Crews Hole, Bristol, has been laid. The chancel, two bays of the nave, with the south aisle and morning chapel and vestries will be proceeded with at once, and contracts for this work amounting to 4,873*l.* have been signed. The necessary furniture, fittings and contingencies will increase this amount to 5,200*l.* The church when completed will accommodate 755, and will cost an additional 2,400*l.* The plans were prepared by Mr. G. F. Bodley, R.A.

The Metropolitan Asylums Board last week approved of the reconstruction of the South-Eastern Hospital buildings at the estimated cost of 123,000*l.* The scheme provides that the 288 beds in the temporary buildings shall be replaced by 385 in new permanent buildings, bringing the total accommodation for patients up to 488 beds, and it includes the extension and remodelling of the administrative block and the provision of additional accommodation for nurses, female servants and the male staff.

The Foundation-stone of the City of London Crematorium will be laid at Ilford on Wednesday, the 14th inst., by Mr. R. W. Edwards, the chairman of the sanitary committee, a body which acts as the burial board for the City. The crematorium will cost, when completed, 7,000*l.*

The Governors of the Durham University College of Science have received the desired sum of 50,000*l.* to complete the college buildings as a memorial to the late Lord Armstrong, which enables the Council to carry out the whole of the additional buildings with the exception of the important central tower, which would cost 5,000*l.*

A Tomb in St. Bartholomew's Church, Cadelei, has just been restored, which is a very fine specimen of Jacobean sculpture. Under a richly-wrought canopy recumbent effigies of Sir Symon and Lady Leach, and kneeling figures of their nine children. The inscription as follows:—"Here lye the bodies of S. Symon Leach son of Symon Leach, of Crediton, and of Lady Katharine his wife, daughter of Nicholas Turberville, of Crediton, whose true affection in religious wedlock caused them to make their bed together in the dust."

The Members of the Académie des Beaux-Arts have investigated the claims of applicants for the post of secretary are M. Gerôme for painting, M. Frémiet for sculpture, M. Daumet for architecture, M. Chaplain for engineering, and M. Saint-Saëns for music.

The Westminster City Council have recently passed a resolution to aid them in procuring an amendment of the Public Health (London) Act, 1875, more effectually check smoke nuisances in the Metropolitan area, unless black smoke is emitted no offence is taken. The Council suggest that the word "black" should be deleted from the Act. As this (the medical officer states) would effect, cause smoke of any colour emitted from a chimney being the chimney of a private dwelling-house) in a city as to be a nuisance to constitute such an infraction could be dealt with summarily, the Corporation have decided in that view.

The Local Government Board have authorised the erection of additional buildings at Joyce Green hospital, the cost not exceeding 8,680*l.*, and the erection of cottages at Brook and Grove hospitals respectively for the accommodation of the resident engineer at a cost of 1,070*l.*

The London Corporation decided last week to select competitive designs for the new Southwark Bridge, on instructions that the designs shall be as artistic as possible.

The New Church of the Ascension at the Docks, London, was opened last week. It has been planned by Messrs. J. E. K. & J. K. Cutts, and will accommodate 1,000 people. Owing to the treacherous nature of the site the building has cost over 5,200*l.*

The City Engineer of Glasgow stated at the last meeting of the Corporation that the steps which were being taken to restore the decayed stone on the façades of the Town Hall Buildings and prevent further damage from weathering was the result of the advice of an expert, and it was expected that the work would be efficient.

A Divisional Volume, the sixth, of "The Manual of the Carpenter, Joiner and Cabinet-Maker," prepared under the supervision of Mr. Lister Sutcliffe, has been issued by the Publishing Company. It treats of carpentry, joinery, structures and bridges by the Editor, wood-carving, and the commencement of an article on stairs and hand-rails.

The Marylebone Borough Council having obtained the sanction of the Local Government Board for 17,274,000*l.* for the purchase of the Marylebone property, the Marylebone Electric Supply Company, will promote the ensuing session of Parliament to obtain the necessary borrowing powers, and other powers which it would be requisite to acquire for the effective working of the undertaking under municipal ownership and management.

The Isle of Wight County Council have agreed to a Bill of Trade to make an order under section 4 of the Harbours Act, 1814, to prohibit the removal from the island of sand and shingle, the accumulation of which is regarded as the most effectual protection against the wash of the sea. The application is being strongly supported principally by the owners of manorial rights and estates, and is based on the building trade, in which large quantities of material have been used, notably in the construction of fortifications and other military works.

Mr. H. W. Brewer, who was most successful in his career as an architect, died on Tuesday, the 26th inst., in his sixty-seventh year.

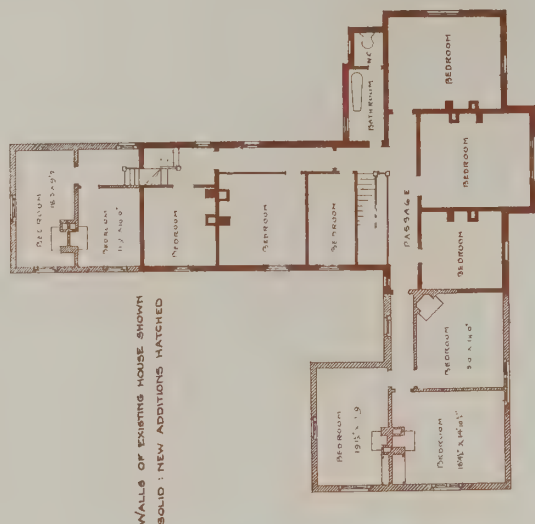
Mr. J. S. Rubinstein will read a paper on "The Law of Officialdom" at the Law Society's Congress, which will be held on November 10, 1903, with reference to the working of the new experimental compulsory registration of title under the Land Transfer Act, 1897.

The Governors of King's College Hospital are seeking a site for the hospital in South London. There is a large area extending from Wandsworth, through Brixton, Stockwell, Camberwell and Peckham to which particularly needs the advantages implied in a general hospital. A sum of 300,000*l.* is required.

The First Ordinary General Meeting of the Institution (session 1903-04) will be held on November 9, when the president, Mr. Albert Smith, will deliver an opening address. The chair will be taken at 8 o'clock.



GROUND FLOOR PLAN



BEDROOM FLOOR PLAN

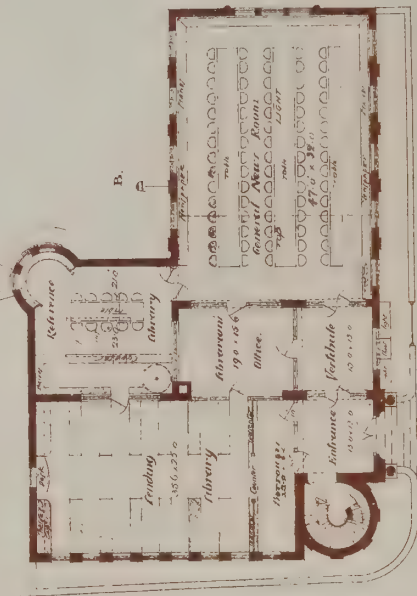
WALLS OF EXISTING HOUSE SHOWN
SOLID: NEW ADDITIONS HATCHED



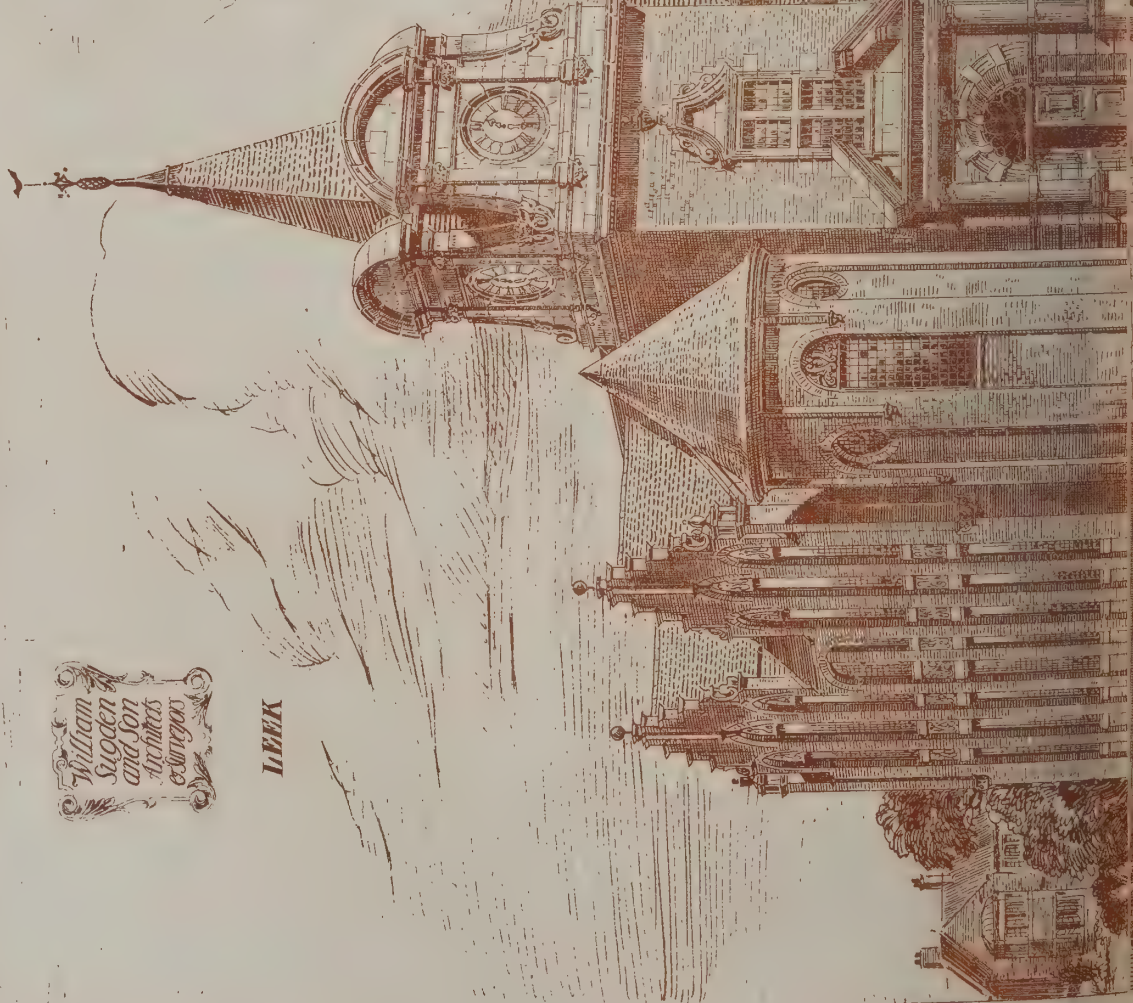
FENTON PUBLIC LIBRARY COMPETITIVE DESIGN

William
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and Son
Architects
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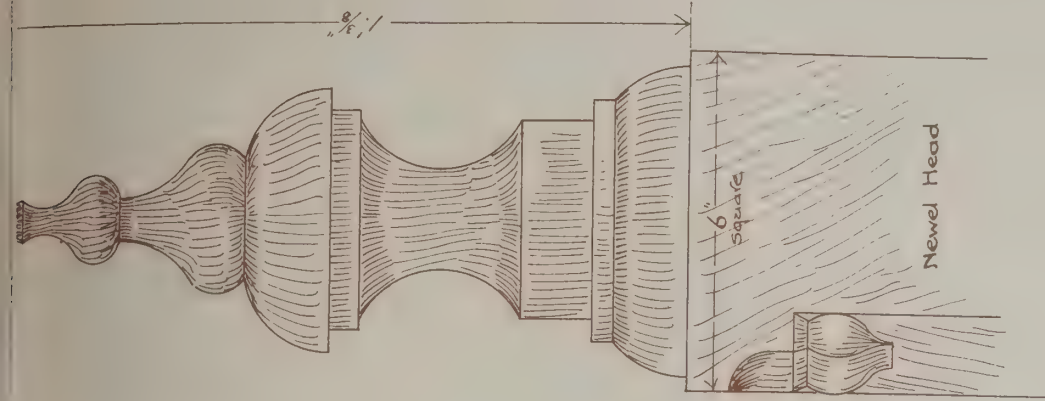
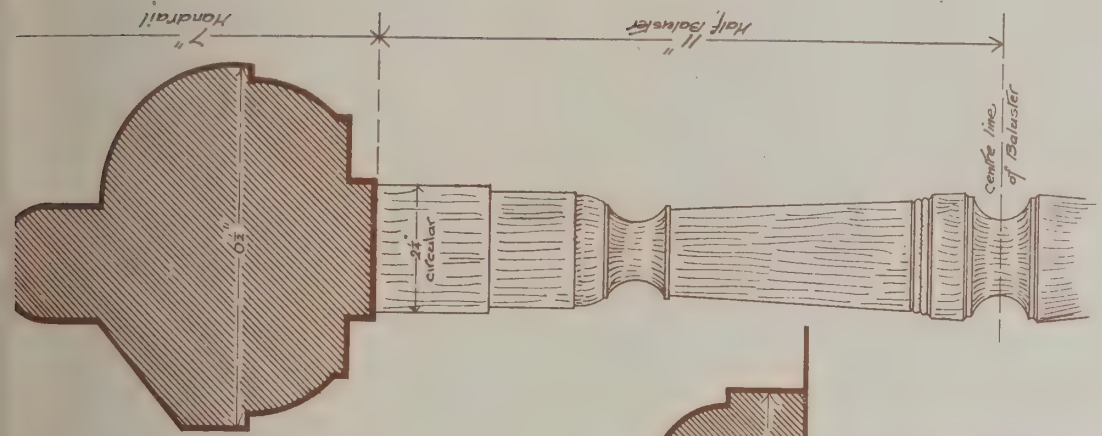
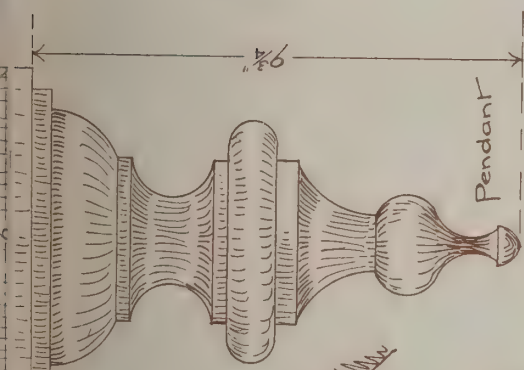
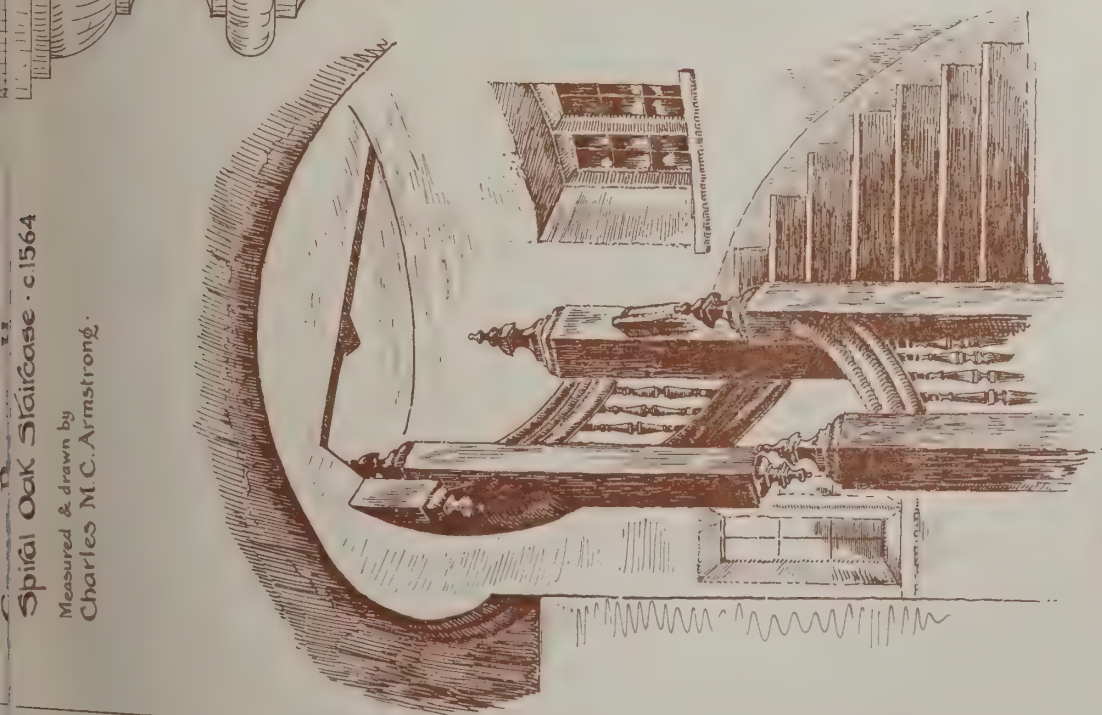


GROUND FLOOR
PLAN



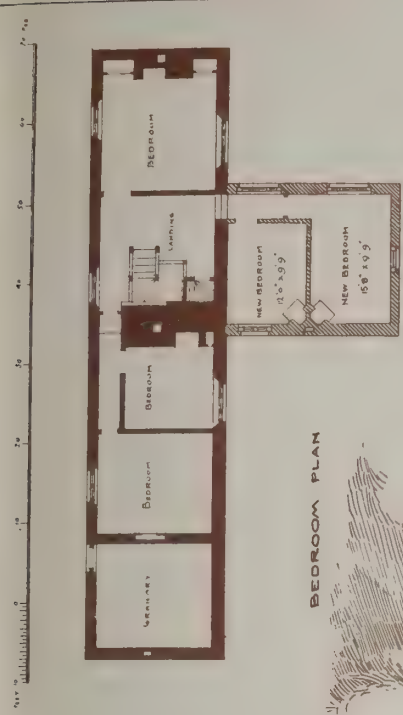
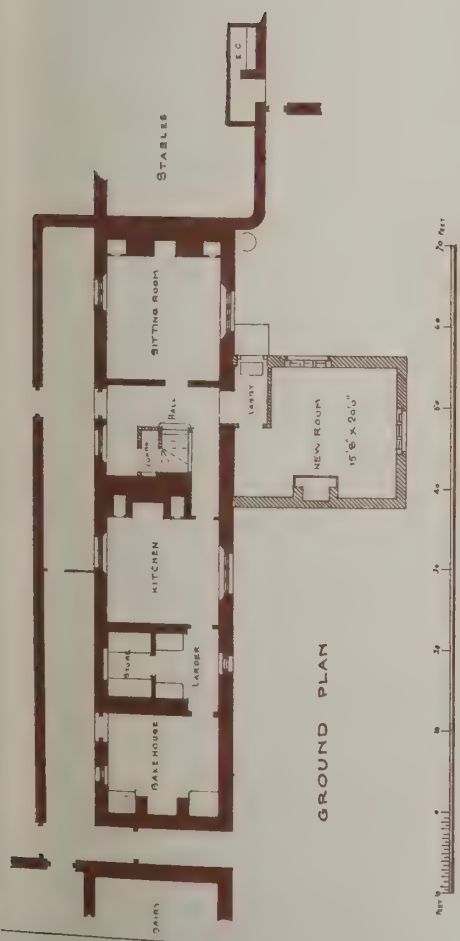
Spiral Oak Staircase - c1564

Measured & drawn by
Charles M.C. Armstrong.



SCALE FOR DETAILS

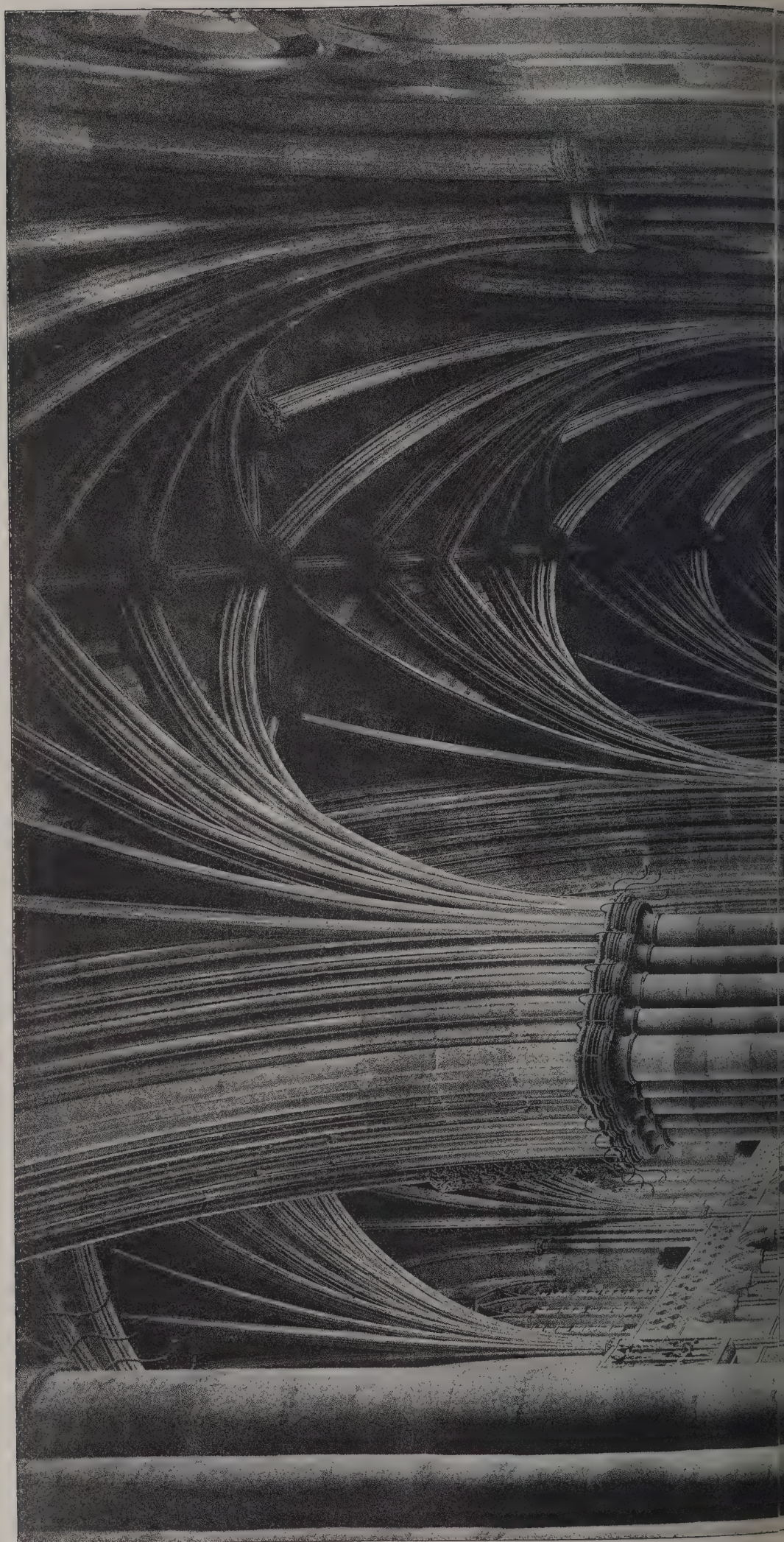
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The Architect, Oct. 9th 1903.





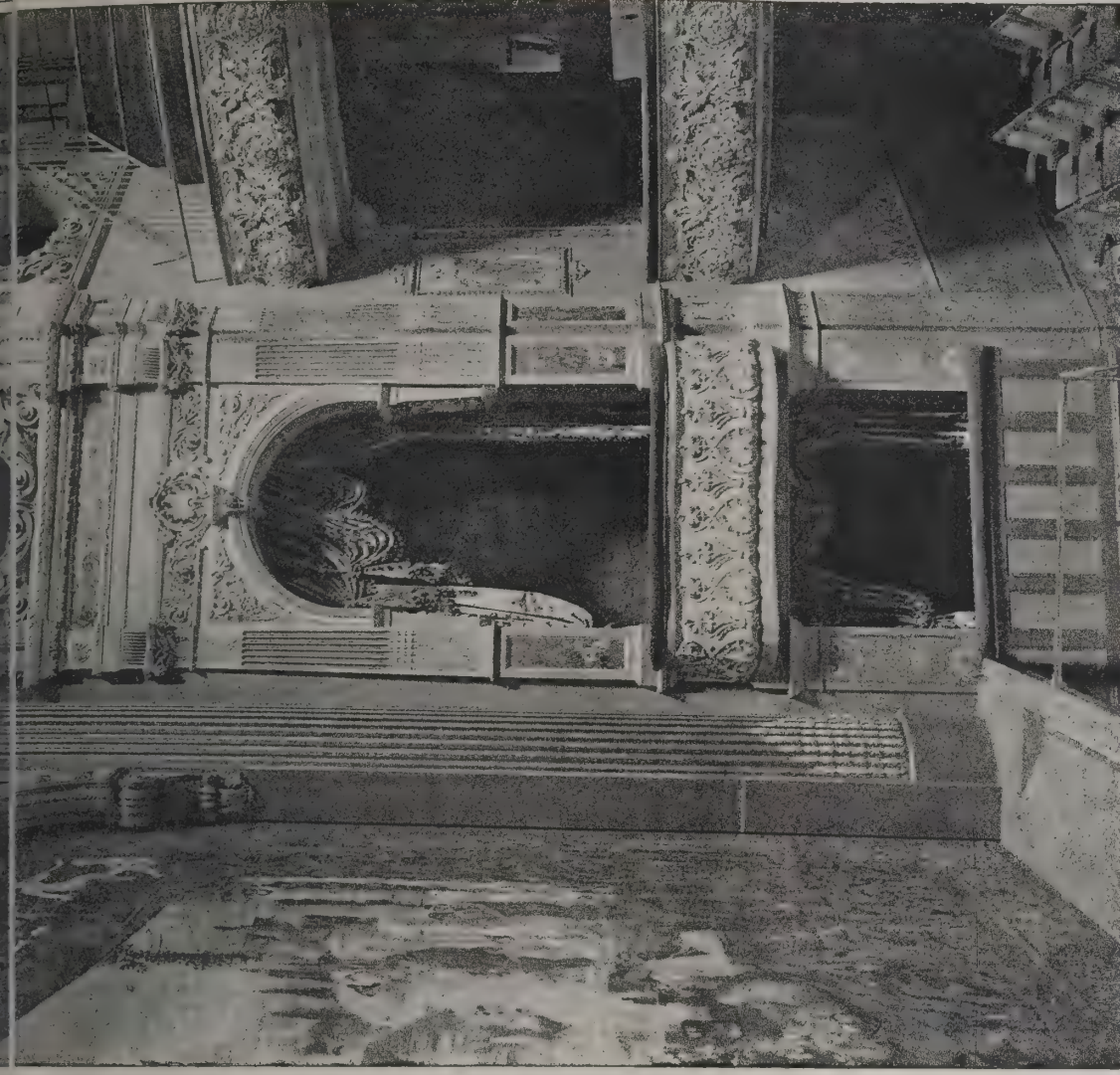
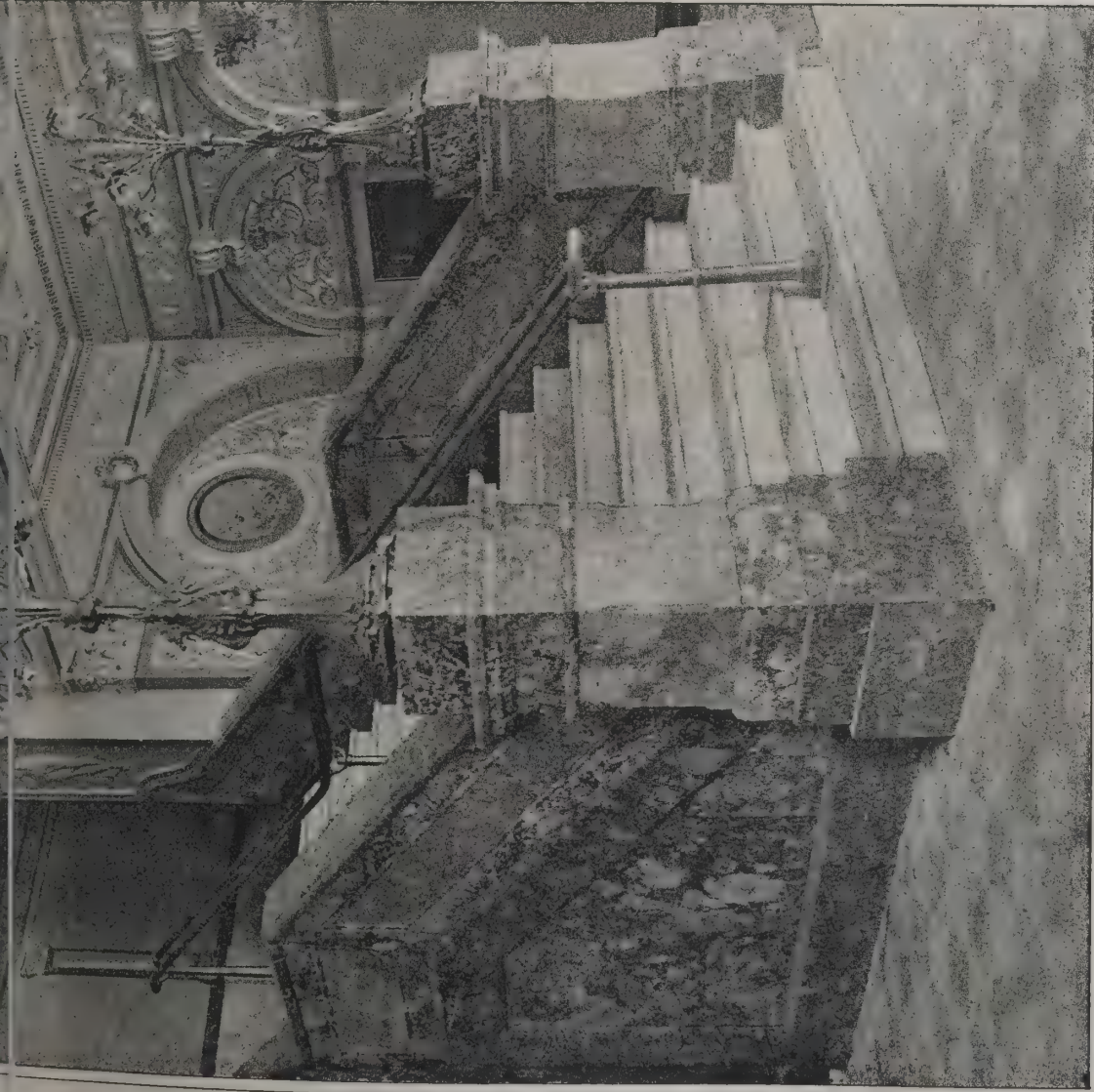
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CATHEDRAL SERIES, No. 466.—EXETER: SOUTH AISLE, LOOKING EAST.

The Architect, Oct 9th 1903.





HER MAJESTY'S THEATRE, SYDNEY: INTERIOR VIEWS.

THE HONBLE. WILLIAM PITT, Architect.

THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

authors of signed articles and papers read in public must necessarily be held responsible for their contents.

communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BRIGHTON.—Nov. 9.—Designs are invited for a new hospital. Premiums of 50*l*, 30*l*, and 20*l* will be paid to the first, second and third premiated designs respectively. Parcels up to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Brighton and Hove Hospital for Women, 76 West Street, Brighton.

OLDHAM.—Competitive plans are invited by the Oldham School Board for a school for older children and infants. Mr. Annie, clerk, School Board Offices, Oldham.

LAWTENSTALL.—Oct. 12.—Competitive designs are invited for a free library, town hall and assembly-room buildings. Premiums of 100*l*, 50*l*, and 30*l* respectively will be awarded. Mr. A. W. Lawson, borough surveyor, Municipal Offices, Lawtenstall.

SHEPTON MALLET.—Oct. 15.—For the erection of a hall used as drill hall and for musical purposes, cost not to exceed £1,200. Plan of site and copy of conditions on payment of £1 1*s*, which will be returned, from Mr. H. Charles, 12 Commercial Road, Shepton Mallet.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100*l*, 50*l*, and 25*l* will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20*l*, 10*l*, and 5*l* will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

CONTRACTS OPEN.

ACTON.—Oct. 20.—For the erection of an engine-shed, &c., at Old Oak Common, Acton, Middlesex, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

ASHINGTON.—Oct. 21.—For additions to the bakery department, Ashington (Northumberland) Industrial Co-operative Society, Ltd. Mr. John Magin, secretary.

BARROW-IN-FURNESS.—Oct. 17.—For the erection of a store shed at Cambridge Street school. Mr. C. F. Preston, town clerk, at the Town Hall.

BARROW-IN-FURNESS.—Oct. 17.—For the removal of the iron school in Back Latona Street, Vickerstown, and the erection of the same on site in Ocean Road. Chairman of the Sites and Buildings Committee, Education Committee, Town Hall.

BATLEY.—Oct. 17.—For the erection of boundary walls at the sewage outfall works, Bradford Road. Particulars may be obtained at the office of the Borough Surveyor, Branch Road, Batley, Yorks.

BECKENHAM.—Oct. 12.—For the taking-down and re-erecting in new position the cart, &c., sheds in the Council's depôt, Bromley Road, the erection of boundary walls and sundry other works in connection with the alterations to the sheds. Mr. John A. Angell, surveyor, Town Hall.

BEDFORD.—Oct. 12.—For the carrying-out and construction of certain works in connection with the existing waterworks of the borough, consisting of new filter beds, alterations to the existing filters and reservoirs, the driving of a heading, waste prevention works, &c. Mr. Hedley Baxter, town clerk, Town Hall, Bedford.

BEDLINGTON.—Oct. 17.—For the erection of a corrugated iron fever hospital at Bedlington, Northumberland, to accommodate twenty patients, administrative department and usual out-buildings. Mr. C. Brown, surveyor, Bedlington.

BLACKHEATH.—Oct. 15.—For the erection of depôt buildings on site at St. John's Park. Mr. Francis Robinson, town clerk, Town Hall, Greenwich Road, S.E.

BRADFORD.—For the erection of a house, offices, stabling and boundary walls at Canal Road, Bradford. Specifications to be seen at the Aird and Calder Navigation Offices, Dock Street, Leeds.

BRISTOL.—Oct. 22.—For the erection of a school at Air Balloon Hill, St. George. Messrs. La Trobe & Weston, architects, 20 Clare Street, Bristol.



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BURY (LANCS).—Oct. 27.—For the taking-down and re-erection of shop and premises, 10 Water Street, Bury. Mr. John Haslam, town clerk, Municipal Offices, Bank Street, Bury.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

DEWSBURY.—Oct. 17.—For the erection of a warehouse in Bradford and Wood Streets, Dewsbury. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

DURHAM.—Oct. 12.—For the erection of dwelling house, Hugar Road, High Spen. Mr. Thomas H. Murray, architect, Consett.

EASTBOURNE.—Oct. 13.—For additions to the reconstructed refuse destructor at Roselands. Mr. Daniel J. Bowe, borough surveyor, Town Hall, Eastbourne.

EMBLETON.—Oct. 17.—For erection of farm buildings at Low Netherscales, Embleton, Cumberland. Mr. Edmund Jackson, civil engineer, Whitehaven.

GATESHEAD.—For alterations and additions to premises in West Street, Gateshead. Mr. W. R. Story, architect, 2 St. Nicholas Buildings, Newcastle-on-Tyne.

HARROGATE.—For alterations and additions to the Claremont hotel, Harrogate. Messrs. Butler, Wilson & Oglesby, architects, 12 East Parade, Leeds.

HARROGATE.—For alterations and additions to the New inn, Skipton Road, Harrogate. Messrs. H. E. & A. Bown, architects, James Street, Harrogate.

HASTINGS.—Oct. 13.—For joinerywork at the engine-house, Brede, near Hastings. Mr. P. H. Palmer, engineer, Town Hall, Hastings.

HEREFORD.—Oct. 16.—For extension of the post-office at Hereford for the Commissioners of H.M. Works and Public Buildings. Particulars can be had on application to the Postmaster at Hereford, or at H.M. Office of Works, &c., Storey's Gate, S.W.

HORNSEY.—Oct. 13.—For street works in Birkbeck Road and Clovelly Road (2nd section). Mr. F. D. Askey, clerk to the U.D. Council, 99 Southwood Lane, Highgate, N.

HULL.—Oct. 16.—For the erection of thirty-two artisans' dwellings in Steynburg Street. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

ILFORD.—Oct. 26.—For the erection of dépôt building stables, &c., in Ley Street. Mr. H. Shaw, surveyor, Hall, Ilford.

IPSWICH.—Oct. 29.—For the erection of a public convenience at Alexandra Park. Mr. E. Buckham, borough surveyor, Town Hall, Ipswich.

IRELAND.—Oct. 12.—For the erection of a soldiers' mess at the Fair Green, Mullingar, co. Westmeath. Mr. A. E. Joyce, architect, Mullingar.

IRELAND.—Oct. 13.—For constructing and laying fireproof floors at the new male block (in course of erection) at the asylum, Letterkenny, co. Donegal. Mr. J. P. McGrath, architect, Commercial Buildings, Foyle Street, Londonderry.

IRELAND.—Oct. 16.—For the erection of a canteen building at the Ordnance Survey Offices, Phoenix Park, Dublin. Particulars and specification can be seen at the Office of Public Works, Dublin.

IRELAND.—Oct. 19.—For the erection of a new station building at Malahide, a stationmaster's house (two-storey) at Goraghwood, a stationmaster's house (one-storey) at Hambleton, for the Great Northern Railway Company, Ireland. Mr. W. H. Mills, Amiens Street Terminus, Dublin.

JOHANNESBURG.—Oct. 19.—For the supply alternatively of gas generating plant or steam generating plant, and of electric motors or steam motors, with electric generators and accessories, to the following specifications:—Specification No. 2.—Section A: Gas producer plant, capable of gasifying 7½ tons of Transvaal coal per hour, with coal conveyer, engine and cooling plant and all accessories; sections B and C: Four gas-engines, each for driving a 1,350 kw. dynamo (2,000 B. h. p.); one gas-engine for driving a 675 kw. dynamo (1,000 B. h. p.); three gas-engines, each for driving a 675 kw. two-phase alternator (1,000 B. h. p.); two motor generators, each consisting of a 250 kw. two-phase alternator and a 150 kw. dynamo; two balancers, each consisting of two 150 kw. dynamos. Specifications, forms of tender, and a plan of the site may be seen on and after September 7, at the offices of the Town Clerk, Johannesburg, or at the offices of the Council's consulting engineers, Messrs. Mordey & Davidson, 82 Victoria Street, Westminster, S.W.

KNARESBOROUGH.—For the erection of two semi-detached houses on the Avenue estate, Knareborough. Mr. V. Driffield, architect, Boroughbridge Road, Knareborough.

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LAMBETH.—Oct. 14.—For external repairs at relief station at 5 Stockwell Road, S.W. Particulars may be obtained and contract may be inspected at the Guardians' Board-room Offices, Brook Street, Kennington Road, S.E.

LEEDS.—Oct. 12.—For erection of a range of urinals at Adhouse Ridge. Particulars may be obtained at the City Engineer's Office, Municipal Buildings, Leeds.

LEICESTER.—Oct. 23.—For erection of two district car-houses, offices and all other buildings and works in connection with, for the tramways committee. Mr. E. George Hey, engineer, Town Hall, Leicester.

LINCOLN.—Oct. 14.—For the erection of new operating-rooms, &c., at the Lincoln county hospital. Messrs. W. Gains & Son, architects, Silver Street, Lincoln.

LONDON.—Oct. 25.—For the construction at the corner of New Wall Lane of an underground convenience for both sexes. Mr. Francis Robinson, town clerk, Town Hall, Greenwich, S.E.

MARGATE.—Oct. 12.—For construction of a toeing wall at base of a cliff at Newgate Gapway, Margate. Mr. Edward Price, town clerk, 18 Cecil Square, Margate.

MESDEN BRIDGE.—Oct. 26.—For the reconstruction of Mesden bridge. Mr. Urban A. Smith, county surveyor, Apsley, Herts.

MIDDLESBROUGH.—Oct. 14.—For the erection of an accumulator-house and clock-tower at Middlesbrough docks, for the North-Eastern Railway Company. Mr. William Bell, company's architect, York.

NEWHAVEN.—For the erection of a post office at Newhaven, Essex. Mr. F. J. Rayner, architect, Fort Road, Newhaven.

NEWHAVEN.—For extensive alterations to Primitive Methodist chapel at Newhaven. Mr. F. J. Rayner, architect, Fort Road, Newhaven.

PADIHAM.—Oct. 12.—For widening Padiham, Lancs, viaduct bridge on both sides in two skew brick arches, the viaduct, pier, wing, retaining and parapet walls being in brick. Plans may be seen and copies of the specification and bill of quantities obtained at the County Bridgmaster's Office, Preston.

PARLIAMENT.—Oct. 20.—For the extension of the boiler-rooms at the workhouse, Harrow Road, W. Mr. F. J. Smith, architect, Parliament Mansions, Victoria Street, S.W.

PORTLAND.—Oct. 27.—For additions to the police station at Portland, Dorset, including the erection of six cells and stable, &c. Mr. E. Archdall Ffooks, clerk to standing joint-committee, Sherborne, Dorset.

PORTSMOUTH.—Oct. 23.—For the erection of a school of three departments (boys, girls and infants) in place of the present Milton school building (mixed and infants). Messrs. Rake & Cogswell, architects, Prudential Buildings, Landport.

SCOTLAND.—Oct. 12.—For the construction of filters and other works at Blackbog, in the parish of Hamilton. Mr. W. R. Copland, 146 West Regent Street, Glasgow.

SCOTLAND.—Oct. 14.—For the formation of a cemetery and the erection of a lodge. Mr. J. B. Brodie, civil engineer, 136 Wellington Street, Glasgow.

SCOTLAND.—Oct. 14.—For the erection of proposed new generating station and tramcar-shed at Kilmarnock. Mr. W. Middlemas, town clerk, Kilmarnock.

SCOTLAND.—Oct. 17.—For the erection of new gasworks at Eschiels, near Peebles. Mr. Wm. Buchan, town clerk, Peebles.

SEAHAM.—Oct. 14.—For the erection of a stationmaster's house at Seaham, for the North-Eastern Railway Company. Mr. William Bell, company's architect, York.

SHEFFIELD.—For the erection of fifty workmen's cottages in Ellesmere Road, Scotter Road, Kirton Road and Blaydon Road, for the Midland Railway Company. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SLOUGH.—Oct. 20.—For the erection of a court-room and alterations to existing buildings at Slough police court. Mr. R. J. Thomas, county surveyor, County Hall, Aylesbury.

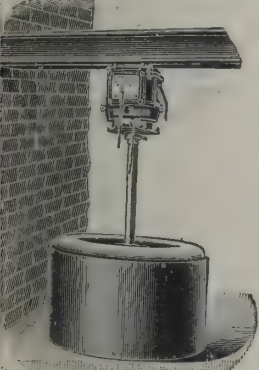
STANNINGLEY.—For the erection of a workshop at Stanningley. Mr. Percy Fox, architect, 14 Manchester Road, Bradford.

SWINDON.—Oct. 14.—For the erection of a block of buildings (comprising five shops and Sunday school premises), in Faringdon Street, Swindon. Mr. William F. Bird, architect, Midsomer Norton, Somerset.

WALES.—For rebuilding premises in Castle Street, Cardigan, recently destroyed by fire. Captain Griffith Davies, 7 Castle Street.

WALES.—Oct. 12.—For the erection of ninety-one houses, and for street and sewerage works at Rhymney. Mr. T. Roderick, architect, Glebeland, Merthyr Tydfil.

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published on Application to The Publisher.

WALES.—Oct. 12.—For the erection of classroom, cloak-rooms, offices and boundaries at Nantyglo school, Aberystwith. Mr. R. L. Roberts, architect, Abercarn.

WALES.—Oct. 14.—For the erection of a parish storehouse, for the Llandilo-Talybont Parish Council. Mr. Thomas Thomas, Glasfryn House, Pontardulais.

WALES.—Oct. 17.—For the erection of twenty houses at Melincourt, Resolven. Mr. J. Cook Rees, architect, Neath.

WHITEHAVEN.—Oct. 14.—For alterations to the Brow Top beerhouse, Wellington Row, Whitehaven. Mr. Wm. Carmichael, architect, Parton, Whitehaven.

WHITEHAVEN.—Oct. 14.—For alterations to the Shakespear hotel, Roper Street, Whitehaven. Mr. Wm. Carmichael, architect, Parton, Whitehaven.

YORK.—Oct. 14.—For the erection of the new general offices at York, for the North-Eastern Railway Company. Mr. William Bell, the Company's architect, at York.

SCHOOL OF ART WOOD-CARVING.

THE School of Art Wood-carving, South Kensington, which now occupies rooms on the top floor of the new building of the Royal School of Art Needlework in Exhibition Road, has been reopened after the usual summer vacation, and we are requested to state that some of the free studentships maintained by means of funds granted to the school by the Technical Education Board of the London County Council are vacant. The day classes of the school are held from 10 to 1 and 2 to 5 on five days of the week and from 10 to 1 on Saturdays. The evening class meets on three evenings a week and on Saturday afternoons. Forms of application for the free studentships and any further particulars relating to the school may be obtained from the manager.

WE understand that the citizens of Ballarat, Australia, have decided to erect a statue to the memory of the troops who fought in the South African war. The statue is to be equestrian, in bronze, and the cost will not exceed 1,300l. delivered in Melbourne. The pedestal is to be constructed locally. Designs are being received by the Agent-General for Victoria for transmission to the committee.

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Orton & Son	256 10
Slater & Son	254 16
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AUDENSHAW (LANCS).

For the supply of 372 lineal yards of 12-inch stoneware pipe. J. HALL & SON, Dukinfield (accepted).

BADBY, DAVENTRY.

For work for Miss Baldock	£250 18
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Bosworth	198 10
ADAMS & SON (accepted)	198 10

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For sewerage work, constructing a brickwork tank, manholes, &c., for the drainage of the village of Brixton, Devon. BENNETT & GARDINER, Soloman's Lodge, Elburton, Plymouth (accepted) £323

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For additions to the electric-light plant and supplying and laying new cables. Mr. ALBION T. SNELL, consulting engineer. W. J. FRYER & CO., Bravington Engineering Works Paddington, and Sloane Square (accepted) £2,198

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Holme	1,388	0	0
& G. Chappell	1,361	0	0
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W. Weeks & Son	1,350	0	0
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J. E. B. James	14,220	15	0
J. RILEY, Cheltenham (accepted)	13,361	15	0
E. & H. Page	13,345	0	3
J. H. Macdonald	12,928	7	2
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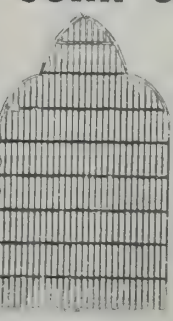
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HALIFAX.

For street works at Salterhebble Hill, at the junction of Rookery Lane and Salterhebble Hill. Mr. JAMES LORD, borough engineer.

BOWER BROS, Church Street (accepted)	£553	1	1
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IRELAND.

For the construction of a pumping station, a dwelling-house and various auxiliary works on land at the west end of the Pigeon House Road, in the city of Dublin.

J. & W. Stewart, Ltd.	£34,600	0	0
J. & P. Good, Ltd.	32,500	0	0
H. & J. MARTIN, LTD., Upper Grand Canal Street, Dublin, and Belfast (accepted)	29,466	0	0

ILFORD.

For the erection of a post office at Ilford.

J. C. Garbett	£4,570	0	0
J. Ferguson & Co.	4,500	0	0
J. Guttridge	4,482	0	0
T. Bendon	4,449	0	0
S. E. Moss & Co.	4,250	0	0
Hammond & Miles	4,185	10	0
B. E. Nightingale	4,100	0	0
F. Willmott	4,074	0	0
Foster Bros.	4,063	0	0
T. Almond & Son	4,000	0	0
S. Parmenter	3,999	0	0
E. Brown & Son	3,997	10	0
F. Gowen	3,997	0	0
Perry Bros.	3,979	0	0
C. ANSELL (accepted)	3,939	0	0
J. Chessum & Sons	3,760	0	0

IMPINGTON.

For the erection of a house. Mr. PAUL BAUSOR, architect, 9 St. Andrew's Street, Cambridge.

Mortlock & Sargent	£465	0	0
M. Christmas	454	0	0
King & Tolliday, Histon (accepted conditionally)	450	0	0

IPSWICH.

For widening Milner Street and Curve Street, St. Helens.

C. A. GREEN, Ipswich (accepted)	£133	0	0
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KNUTSFORD.

For providing and fixing of steam mains, pipes and fitting, and for heating and providing with hot-water arrangements some blocks of workhouse buildings at Knutsford.

SAUNDERS & TAYLOR, LTD., Lower Mosley Street, Manchester (accepted)	£669	10	0
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LAVENHAM.

For the kerbing of parts of Water Street and High Street, Lavenham, Suffolk. Mr. ERNEST W. VEALE, surveyor, Bildeston.

E. J. EDWARDS, Norwich, 2s. 6d. per yard (accepted)			
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LONDON.

For supplying and fixing electric lift and conveyer at 186 Strand. Messrs. O'GORMAN & COZENS-HARDY, consulting engineers, 82 Victoria Street, Westminster.

W. J. FRYER & Co., Paddington (accepted)	£497	0	0
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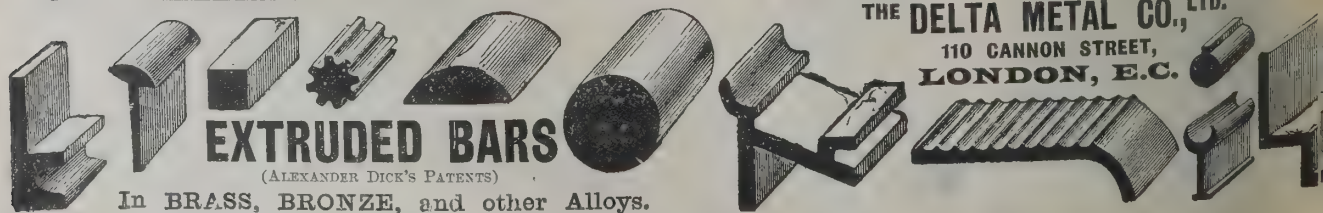
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NELSON.

the erection of a clock tower on the market hall, Lancs. Mr. B. BALL, borough surveyor.

Accepted tenders.

T Dent & Sons, Nelson, mason.
Exors. of T. Boothman, Brierfield, carpenter and joiner.

POOLE.

(1) laying 8-inch sewer in the Edward Road, Upper Parkstone; (2) making-up the Vale Road, Upper Parkstone. Mr. JOHN ELFORD, borough surveyor.

Contract No. 1.

ATES & GULLIVER, Parkstone (accepted) . £72 9 0

Contract No. 2.

C. Brixey 477 17 0
J. P. Saunders 474 9 0
T. Budden 453 19 0
ATES & GULLIVER (accepted) 433 6 0

REIGATE.

the erection of a residence at Cronks Hill, Reigate. Mr. C. E. SALMON, architect, Bell Street, Reigate.

Knight £2,217 0 0
Nightingale 1,359 0 0
Nightingale & Sons 1,350 0 0
sey & Sons 1,293 0 0
Wickman 1,290 0 0
WAYCOTT (accepted) 1,150 0 0

RIPLEY.

sewerage and sewage disposal works at Ripley, Surrey. Mr. JOHN AUSTEE engineer, Commercial Road, Guildford.

Norris £6,975 0 0
Jackson 6,652 19 0
nson & Langley 6,651 2 8
enton 6,338 0 0
vanagh & Co. 6,164 0 0
bbbern 5,926 0 0
imm 5,819 0 0
Igett & Hammond 5,566 0 0
A. FRANKS, Station Approach, Guildford
(accepted) 5,449 0 0
Ivis & Ball 5,439 7 3
eeters & Todhunter 5,243 0 0

RUGBY.

For alterations and additions in forming new board-room and offices at the Rugby union workhouse. Mr. T. W. WILLARD, architect, Rugby.

J. Parnell & Son £1,758 6 0
A. Harris 1,680 0 0
Linnell & Son 1,648 0 0
Richard Cleaver 1,636 0 0
Walton & Son 1,619 0 0
Hopkins & Son 1,550 0 0
Hollowell & Son 1,472 0 0
Reynolds 1,436 0 0
Emery Brothers 1,367 5 6
Adams & Son 1,367 5 0

SCARBOROUGH.

For alterations and additions to stables, sanitary department, Trafalgar Street West, Scarborough.

C. Flinton £350 0 0
J. Jaram & Sons 340 10 0
Dinsley & Ware 337 16 0
A. Moore 333 0 0
G. Colley 332 0 0
J. Basteman & Sons 328 0 0
J. Barry & Son 324 0 0
J. W. Bland 319 10 0
A. G. Wellburn 311 17 4
HUNTER & SMITH, 28 Belle Vue Street, Scar-
borough (accepted) 308 10 3

SCOTLAND.

For rebuilding and extending business premises, Elgin. Mr. R. B. PRATT, architect, Town and County Bank Building, Elgin.

Accepted tenders.

Davidson & Hay, mason.
A & R. Dunbar, carpenter.
G. Murray, Lossiemouth, slater.
Lyon & Sons, plumber.
Kintrea & Son, painter.
McKenzie & Monend, Edinburgh, heating.
P. & W. McLellan, Glasgow, ironwork.
Total, £3,818.

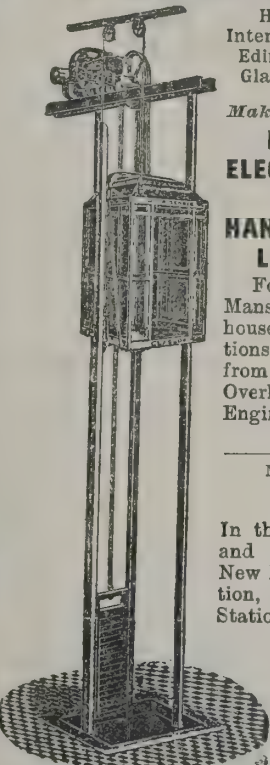
Note.—Tiling, &c., and fittings not tendered for yet.

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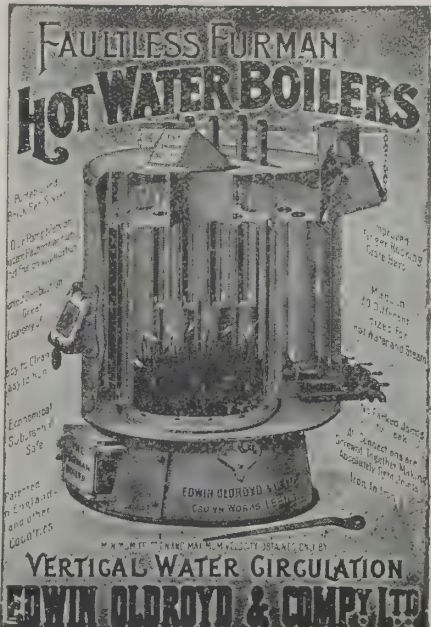
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SCOTLAND—continued.

For construction of a pier at Aird Point, Aultbea, on Loch Ewe, Ross-shire, containing about 1,313 cubic yards of concrete, 3,599 cubic feet greenheart, 4,533 cubic feet creosoted pitch-pine, 1,075 cubic feet larch planking, with necessary pile shoes, bolts, &c. Mr. MANNERS, engineer, 12 Lombard Street, Inverness.

A. Nicholson	£6,638	6	6
S. Baikie	5,434	2	0
Mackenzie & McLeod	5,072	0	0
W. Petrie	5,667	10	6
E. & D. Stewart	5,661	1	7
R. Young & Co.	4,977	0	2
G. Halliday	4,891	0	10
W. Kennedy	4,831	17	9
Stirling & Kinniburgh	4,570	9	4
W. Alexander & Co.	4,399	0	0
J. McNally	4,297	13	0
A. & J. Mackenzie	4,296	2	1
J. Ross	4,166	16	10
Morrison & MacIntyre	4,065	9	9
T. Macdonald	3,950	7	8
R. Fraser	3,898	9	1
C. Mackay	3,895	18	6
R. C. BREBNER & Co., Edinburgh (accepted)	3,758	15	7

STOKE-UPON-TRENT.

For the supply and erection of the following plant in connection with the proposed electricity and destructor works. (Contract 10, Section A) pipework; (B) non-conducting covering; (C) water-softening plant.

Accepted tenders.

(A) Crompton & Co., piping; (B) lagging (sub-contractor Mica Boiler Covering Co.); (C) Pulsometer Engineering Co., water softener.

STOWMARKET.

For sewerage works in Lime Tree Place, Stowmarket. Mr. G. W. LINGWOOD, surveyor, Station Road, Stowmarket.

Bradshaw & Co.	£165	0	0
E. & S. Plummer	145	0	0
G. Burgoyne	119	3	0
Scales & Robins	113	10	0
MURRAY & SHERWIN, Stowmarket (accepted)	105	0	0

THORNTON-LE-FYLDE.

For the erection of air-compressing station, caretaker's cottage, &c. Mr. ARTHUR HINDLE, engineer, 44 Abingdon Street, Blackpool.

Accepted tenders.

T. Riley, Fleetwood, contractor, buildings.
Hughes & Lancaster, Westminster, machinery.
Galloways, Limited, boilers.

WALES.

For the erection of thirty-five houses on the Cefn Bach Estate, Deri, via Cardiff.

T. WILLIAMS, Llandefaillog Fach, Brecon (accepted) £6,919 0 0

For the erection of a central public library, Holton Road, the Barry (Glamorgan) Urban District Council. Messrs. C. E. HUTCHINSON & E. HARDING PAYNE, architects, 11 John Street, Bedford Row, London, W.C.

Davis & Francis	£9,287	10	0	£9,189	11	0
J. Prout	7,745	10	6	7,620	5	0
H. S. Rendell	7,624	15	0	7,507	12	0
Lloyd & Tape	7,600	0	0	7,554	0	0
A. N. Coles	7,465	17	7	7,350	15	2
Stephens, Bastow & Co., Ltd.	7,413	0	0	7,312	0	0
Lattey & Co., Ltd.	7,362	14	8	7,212	14	3
W. Britton	7,307	2	8	7,228	4	2
J. Gibson	7,162	0	0	7,068	0	0
WATKIN WILLIAMS, Cardiff (accepted)	6,900	0	0	6,830	0	0

A.—Deduction for blue Forest of Dean.

WELLINGTON.

For painting the exterior of the Urban District Council offices, caretaker's house and outbuildings in Walcott Street, Wellington, Salop.

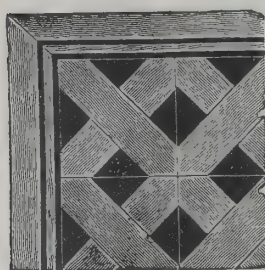
Burnall & Son	£14	15	6
J. Davies	9	15	0
J. ELPHWICK (accepted)	9	0	0
Surveyor's estimate	15	0	0

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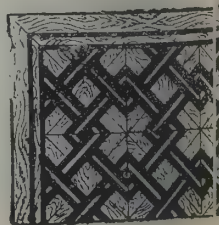
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LONDON.

Painting and repairs required to be done at the Metropolitan Beer and Wine Merchants' Asylum, Nunhead Green, Surrey. Mr. W. F. POTTER, architect.

W. F. Potter & Co.	£148	0	0
J. Rogerson	120	0	0
E. V. Newman	118	15	6
J. HONEY (accepted)	118	0	0

EXHIBITION OF ARCHITECTURAL ART AND MODERN BUILDING IMPROVEMENTS, 1903, BRIGHTON.

Following are the awards made by the jurors appointed to the committee of the exhibition at the Aquarium, which is to-morrow:—

- The Art Pavements Decorations, Ltd., the silver cup.
- Class 1.—The Art Pavements, Ltd., a gold medal; Messrs. Elliott Bros., a bronze medal; Messrs. Elliott & Son, of Ipswich, a bronze medal; the Crowborough Brick Company, a diploma.
- Class 2.—Messrs. Gilkes & Son, a silver medal; Messrs. Elliott & Son, a bronze medal; Mr. Boekbinder, a diploma; Messrs. Essex Cement Company, a diploma.
- Class 3.—The Uralite Company, a diploma.
- Class 4.—Messrs. Morris & Co., a gold medal; Mr. A. W. Elliott, a diploma; the British Challenge Glazing Company, a diploma.
- Class 5.—Messrs. Elliott, of Caversham, a silver medal; Mr. Elliott Company, a diploma; the Lift and Hoist Company, a diploma.
- Class 6.—Messrs. George Jennings & Co., a gold medal; Messrs. E. Long & Co., a diploma; Messrs. Brown, Ltd., a diploma; Mr. Shoesmith, a diploma.
- Class 7.—Messrs. Yates, Haywood & Co., a silver medal; Messrs. Black Rock, a bronze medal; Elphick's Fire, a bronze medal; Mr. F. V. Hadlow, a diploma.
- Class 8.—Mr. Phillips, for photographs, a diploma.
- Class 10.—Messrs. Foulger & Co., a diploma.
- Class 11.—The Herne Hill Rustic Works, a bronze medal.

TRADE NOTES.

MESSRS. E. H. SHORLAND & BROTHER, of Manchester, have just supplied their patent Manchester grates to the new Police Buildings, Llanfairfechan.

AT Stanwix, Cumberland, parish church an illuminated quarter-chime clock, with three large dials, has been erected by Messrs. Wm. Potts & Sons, clock manufacturers, of Leeds and Newcastle.

A LARGE clock is about to be erected in the new Victoria Hall, Ellon, Aberdeen. It will have three large illuminated dials and strike the hours. Messrs. John Smith & Sons, Midland Clock Works, Derby, are carrying out the work under the instructions of Mr. William Davidson, architect, Ellon. The same firm made a similar clock some years ago for Mintlaw, a neighbouring place.

MESSRS. KORTING BROS., of 53 Victoria Street, S.W., announce the conversion of their business into a private limited liability company, which will henceforth be carried on at the same address with the former staff and under the management of Mr. Ottocar Lindemann, who has been connected with the firm for more than twenty years, and who has now been appointed managing director under the style of Korting Bros., Ltd.

MESSRS. JOHNSON & PHILLIPS, Electric Cable Works, Old Charlton, Kent, have sent us their new illustrated catalogue (No. J. B.) of Main's disconnecting feeder, fuse and other boxes, frames and covers and other appliances. The designs embody the latest and most approved practice, and have special features which give efficiency and ease of manipulation. Messrs Johnson & Phillips remind us that they are always prepared to make special designs and tender for special work.

BUILDING AND BUILDERS.

On the 2nd inst. Colonel A. G. Durnford, R.E., Local Government inspector, conducted an inquiry at Skegness concerning the Urban Council's application to borrow £3,360 for new sewerage works. The scheme was explained by Mr. J. R. Elliott, representing the engineers, Messrs Elliott & Brown, of Nottingham, and consists of new bacterial purification works, additional pumping-station, and improvements and extensions to the sewerage system rendered necessary by the rapid growth of the district. There was no opposition.

THE foundation-stone laying ceremony of the United Methodist Free church, Highams Park, E., took place on

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CATHEDRAL SERIES.—EXETER: SOUTH AISLE, LOOKING EAST.

Saturday last, October 3. The building occupies a prominent corner site. The design is in a late period of Gothic freely treated. The facings are in pressed red bricks, and the dressings are in white Costessey work. The block comprises church with transepts and apse and two vestries and the usual conveniences. The contract amount of the building is 1,828*l*. This building will form the school when the future church is erected, and is only the first portion of a large scheme. The architects are Messrs. G. & R. P. Baines, 5 Clement's Inn, Strand, W.C.

THE possibility of the North-Eastern Railway Company making Northallerton one of their greatest goods collecting and distributing centres has long been a subject of discussion, and at length the directors have decided upon a colossal scheme, which is estimated to cost 520,000*l*. The land required has been secured near Northallerton station on the west side of the main line between York and Darlington, extending about a mile southward. On this land will be erected a siding, the largest in the world, where will be dealt with the whole of the main goods traffic on the system. Northallerton will not be able to contain the immense number of men who will be required to work this siding. The company therefore intend constructing a model village in which they will be housed. The plans already prepared provide for 500 houses.

THE foundation-stone was laid on the 30th ult. of the new Wesleyan chapel which is in course of erection at Staveley on a conveniently situated central site on the main road to Chesterfield. Messrs. Gordon & Gunton, London, are the architects, and Messrs. Lee & Kirk, Alfreton, the builders.

The church is to accommodate 506 worshippers, and Sunday school, which will be added in the future, will provide room for a large number of scholars. The church will be erected in the Gothic style, of pressed bricks fired and treated with Bath stone dressings, which will be used for arches, windows and traceries. The ground plan is cruciform with nave, transepts, apse and vestries. The windows will be glazed with coloured cathedral glass, and the seating is to be of pitch pine. The floor will be of solid blocks, and a waggon-headed roof will be covered with green slates.

EARLY on Saturday morning a man named George Walker, aged forty, married, and residing at 134 North Street, Glasgow, met with his death under distressing circumstances. The deceased, who was a slater by trade, was working along with another man named James Stewart, a foreman slater, of 42 Hutcheson Square, on a swing scaffold, erected about 40 feet from the ground in front of the Wellington Commercial Road. Adjoining the one on which Walker and Stewart were standing was a disused scaffold, which the foreman ordered to be removed. In order to loose the ropes which secured the pulleys two men had to go inside the building, and as the ropes connected with the used and disused scaffolds were only 6 feet apart, one of the men unfortunately loosened the wrong rope, with the result that the scaffold on which Walker and Stewart were working canted. Walker fell to the ground and was killed instantly, whilst Stewart managed to get hold of a rope, and escaped with a slight bruise on his shoulder and severe shock. A medical examination of the body of the deceased man showed that death was due to fracture of the skull.

PLANS have been prepared and passed for the erection of a new school in connection with the Wesleyan chapel, Kimberworth, near Rotherham. The arrangement consists of a central hall 59 feet long by 29 feet wide, with classrooms opening direct into it on either side, having glazed screens between with lifting sashes. Separate entrances are provided for boys, girls and infants. The infants' classroom is 22 feet by 12 feet 6 inches, and is divided from the central hall by a folding glazed partition, the whole of which can be folded up, and the infants' room would then form a transept additional to the assembly hall. One classroom (or part of it) can be used as a minister's vestry, and has a lavatory, &c., and separate entrance adjoining. Storage for benches is also provided on the ground floor, which would be found handy for temporary removal of children's benches preparatory to chapel service.

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to make use of the great fall in the site a basement is at the front, which consists of a church parlour by 11 feet 6 inches, ladies' lavatory, also a kitchen, vault and coal place. A staircase communicates from ment to the floor above, but there are also separate from the road. It is proposed to heat the ground- ms with pipes and radiators on the hot-water low- system. Ventilation is secured by wall brackets and casements as inlets and extract roof-ventilators as A salt-glazed brick dado 4 feet 6 inches high runs central hall. The accommodation is as follows:— including the classrooms, about 480; or adults, classrooms but including transept, about 350. The Gothic. The front and portions of two side elevations special 2½-inch thick pressed bricks from Sha'ton, near the remaining elevations being of local bricks. The e-ration will also have Stoke Hall stone dressings and tiered windows. Mr. J. E. Knight, of Rotherham, is el ect.

VARIETIES.

village church has been opened at Gosberton near Spalding, by the Bishop of Lincoln. The new which has been built to accommodate 120 persons, of a nave, chancel and vestry. The cost of the building is £1,300. The architects were Messrs. W. Bucknall & J. r, of Westminster, and the contractor was Mr. Wm. St. Neots, Hunts.

richly carved figures of SS. Chad, Aidan and c, with their respective emblems, were fixed last week w church of St Chad, Bensham, Gateshead-on-Tyne, ers. Hicks & Charlewood, architects, Newcastle-on- two more figures over the porches were placed in on the new church at West Hartlepool. They were d and Aidan, the former being the patron saint of the. All the above were the work of Mr. G. W. Milburn, York.

SE of about an acre in extent has been secured, at a of £1,000, in Tyndall's Park, Bristol, for the new Baptist or the West of England. It is situated near to the rty College, at which the students take their arts end to Western (Congregational) College, where they me of the theological classes. The present building

at Stokes Croft is said to have been erected from plans originally designed for Dartmoor Prison.

A NEW police-station which has been erected in Mill Street, Bradford, Manchester, was opened on the 1st inst. The station has cost 25,000/., and will take the place of the old headquarters of the C Division in Fairfield Street, as well as of several sub-stations. The building contains separate departments for police and firemen, together with housing accommodation for several men of both forces. In the police department there are thirteen cells, and these, like the rest of the building, are lighted by electricity. The fire department at the corner of Mill Street and Rhyl Street has been arranged on most modern lines, with open stalls for the horses on either side of the engine-house, and sliding poles from the men's quarters on the floor above. The new station contains a section of the Horse Ambulance Corps.

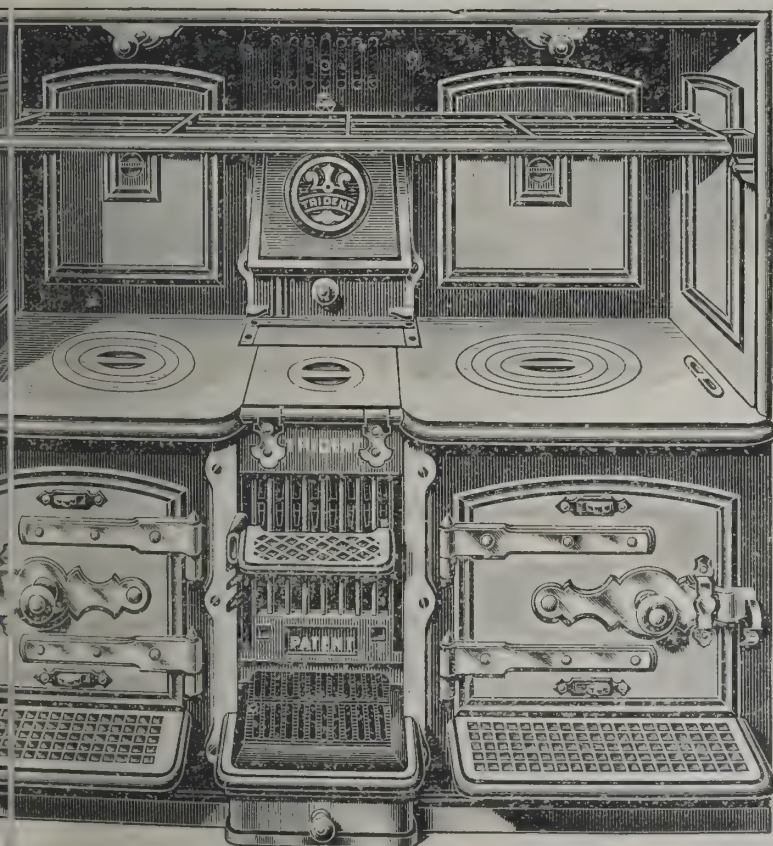
ELECTRIC NOTES.

THE Belfast City Council have unanimously approved a scheme for the purchase and electrification of the tramway system of Belfast submitted by a London civil engineer expert at a cost of close upon a million pounds, including the purchase price from the owning company. It was also decided to promote a Bill in Parliament for the purpose of acquiring the undertaking.

THE Bexley Urban Council's electric-lighting and tramway schemes have now been completed. About 100,000/ has been expended on the scheme. There are 5½ miles of tramways. They extend from the terminus of the Woolwich and South-East London tramway at Plumstead, and traverse the old Dover Road through Bexley Heath to the Dartford Rural Council's boundary, and branch off to the left to the boundary of Erith parish, thus supplying connections for future tramways in these two directions.

A REVOLUTION in the method of producing electricity is promised by Mr. Edison. If all that is claimed for it proves to be justified it will mean a triumph of electricity over petroleum as the motor force of automobiles, and it will also be a wonderful jump forward wherever electricity is required for lighting or driving power. The invention consists in the discovery of a substance not hitherto used in the generation of electricity. Three pounds of it are said to be sufficient to secure enough electricity to light a house or run an automobile for a day, at a

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less cost than petroleum. To produce this amount of power for the light mentioned or to run the automobile Mr. Edison has invented a generator, costing 90%, with a base 6 feet square and 5 feet high, rather too cumbersome for automobiles.

THE Inverness Town Council have resolved to accept the offer of Edmundson's Electricity Corporation, Ltd., to establish and carry on the lighting of the town by electricity. The company has agreed to repay the costs incurred in connection with the provisional order, and they will have the option of terminating the permanent lease by giving twelve months' notice at the end of seven years, or the end of any subsequent term of seven years, the price to be paid by the Town Council to be the capital expended by the company with the addition of 15 per cent., and of a sum sufficient to make up profits to 5 per cent. per annum. The works must be completed within twelve months from date of lease. The company will adopt the system of free wiring. The Town Council selected the offer on the recommendation of Messrs. Buchan & Hogarth, consulting electrical engineers, Edinburgh. At the same meeting Mr. John F. Smith, Wolverhampton, was appointed borough surveyor.

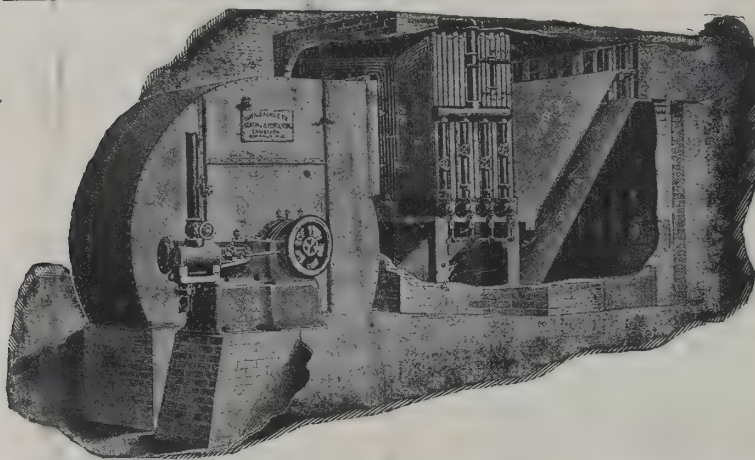
AN experimental test of the Brighton Corporation's telephone system, upon which about 45,000% is being expended, took place on Monday, when the mayor (Mr. Alderman Buckwell) opened the exchange by ringing up and conversing with a number of the subscribers. Everything worked satisfactorily, and good wishes were expressed for the success of the undertaking. The area covered by the license extends to Burgess Hill on the north, Shoreham and Steyning on the west and Rottingdean on the east, and the subscription of 5% 10s. per annum for unlimited service covers the whole area, without extra charge, while subscribers may also speak to any other town in the United Kingdom over the Post Office trunk wires on payment of the usual fees. Up to the present, 25 miles of duct have been laid within the borough of Brighton, and the work of laying ducts within the borough of Hove and of connecting subscribers is rapidly approaching completion. The cable drawn into the ducts commences at the exchange at the Royal Pavilion with 626 wires, and extends to the borough boundary on all sides, gradually diminishing, as connections are made with subscribers' premises, to twelve wires at the extremities. The instruments, which are of elegant design and bear the borough arms, are a combination of the latest devices for giving an excellent service with a minimum of trouble to the subscribers. All that is required for a subscriber

to call the attention of the operator is to lift the 'phone rest, and when conversation is finished the replacement 'phone gives the clearing signal automatically. The board is at present fitted for 1,000 subscribers, with an ultimate capacity of 5,000, and the number of applications already considerably exceeded 1,000, the work of extending the board is to be proceeded with at once.

THE FIRST GARDEN CITY.

THE Garden City scheme seems to be at last in a fair way of being carried to a successful issue, a company having been formed bearing the title First Garden City, Ltd., with a capital of 300,000%, in 59,400 ordinary shares of 5% each at 10s. each, and 10,000 preference shares of 1% each. The board of directors is an eminently practical one, numbering among its members some of the most experienced men as Mr. Edward Cadbury, of Bourneville, Mr. W. H. Lever, of Port Sunlight, whose experience in some of the most important directions have been so singularly successful. The company has acquired an estate of 3,800 acres and a beautiful pastoral scenery for which Hertfordshire is famous, and to this picturesque spot they propose to attract manufacturers and large employers of labour whose factories and workshops are to be built alongside the railway which intersects the estate. In handy proximity to these, houses for the workers are to be erected, and in order to prevent overcrowding only one house is to be allowed to the acre; in a widening circle residence of a better class will arise, and the outskirts of the estate are to be reserved for agriculture.

The cost of the estate, which is close to Hitchin and 35 miles of London, is 150,000%. The estate is traversed not only by important highways (and new roads will be built where necessary), but for a distance of two and a half miles the Great Northern Railway from London to Cambridge, and it is within one and a half miles of the Great Northern line from London to the north, and of the Midland line from Bedford to Hitchin. The Great Northern Railway Company is prepared to give the company facilities for starting a scheme, and has already erected a station at Letwell in the centre of the estate, which is also fairly near to the Midland and Great Eastern Railways. It is estimated that goods can be taken cheaply to London by road. There are 52 trains per day to and from London, and Hitchin, a number of which take only 42 minutes in the journey.



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ed that the site is peculiarly suitable for manufac-
arry on their business in, at the same time giving
ines and surroundings to a number of employes, while
is would reap the benefit of having such a colony in
The manufacturer will also be able to draw to
on the local supply of labour, for there is a popula-
20,000 within three miles of the site. In order to
ufacturers—with whom negotiations are proceeding
ement is held out of an abundance of water and
ve-power, as an installation of power gas for the
o of electricity for power as well as for lighting will

BUILDINGS AND ROADS.

ing clauses are in the draft of the Bill to Amend
the Administration of Highways prepared by Mr.
awson, M.P., chairman of the Departmental Com-
Highways:—

land fronting, adjoining or abutting on any main
art of any main road, repairable by the county
in process of being, or is about to be developed for
urposes, and an addition to such road is required in
ake it adequate for the probable increase of traffic,
council may resolve to level, pave or metal, channel
good such addition, and may apportion the expenses
them in so doing on the owners of the land front-
ing or abutting on such addition or part thereof,
to their respective frontages, with power to recover
ses, either summarily or by action, in any court of
jurisdiction.

ounty council may from time to time make by-laws
whole or any part of their county with respect to:—
line of new buildings to be erected on any land
 adjoining or abutting on any main road repairable by
at council.

level and width of any such main road wherever
ing, adjoining or abutting thereon is in process of
about to be developed for building purposes.

visions of sections 157, 158 and 159, and of sections
of the Public Health Act, 1875, shall, so far as
and with any necessary modifications, extend and
ch by-laws.

erson who sustains any damage, by reason of the

operation of such by-law as affecting his property, shall be
entitled to compensation, to be paid by the county council, and
any dispute as to the fact of damage or amount of compensa-
tion shall, in case of difference, be settled by arbitration.

In the case of houses and buildings situate in or abutting on
any main road repairable by the county council, the county
council shall have and may exercise and perform all the powers
and duties which an urban district council have and can
exercise and perform under section 155 of the Public Health
(Buildings in Streets) Act, 1888; and those sections shall in
such cases be read and have effect accordingly, whether the
main road is, or is not, situate in an urban district.

Provided that the county council shall not exercise the
powers hereby conferred in any case where the district council
have already put in force their powers under the above-
mentioned sections in respect of such houses and buildings.

URALITE.

THE British Uralite Company, Ltd, of 50 Cannon Street, are
issuing a handsomely got up illustrated booklet containing a
number of views of buildings in the construction of which Uralite
has been largely employed. Of the value of Uralite as a fire-re-
sisting building material we have already had several occasions to
write. The scope of its applicability appears, however, to be
constantly widening out, and we are informed that for
engineers it is useful in several directions. Fireproof washers
can be made from it which are excellent for joints subject to
high pressure. Being a non-conductor it is valuable for boiler
covering and for locomotive boiler lagging, economising steam
and preventing the heat from escaping to the outer steel casing,
preventing blistering of paint and varnish, and adding to the
life of the machinery. For insulating cold-storage chambers
its fireproof, non-conducting and vermin-resisting properties are
of great importance. By the application of Uralite the thick-
ness of the insulation necessary is reduced, and on board ship
a saving in weight is effected, a saving of time occupied in con-
struction, and additional cargo space is obtained. Every square
foot of timber which can be dispensed with on board ship
means that there is a greater factor of safety for both crew and
passengers, and reduced chance of serious conflagrations.
Uralite, on these grounds, is worthy of the attention of the
shipbuilder, the shipowner and the underwriter.

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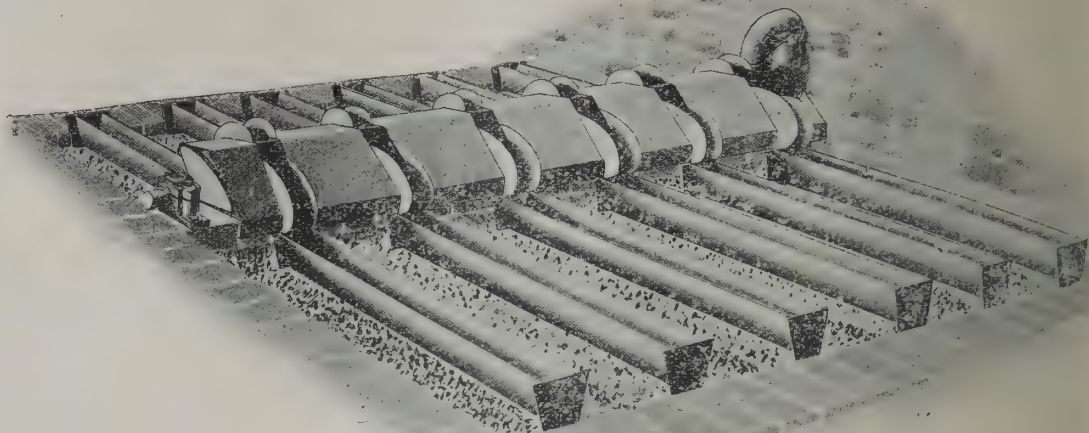
A NEW SEWAGE DISTRIBUTOR.

ONE of the greatest difficulties in connection with sewage disposal for small installations is that of getting even distribution over the whole bed, and this difficulty seems to have been grappled with successfully in an apparatus which has been brought before our notice, viz. that of Mr. William E. Farrer, of Star Works, Cambridge Street, Birmingham.

The apparatus consists of an automatic tipper throwing

In the case of the apparatus now under discussion, difficulty has been entirely avoided, and the size of the tipper is accurately gauged, so that the channels are always evenly charged, and the amount of head in the channel is such that the whole bed is successively sprayed.

Another point is that the section of the channels is such that it insures their being entirely drained after each successive charge. Experience has proved that with this apparatus the bed is never overdosed at one period of its working and so



alternately on to the two halves of the bed, the great point about it being that until the necessary amount of sewage has been collected to cover the whole of one side of the bed, it will not commence to work. As our readers are aware, with only too many of the automatic sprinklers the trouble lies in the fact that unless they obtain a maximum supply of sewage matter, the sprinkler ceases to revolve, and the sewage trickles on to one part of the bed.

another, the distribution being always equal, thus insuring a good effluent. As will be seen from the illustration, the apparatus is a simple one, and is not likely to get out of order, nor does it require much attention. The whole thing is easily adjusted, and any part of it may be readily taken apart should occasion require.

We can, then, confidently recommend Mr. Farrer's apparatus to the critical consideration of our readers.



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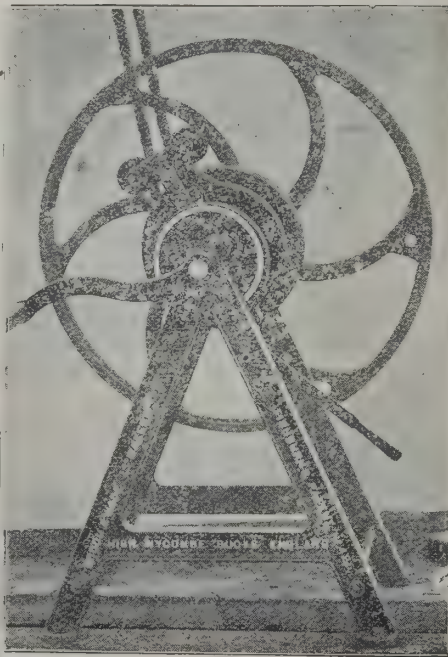
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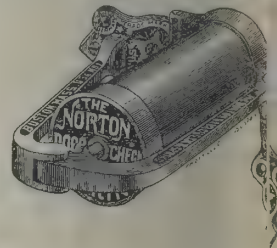
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THE MARLBOROUGH THEATRE.
 A beautiful new theatre which has been erected in the Road was opened on Monday evening, and at once amongst the handsomest and most commodious the Metropolis. Mr. F. W. Purcell, already favoured to North Londoners as the enterprising proprietor of the Alexandra Theatre in Stoke Newington, is also the new theatre, which has been erected from the Mr. Frank Matcham, and visitors will be at once the air of spaciousness which pervades the interior, constructed to seat no less than 3,000 persons, and have a perfectly unobstructed view of every portion of the stage. Another noticeable feature is the abundance of the exits, the provision of which, the the site, which is on all sides isolated, has greatly the frontage of the building is set back from the this space is laid out with a carriage approach to the doors, the centre being occupied with a shrubbery and with railings and piers.
 The elevation towards Holloway Road is carried out in bold of French Renaissance style, it is faced with dark with buff terra-cotta dressings and ornamentation; the centre entry doors devoted to the patrons of the stalls is an arched balcony with curved balustrading, the doors open from the dress circle saloon, and over a loggia is formed from the upper circle saloon surmounted by a large gable containing a female figure of the attendant boy figures, the whole surmounted by a dome. The entrance vestibule is treated in Jacobean a geometrical moulded ceiling and ornamented drops of lamps hanging from each of these; a deep ornate is formed around the walls above a high panelled dado. On each side of the staircase columns support a coffered arch over the main the panelled mahogany dado is carried up the and leads to a beautiful Louis XV. foyer with fibrous plaster dome-shaped ceiling with various light pendants hanging from special positions, and the walls filled in with gold lustrette. The side with white and black marble, and a marble leads to the dress circle. From the foyer four lead to the dress circle seating, two opening into the galleries and two at the sides, where handsome open arcading and balustrading divide those entering the those seated in the dress circle. The upper circle

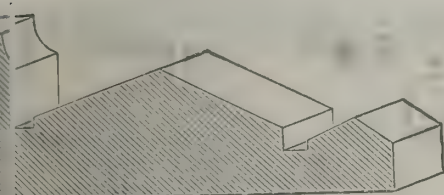
is set back from the dress circle, but raised sufficiently high as to constitute a separate tier; there are eight rows of velvet upholstered seats with a wide promenade at the rear. The gallery is an immense one, the sight lines being perfect; the walls are lined with glazed brick, the ceiling is lofty, and there is a large lantern light over a great part of the gallery, giving light and ventilation. The safety of the public has had every consideration. The whole theatre is built of fireproof material, hydrants fully equipped abound throughout the building, there is a fireproof curtain dividing the auditorium from the stage, and the exits are numerous, and no long tortuous passages are formed, everyone having a clear way to and from their seats.

In the decorations and furnishings Mr. Matcham has very effectively adopted the up-to-date style of *L'Art Nouveau*. It is finished in tints of cream and gold throughout with the exception of the ceiling, in which a remarkably beautiful effect is obtained by an indefinitely outlined treatment in blue, which, with the electric lights with which it is studded, produces a summer-skylike effect which is as original as it is pleasing. The hangings and upholstery are in a rich shade of copper velvet, with touches of dark green appliqué. The stage measures 43 feet by 76 feet and 56 feet to the grid, and is capable of staging the largest productions.

Messrs. Patman & Fotheringham were the general contractors and were also responsible for the ornamental woodwork; expanded metal (the New Expanded Metal Company) was used for ceilings, arches, &c., throughout; heating and fire-hydrants were by Messrs. Oldroyd & Co.; Messrs. Blackburn & Starling carried out the electric lighting, for which the very effective fittings were supplied by Messrs. Osler; the Fibrous Plaster and decorations were by Messrs. F. De Jong & Co.; the carpets, draperies and furnishing by Messrs. Maple & Co.; the seats, in which an ingenious improvement was noticeable, were supplied by Messrs. Lazarus & Co.; and the lead-lights and ornamental glazing were executed by Messrs. Pepper & Co.

SUNDERLAND HARBOUR OF REFUGE.

THE conclusion of an important undertaking of the River Wear Commissioners was signalled recently, when, to record the completion of the Roker Pier, a large polished block of black granite was placed in position in the lighthouse at the extremity of the pier by the Earl of Durham, Lord-Lieutenant of the county. This great scheme, which has been



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carried out at a cost of over half a million sterling, was inaugurated eighteen years ago. The scheme embraces the construction of two enormously strong piers of granite and concrete on the north and south sides of the river, which will render safe the entrance of vessels in any kind of weather, and also form a splendid harbour of refuge which will not be equalled on the north-east coast of England. The immense granite and concrete blocks, weighing up to 56 tons, used in the building of the piers have been constructed at works belonging to the Commissioners, where they have been placed upon waggons by a Goliath crane, and then lifted into position at the Roker Pier by means of a 60-ton hydraulic radial crane. The length of the pier just completed is 2,800 feet, and the new pier in course of construction on the south side of the river will be 2,844 feet in length, of which 2,299 feet have been constructed. The width of the Roker Pier is 35 feet for a distance of 2,000 feet out, and for the remainder it is 41 feet. The height of the pier above high water is 10 feet. At the extreme end of the pier an enormous round head has been constructed on a foundation 40 feet below low water, and rising to a height of 18 feet above the level of high water, the total height of the structure being 72 feet 6 inches. It rests upon a caisson 101 feet long by 69 feet wide, which, when sunk into position, was filled with 10,000 tons of concrete. The lighthouse erected upon this structure is of red and white granite, and rises to a height of 54½ feet, its diameter at the bottom being 31 feet, gradually reduced to 16 feet at the summit, and the lantern has a diameter of 10 feet. The light, it is said, will be the most powerful port light in the kingdom and the quickest flashing light; its focal plane is 83 feet 6 inches above high water.

VENTILATION OF TUBE RAILWAYS.

FROM the paper which was read by Mr. J. W. Thomas before the British Association, the ventilation of tube railways is quite practical, for the forces brought into play by the moving trains and the natural heat of the tubes will be ample if properly directed. According to him, in tube railways, if B is the centre of three stations, the down train moving from A to B will draw air from the A station into the tube, and expel it in the B station, and the up train moving from C to B will draw air from the C station into the tube and expel it in the B station. Three stations are thus directly involved, and a triple-station arrangement will best fulfil the physical conditions. Owing to

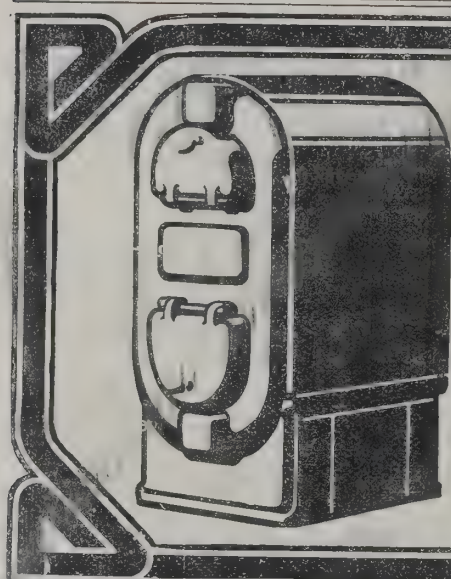
the elasticity of air the outlets for expelling the vitiated sphere must not be situated far from the points of compression, and should begin in the centre of each station underground, and end in the open air above the station surface. For the same reason the intakes for fresh air should be close to the points where the sudden expansion of the air begins. These points are at the ends of the tubes where the moving trains enter. Doors can be fixed at the ends of the two tubes which the trains enter in each station, and closed behind the last trains at night, so that the fresh air will be driven into the end of the tube immediately beyond the station. The drive out the foul air into the next station by natural pressure. The providing of fresh air inlets inside the tubes, the tubes which the trains enter, with an outlet shaft at the centre of each station, will enable the moving trains to draw in and expel enough air to keep the atmosphere in each station in good condition, even in hot summer weather. In addition to this, however, there are two auxiliary aids to ventilation which the stationmasters to make certain that the state of the atmosphere in the tubes is satisfactory. 1. Having inlets at the ends of the tubes as above, the timing of the departure of the up and down trains as they move towards the same station will draw enormous volumes of air to be driven to the surface, the corresponding volume will be drawn in. 2. By closing the doors after some of the trains as they leave the station, the air must be drawn into the tubes. As the sectional area of the Central London Railway is rather limited, it should be difficult to carry out arrangements similar to those suggested by Mr. Thomas, but temporarily. The air in the sections could be tested, and if any improvement was required, then more permanent arrangements could be introduced.

SOCIETY OF ENGINEERS.

A VERY interesting visit was made by the president (Mr. Patten Barber) and members of the Society of Engineers on Wednesday, September 23, to the electricity generating station and one of the baths and washhouses at Islington, under the kind permission of the Islington Borough Council.

The Electricity Works.

These works are situated in Eden Grove, Holloway, on the south side of the Great Northern Railway, and in a position practically the electrical centre of gravity of the district. The system adopted for supply is high-tension alternating current, with street tank transformers as sub-stations.



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works consist of a range of buildings comprising boiler-house, double-bayed engine-room, old boiler-houses, workshops and auxiliary plant-room, yard and cooling tower. The offices have been sited to come between the works and the Catholic church of St. Red Heart, which lies south-east of the works and is reached by a rail-borne, and delivered on a private siding from the Northern main line. The siding is continued through the works, and by means of permanent ways over the coal and both boiler-houses; railway waggons can be lifted directly into the bunkers, a special tipping gear being provided for the purpose. The boiler-houses are excavated so that the firing floor is 10 feet below ground level. They contain (old boiler-houses) Babcock and eight Lancashire, and (new boiler-houses) Babcock boilers of the following sizes:—

Lancashire Boilers.

No. of Flues.	Grate Area.	Normal Evaporation in lbs. Water at and from 212 degs. Fahr. per hour.
2	33 sq. ft.	About 6,000 lbs.

Babcock.

	Number of Tubes.	Diameter of each Tube.	Heating Surface.	Grate Area.	Normal Evap- oration in lbs. Water at and from 212° F. per hour.
		Inches.	Sq. feet.	Sq. feet.	lbs.
id 2	72	4	1,624	30½	5,500
d 12	81	4	1,827	33½	6,500
o 22	252	4	5,540	76	16,000

steam pipes are arranged so that the boilers are direct to the engines, and by means of an equalising boiler can be connected to any engine, or the whole can be run together. By this means the large steam rings favoured in electricity works have been avoided, and heat losses reduced. The engines consist of the following:—Wheellock cross-

coupled compound, run at 95 revolutions, with a steam-chest pressure of 125 lbs. to 150 lbs. per square inch:—

No.	Horse Power.	Kilowatt Capacity of Alternator.	Maker of Alternator.	Method of Connection.
2	250	125	Fowler	Rope driven
1	250	125	Fowler	Direct coupled
1	250	125	Ferranti	"
3	500	300	Ferranti	"
3	1,000	600	Ferranti	"

There is also a combined engine-driven motor generator, consisting of Reavell high-speed 80 horse-power engine, Crompton 40 k.w. high-pressure alternator, and Crompton 20 k.w. dynamo used for charging cells and day plant.

The switchboard is situated on a gallery which is extended across a portion of the width of the engine-rooms at one end, and along the engine-room down the centre so as to command a view of every part.

The high-tension machine board is a fourteen-panel Ferranti 500 ampere board, split in halves, with the usual regulating gear instruments, fuses and synchronisers. On either side are the circuit boards of the Fowler plug pattern, and on the extension gallery is the arc circuit switchboard by Cowan's, Ltd.

The alternators are run in parallel upon bus bars, and the rule adopted is that speed is adjusted for frequency, steam is adjusted for load and excitation is adjusted for volts.

For street arc lighting there are five 30-light and three 50-light rectifiers, with two boards, one of the 1895 and one of the 1902 pattern by Ferranti, and five alternating series constant current transformers.

The street lighting now consists of 473 lamps made up as follows:—Four circuits with a maximum of thirty lamps each, twelve amperes rectified; two circuits with a maximum of fifty lamps each, ten amperes rectified; six circuits with a maximum of thirty lamps each, high-tension constant pressure alternating with transformers in base of each lamp-post for the individual lamp; four circuits with a maximum of thirty lamps, constant current series alternating with compensators in the series circuit, and across which the lamps are connected. For side-street lighting experiments have been made with the Reason Company's, the Improved Electric Glow Lamp Company's and Nernst fittings.

Warehouses, Race Stables, and Private Houses.



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ESTIMATES GIVEN
ON RECEIPT OF PLANS.

QUOTATIONS FOR CASTINGS.

The distributing system in the past has consisted of cast-iron pipes containing double concentric rubber insulated steel-armoured cables as high-pressure feeders and distributors, also vulcanised indiarubber double concentric steel-armoured cables drawn into 3-inch earthenware pipes. Extensions are now being laid with paper insulated twin arc cables, double concentric paper insulated high-tension feeders and triple concentric paper insulated low-tension distributors, all laid on the solid system.

The meters in use are Chamberlain & Hookham, Hummell, Guttman, Westinghouse, British Thomson-Houston, Aron, Stanley; and Reason demand indicators are fitted where the sliding-scale method of charging is adopted.

The Baths and Washhouses.

The Hornsey Road baths and washhouses are the largest of the three establishments under the control of the Islington Borough Council. They were designed by Mr. A. Hessel Tiltman, F.R.I.B.A., and were opened in 1892; they were enlarged in 1899, and now consist of:—

Men's 1st-class swimming-bath, 132 feet by 40 feet.

Men's 2nd-class swimming-bath, 100 feet by 35 feet.

Women's 1st-class swimming-bath, 75 feet by 25 feet.

Women's 2nd-class swimming-bath, 75 feet by 25 feet.

36 men's 1st-class slipper-baths.

72 men's 2nd-class slipper-baths.

10 women's 1st-class slipper-baths.

27 women's 2nd-class slipper-baths.

The public washhouse contains 49 washing troughs and 4 hydros, and is fitted with 50 drying-horses heated by steam. Immediately adjoining the washhouses is the mangling and ironing-room. The establishment washhouse is fitted with one rotary washing-machine and two hydros, the towels being dried in a room heated by steam. The whole of the fittings in the washhouses and mangling and ironing-rooms were manufactured and supplied by Messrs. Bradford & Co., Crescent Iron Works, Manchester.

The water supplied to the swimming-baths is heated on its way thereto by the injection of steam into the water main at two points. The original method of heating the water for the slipper baths has been abandoned, and it is now heated in two large cylinders by passing steam through pipes placed in the cylinders, the steam having first been used for heating the drying-horses in the public washhouse. Steam can also be

supplied direct from the boilers for heating the water in cylinders.

A portion of the water used in the establishment is from two boreholes in the engine-room, each borehole 13 inches in internal diameter and 450 feet deep, the water in each boring being lined with 8-inch steel tubes, the chalk being reached at a depth of 200 feet from the surface. The water has the characteristics of a good water, and is fit for drinking purposes. It rises in holes to a height of 165 feet from the surface and has a temperature of 55 degs. Fahr. The total yield from the holes is about 14,000 gallons of water per hour.

Pumps, 9 inches in internal diameter, are fixed in the holes with the bottoms of the working barrels 270 feet from the surface, the pumps being worked by a pair of 10-horsepower 20-inches Marshall's "K" class horizontal, single-cylinder condensing engines, and may be worked singly if required.

The water is pumped through a 9-inch main to the establishment laundry, where it is heated by a boiler at about 70 deg. Fahr., the water then being delivered by a pump where required. Water is also pumped through a 9-inch main to a tank over the board-room for use as cold water for the slipper baths. At present there is insufficient capacity for the water required, so that the pump is intermittent, the supply being supplemented by water from the New River Company's main. A scheme for obtaining sufficient water for all purposes is under consideration by the Council, and if adopted will enable the entire supply to be obtained from the boreholes.

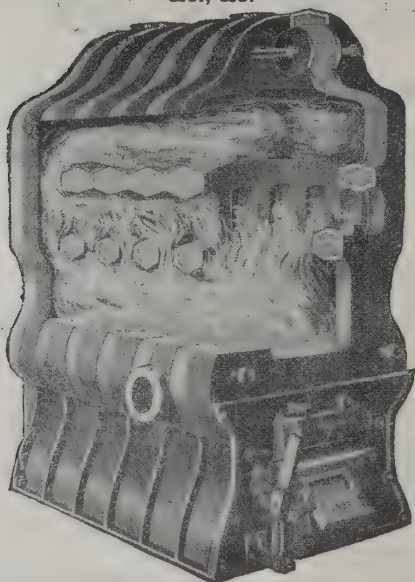
The steam required for driving the engines and for other purposes is obtained from two Lancashire and two Babcock & Wilcox boilers, all condensed steam being collected and again in the boilers with the exception of that from the Lancashire which is raised by an injector and discharged into the condenser. At present there is no means provided for removing the steam.

Electricity is used throughout for lighting the buildings, being generated by three dynamos manufactured by the Electric Construction Company, Wolverhampton. The power for working the dynamos is also obtained from the Lancashire mentioned boilers. The buildings are heated by means of water pipes and radiators.

The entire cost of the buildings and equipment was about £280,000, and since the opening they have been used by about 1,000 bathers and washers, the attendance for the year ending 1902 being about 280,000.

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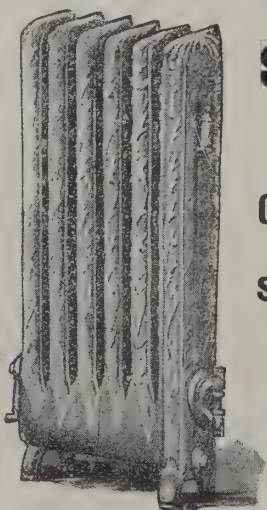
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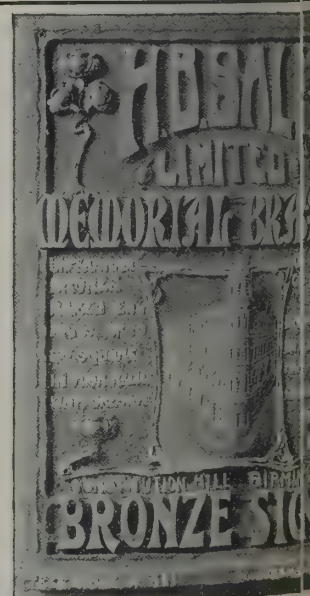
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RAILWAY DEVELOPMENT IN IRELAND.

tors of the Great Northern Railway Company, an extraordinary meeting of the proprietors convened at 11, Henrietta Street, Dublin, on Tuesday, October 6, passed resolutions authorising that company under the powers conferred upon them by the Castleblayney, Keady and Banagher Railway Extension of Time Act, 1903, to subscribe to the necessary capital, namely, 350,000*l.*, for the construction of the Castleblayney, Keady and Armagh Railway, which will be proceeded with.

for the construction of a line from Drogheda to Banagher in connection with the steam-packet service to that place, and the Lancashire and Yorkshire Railway, was discussed at a session of Parliament, the capital for which is

the engineer for both these lines is Sir Benjamin Baker, Bt., and the contracts for construction, amounting to 1,000,000*l.*, have been placed in the hands of Mr. Robert Gordon, J.P., of Dublin.

GERMAN AND LONDON HOUSING.

German, thirty-seven in number, who are now in London, have come on a twelve-days' visit to England to study the British methods of housing the working classes. These gentlemen have which tend to the welfare of the working classes belong to the German Central Department for the Propagation of the German Benefit Institutions, a body which was founded in 1890 on the suggestion of the then Prussian Minister of Commerce. This body is subsidised by the Governments of Prussia, the German Federal States and the Imperial and Prussian Governments, who have the right to be represented on the committee which forms the central point in Germany for all endeavours of the working classes outside dispositions by the Government. It does much good work by giving information, by publishing journals and periodicals, holding conferences and sending out journeys as the present one for the purpose of gathering information and suggestions from what is being done in other countries. The manager is the reporting councillor of the Prussian Ministry of Commerce. Speaking to a repre-

sentative of the *Manchester Guardian*, Dr. Von Erdberg, one of the leaders, said:—

We have among our party representatives of many working men's benefit societies in the different principal towns—Karlsruhe, Düsseldorf, Dresden, Altenburg, Frankfurt, Hanover, Bremen, Berlin, and others. With us also is the Burgomaster of Charlottenburg and the Senator of Bremen, one of the three burgomasters in Germany—those of Bremen, Hamburg and Lübeck—who as chief citizens hold that title. We have with us, too, Herr Schmohl, the housing expert for Messrs. Krupp at Essen; some high officials sent by the governments, and some manufacturers. It may interest you to know that, though in no way chosen as delegates on that account, no fewer than fifteen of our party hold the University degree of doctor. We return on October 6. So far we have visited some of the slums of Whitechapel, the wonderful Rowton House there, the most excellent blocks of dwellings built by the London County Council on the Boundary Street estate, the Stepney workhouse, the German Seamen's Home in Mile End Road, the lodging-houses and clubs at the Red House, Commercial Road, and the Victoria Temperance Homes in Commercial Street, the Bethnal Green Museum, and the "Mansfield House" settlement in Canning Town.

What we have been most struck with so far has been the Rowton House at Whitechapel. We were amazed at its completeness and its perfection, the care bestowed on details, its superb cleanness and its inspiring determination that everything about it should be beautiful. There is nothing like it in Germany, and we shall endeavour to imitate it on our return. We have only the lodging-houses and refuges established by religious societies. With them the charges are less than at the Rowton House, but they are charities, and there are no beautiful common-rooms, recreation and reading-rooms. We were much delighted to hear Sir Richard Farrant tell us that these noble houses, so superbly built and so lavish in space and other accommodation, have proved to be possible on a commercial basis, and will pay 4½ per cent. interest. Ground with us is cheaper, and we anticipate no difficulty in following Lord Rowton's fine example. We have seen nothing that could do more hopeful work in lifting men and keeping them from sinking into the lower stages of poverty. Our only difficulty would be that with us they would be seized by the thrifty. I think the Rowton House a living monument, showing how excellently the poor can live with proper common management. We shall have an advantage in this, that our working men's societies,

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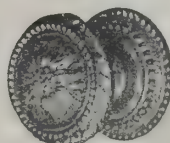
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once assured that these buildings will return 4 to 5 per cent, will consider them a sound investment.

I have been struck by this, that we find none of your working men's societies building dwellings. With us we do that. We admired the County Council dwellings at Boundary Street, but chiefly on account of the change that had been effected and for certain details, such as the bath for each tenement. But we are surprised at the number of one-room tenements you have. We have very seldom such a tenement. Ours are two rooms and a kitchen and three rooms and a kitchen chiefly, and the rooms—at any rate, one room if not all—in each tenement are larger than yours. Then, too, we have common libraries and reading-rooms, and recreation-rooms for the children, for the use of all the tenants. We, however, generally have only one bath-house for every twenty families. That is not quite so good, but then we supply the hot water for all at all hours of the day, which is better. Our rents, too, are cheaper than yours. With us the working men's societies build for, say, a thousand families. That is very good, for in a way most of the tenants feel that they are their own landlords, and they take great care of their rooms. But men with us, I think, pay much less in rent in proportion to their earnings than is paid by your working classes. A German workman earning 2*l.* 6*s.* a week would not pay more than 5*s.* a week, or at the highest 7*s.* 6*d.* a week for rent, taking an average of the dearer and cheaper towns. Yours would have to pay up to 12*s.* 6*d.* a week, or even 13*s.*, I am told.

We have been surprised at the magnificent width of your East End streets, and still more astounded when told that some of those grand thoroughfares were slums. Why does not your Parliament interfere? There are such opportunities. Your charitable efforts are equally amazing—but your working classes do not attempt to help themselves as ours do.

MODERN SEWAGE TREATMENT.

A PROVINCIAL sessional meeting of the Sanitary Institute took place in Birmingham recently. In the morning a number of the members visited the new crematorium near Perry Village, which Sir Henry Thompson, Bart., is to publicly open in a few days. Mr. Murray N. Phelps (hon. secretary) and Mr. J. E. Willcox (engineer) were present, and under their direction the visitors inspected the building and appliances and witnessed a practical demonstration of the methods. Later in

the medical lecture theatre of the University, a conference held under the presidency of Dr. Alfred Hill. The subject of the discussion, as reported in the *Birmingham Daily Post*, was "Some Practical Considerations in Connection with Modern Methods of Treating Sewage." In opening the proceedings the chairman dwelt on the importance of the subject. It was important to the health of the community, and it was important particularly as regards the command of land on which to treat sewage. To obtain such land was by no means an easy matter. There was no land available which was unsuitable, or there might be no land available. In such cases the bacterial system was of timely assistance. He remembered thirty years ago the condition of the Birmingham sewage farm. He was consulted in the earliest days of his office as medical officer, and it was considered necessary to improve the conditions of the sewage farm. Those conditions were of the most deplorable. Nothing was done but to run the crude sewage through a filter where all that "chose to subside" did so, and the rest was pumped to the river, while the sludge and detritus had to be taken to the river. It covered five or six acres of land a couple of years ago. They might imagine what a nuisance that was. They might that day see what had been done under the present system; how much the condition of the farm had been improved. They would see much to admire in the improvements which the improvements had been carried out by Mr. W. From what he could hear the Birmingham farm would bear comparison with any similar institution throughout the country. What struck most persons who did not work on the subject was the marvellous discovery that they could by simple means deal with such a problem. There was nothing new under the sun. Nature had been carrying on the process under their noses through all time, but men had not been observant enough to see it nor clever enough to imitate why it was. The bacterial method furnished the explanation. They were simply imitating nature's own process, as far as they could make it altogether natural so much the better.

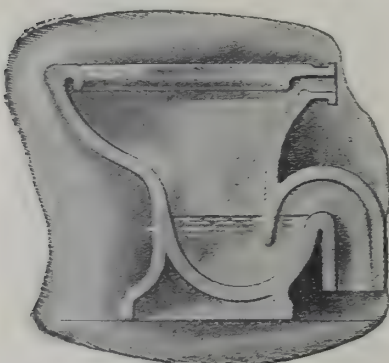
Professor Bostock Hill opened the discussion, practically with the remark that when they considered the condition of many of our rivers it was not surprising that they should possess interest. The modern systems of sewage treatment, which meant nothing but either treatment by or by bacterial means, had arisen through a proper understanding of nature's methods in removing waste matter from the soil. In connection with land treatment few

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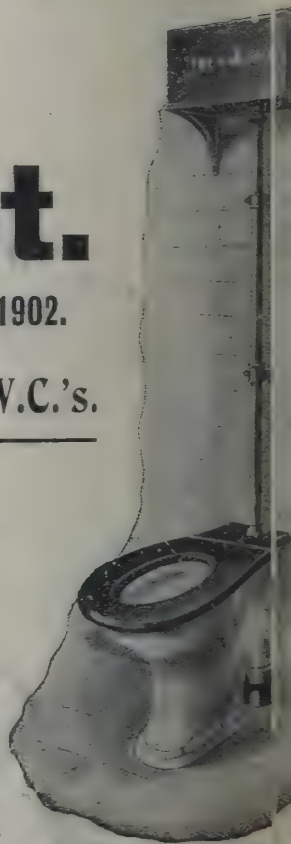
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had arisen of late. They knew that it was absolutely essential the proper sort of land could be obtained, and it was efficient in quantity. One of the greatest advances made by the utilisation of bacteriological methods in connection with land treatment instead of utilising precipitation was previously the case. The old idea of preliminary treatment had been abandoned. Although Birmingham and other towns sent down such large quantities of acid effluent, Mr. Watson had shown it possible to treat the effluent without any of the expense or trouble involved by lime or any form of precipitant. Turning to the methods proper, he remarked that, properly carried out, the method of dealing with sewage in large or small towns was a matter of scientific knowledge, it was a perfectly practical method for dealing with sewage in large or small towns. Dr. Hill reviewed the various methods of treatment and remarked that in considering which system was the best they had to bear in mind all the circumstances, the qualities of the sewage, the surroundings of the works, the fall of the land and the character of the effluent into which the effluent was to pass.

Mr. Willcox also read a paper. He remarked that the success largely depended upon overcoming the practical difficulties which arose in connection with the design and construction of the works, having regard to the special circumstances and conditions obtaining in each case. It was impossible to successfully treat all kinds of sewage by similar methods. He proceeded to show the importance of carefully considering the character and volume of the sewage, and then the methods of treatment, such as in tanks, screening, settling chambers, precipitation, sedimentation and filtration. He also discussed land treatment and the comparison which the best results are obtained; the design of materials for the construction of contact beds and filters. The importance of distribution and the design of filters were also considered.

The discussion which followed Dr. Read (Potteries) said he had found that Professor Hill and Mr. Willcox were in agreement in their opinion that filtration was better than contact. It was regrettable that they ever heard of contact. He thought they would probably have arrived at a better opinion of distribution than they had now. Many authorities were agreed in constructing contact beds, and he was afraid that one or two they would regret it.

Mr. Brook stated that in the experiments which he had made with the septic tank with continuous filtration was

coming out much the best. Contact had not reached the high standard which at one time was anticipated.

Mr. Lowcock expressed his pleasure in finding that opinion was coming round to the view that filtration was a great deal better than contact—an opinion which he had held for a number of years.

Mr. A. J. Martin defended the contact system.

Mr. Scott Montcrieff remarked that there was a general opinion abroad that land was the better method of treatment. Theoretically it might be, practically they were all agreed that nine-tenths of English land was unsuitable for carrying it out.

Dr. Barwise did not think a sufficiently vigorous protest had been made against the suggestion of the Royal Commission that sewage effluent should be bacteriologically treated. It was not the duty of the sanitary authority to turn its sewage into drinking water, but it was the duty of water companies and sanitary authorities providing water supplies to take their supplies from unimpeachable sources.

On the motion of Mr. J. T. Eayrs acting local hon. secretary a vote of thanks was passed to Dr. Hill for presiding. In the afternoon the members visited the works of the Tame and Rea District Drainage Board at Tyburn, where Mr. J. D. Watson, engineer, conducted them over the farm.

BAPTIST CHURCH AND SCHOOLS, BRIGHTON.

THE memorial-stones of this building were laid on September 16. The building is to be faced with whole white flints with red dressings, the seating to be in Orham wood wax polished; lead lights to all windows of quaint design; heating by low-pressure hot-water pipes and radiators; electric-light fittings of wrought-iron and copper; ventilation by means of an electric fan. Baptistry lined with white marble, candidates passing direct under pulpit into vestries. The accommodation will be for 443 adults on ground-floor, 282 in galleries, total 725, or a mixed congregation of over 800 persons. A bold central entrance leads to a vestibule and then on each side into inner lobbies and into the aisles of the church, with a glazed screen filled in with lead lights around the lobbies. The seating is arranged on a semicircular plan, each hearer directly facing the minister. The ceiling is domed to give the most perfect acoustic results. A gallery, somewhat of a

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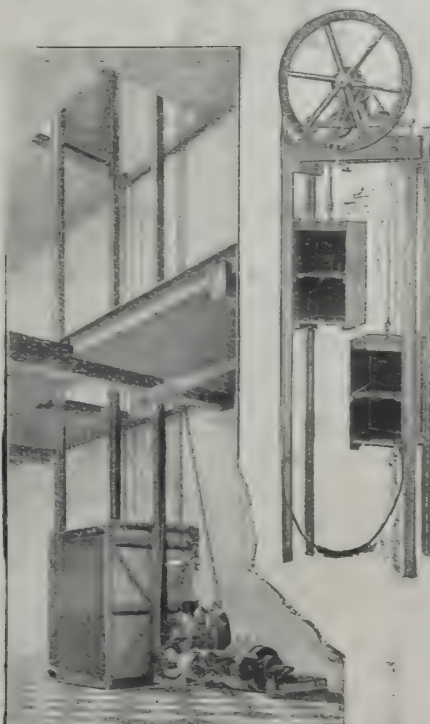
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Hoisting Engineers,
LEEDS.

horseshoe shape, affords accommodation for 241 persons and a choir-gallery for thirty-three behind the pulpit with a separate staircase.

The church will be lighted by handsome traceried windows of various designs. Three vestries are provided behind the pulpit. Two side entrances in the front elevation lead to staircases up to gallery, having fireproof steps and landings.

The schools are under the church, well lighted from three sides, and will contain accommodation for about 500 scholars in a large schoolroom, infants' room, church parlour and four classrooms, with kitchen, &c.

The church being placed between two rows of somewhat lofty houses necessitates a bold and vertical treatment, which is obtained by a broad gable in the centre, having a prominent portico leading to the church, and above this a handsome five-light traceried window with segmental head, and above it a traceried apex, spandrel and finial, and being flanked on one side by staircase, wing and turret, and on the other by a bold tower rising to a height of 58 feet above the pavement to the parapet, and terminated by a spire covered by oak shingles with wrought-iron vane, 93 feet to the top from the road level. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5 Clement's Inn, Strand, London, W.C. The builders are Messrs. Battley, Sons & Holness, 21 Old Kent Road, London, S.E. The present contract is for 5,381*l.*, exclusive of galleries (except choir-gallery).

NEW WORKHOUSE FOR HUNSLET.

HUNSLET Union's new workhouse, situated near the junction of Wood Lane and Wakefield Road, at Rothwell Haigh, was formally opened in the presence of a large gathering. The site of the new building comprises 18½ acres, which provides ample space for future extension, the present accommodation of the workhouse and infirmary being 450. Future extension is also provided for by the administrative portion of the buildings, stores, laundry, boiler-house, &c., having been designed large enough for a building twice the size. The buildings consist of six groups—the entrance block, main building, laundry and boiler-house, infirmary, lunacy building and isolation hospital. The main building, or workhouse proper, has the administrative block placed in the centre; and connected with this by glazed conservatory corridors are

the pavilions for the male and female aged and infirm classes, with the necessary day-rooms, &c.

The laundry, which forms a separate block, has been fitted with steam-power machinery in the most up-to-date manner. Messrs. W. Summerscales & Sons, Ltd., of Keighley, Yorkshire, have supplied the machinery. It comprises receiving-room, washhouse for general work, a separate washhouse to deal with foul linen; a fine for drying horses, with flannel and blanket drying-rooms heated on the hot-blast system, which not only does with extreme rapidity, but gives a result practically out-of-door drying, and maintains its efficiency in all weathers.

The ironing and finishing room is fitted with modern machinery, and the work, after passing through the department, is taken to the delivery room to be sorted for distribution to the various blocks.

The infirmary is a complete building in itself, and is connected with the main building by a covered conservatory, which is entered the central portion of the building, and from this point conservatory corridors to the left and right lead to the male and female pavilions, which pavilions are divided into wards for the various classes of sick. The nurses' quarters occupy the central building.

The maternity block is in a convenient and quiet position between the infirmary and the main building, and the block for thirty-six inmates consists of ample accommodation for male and female attendants in the centre, with entrance on each side on the ground floor and imbeciles above. The period lunatics are in one-storey buildings at each end, with wards and padded and attendants' rooms. The lunacy block is complete in itself, but is connected with the infirmary by a covered way for administrative purposes. The isolation hospital is also a complete building in itself, situated in a remote position on the south-east corner of the site.

The aged married couples' cottages are on a high part of the site, near Rothwell Haigh, entirely separate from the other buildings, and being next to the roadway will have gardens in front. The buildings are lighted throughout by electricity, and there are two electric lifts at the entrance to the infirmary pavilion. There are nineteen telephone exchanges in various parts of the building, and there is also a set of synchronised clocks.

The total cost of the building, including the purchase of the site, is approximately 85,850*l.*, or 182*l.* per bed.

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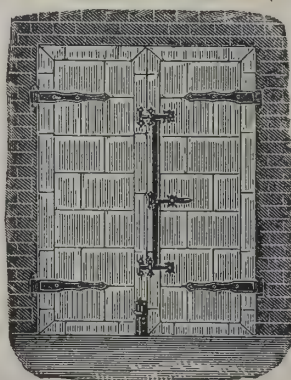
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The Architect.

THE WEEK.

AL authorities who believe it is their duty to launch into a course for providing houses for the humbler classes will do well to study carefully a report which has been prepared by the housing committee of the Birmingham Corporation. We need not say the city has been always in a state of progress. But it has never allowed sentiment to lead it to rash conclusions. The committee find that the city contains houses which, judged by modern ideas of sanitation, are unfit to live in. But they also recognise that the condition is often due to the habits of the tenants, and that people who can afford an increased rent prefer to use better houses. In August of this year there were 785 tenement houses which could be obtained at a rent of 4s. per week. They must be fit to live in, otherwise they would be condemned by the medical officer of health. It is admitted that cheap houses, that is, at rentals under 2s. 6d., have not been built in Birmingham. The causes of the increased value of land, the higher wages (from 30 per cent.) which have to be paid to the building labour, and the increased cost of material. The building laws are also more stringent. There is also a tendency to removal towards the suburbs of Birmingham, which the housing committee wish to encourage. The committee are favourable to municipal housebuilding, because it has been found to be more expensive. The houses have to be let at cheaper rents, and it is plain that rate-aided competition will prevent other people from building. There is consequently a risk of creating a house famine. Since it is known that the Corporation were reluctant to start schemes have been started for the erection of flats for the working-classes. The committee therefore recommend that the Corporation should encourage and, if necessary, compel landlords and tenants to keep their houses in good order; that congested courts should be open to the light; that the by-laws should be modified if required, so that the tram system be reorganised to enable the working-class to live in the suburbs. The subject will be considered by the city council on Tuesday next, and as the recommendations of the committee are based on the views of experts, we suppose there is little doubt that corporate action will be postponed until there is a more urgent necessity for it.

THE Jardin des Plantes is one of the most successful of the educational institutions of Paris. A designer who knows to utilise plants is soon able to know where those he requires are to be found, for a large share of the ground is already laid out to meet his aims. Loss of time in exploration is thus obviated. As the great garden also serves as a museum of natural history, a stranger who seeks plants will first come across the animals, and as they are interesting claims of business may be ignored. It was following to complaints from those who had not taken the trouble to master the plan of the Jardin des Plantes, that it is not a difficult task, that the Municipality of Paris has arranged a garden mainly for the use of artists near the Porte d'Auteuil. It is near many ateliers, but for ordinary designers the position is less convenient than the old garden adjoining the Rue Cuvier. Several artists have been asked to aid the new institution by giving courses of lectures, which will be gratuitous, on the utilisation of plants for various purposes of art. It is well to have rivalry, and art forms are of so much importance in French ornamentation that here can hardly be too much instruction imparted to them.

AMONG the additions to the Berlin Museum are some which must always have interest for English visitors. One is a portrait by RUBENS of ISABELLA BRANT, who was the first wife of the painter. It belonged to the late Empress ELEANOR, from whom it passed to the Prince and Princess ALBERT and PRINCESS CHARLES of Hesse. It was formerly in the collection at Windsor Castle, and was described by WAAGEN as "animated in the expression, clear and blooming, more subdued in the flesh-colour than common, and more finished." There are also some examples of

Renaissance sculpture, which were also part of the property of the Empress. One is a bust of ACCELINO of Salvago, a statesman of Genoa, by ANTONIO DELLA PORTA, known as TAMAGNINI. It is an example of realistic treatment, and is remarkable for its vivid character. Beside has been placed a child's head in bronze by ANTONIO ROSSELINO, whose tomb of a cardinal in St. Miniato is one of the most excellent works of its class. Another work is an admirable wood-carving of St. SEBASTIAN, by an Italian of the sixteenth century. Much attention is obtained by the *Conversion of St. Paul* by RUBENS, which was purchased last winter in England.

ABOUT two months ago we noted the explorations in the grounds of the Palazzo Fiano, in Rome, belonging to Signor ALMAGIA, the contractor, with the object of discovering the Ara Pacis Augustæ, which was set up to commemorate the restoration of peace throughout the empire. It was mentioned that unceasing pumping was demanded owing to the inroads of springs. During the last two months the operations have been carried on with extreme difficulty. The discoveries are of more importance than was anticipated. The structure was destroyed in the Middle Ages, but not, as was supposed, in one of those fires which were common in Rome. The fragments of marble show that the demolition was by the hands of men, but under what circumstances has yet to be revealed. It is better to have fragments of ancient work than dust, for an attempt at reconstruction may be tried. The arrangements are not completely made out, but evidently there was a special door or opening with steps, through which the victims were led that were about to be offered up in sacrifice. In some respects the search may be considered as having a unique aim, and archæologists must hope that the form of so important a monument can be indicated.

STATUETTES in bronze were for many years favourite presents for distinguished visitors to Paris. The exhibition of works in ivory recently opened has revealed that gifts worthy of any king or prince are obtainable in that material. On the day of opening it was resolved by the representatives of the Municipal Council of Paris to purchase "La Danseuse au Cothurne" and "La Danseuse au Tambourin" by M. LÉONARD for the collection of the city. The visit of the King and Queen of ITALY has obtained for them another destination. Instead of appearing in the Petit Palais of the Champs-Élysées they will appear in the royal collection as representatives of the industrial art of Paris. Ivory statuettes are not unlikely to become the vogue. The Municipal Council will also present eighteen of the medals in silver which were prepared as memorials of events. By a curious irony several relate to new churches in Paris, viz. St. Joseph, St. Pierre de Montrouge, Trinity, St. Clotilde, St. Augustine; another shows the Hôtel de Ville, and one the Prison de Fresnes. They will be arranged in a cabinet on which the arms of Savoy will be emblazoned. Four of the splendid volumes, prepared at the instance of the Municipal Council upon the plans of Paris and its armorial bearings, will also be parts of the gift.

THE thirty-seventh annual convention of the American Institute of Architects was to be held in Cleveland, Ohio, on Thursday, Friday and Saturday of this week. Mr. CHARLES F. MCKIM was to preside. The following papers were to be read:—"The Necessity for Trained Men in Future Artistic Productions," by Mr. THEO. N. ELY; "The Advantages of the School of Rome for the Study of Mural Painting," by Mr. JOHN LA FARGE; "A Few Words on Academic Training in Sculpture," by Mr. AUGUSTUS ST. GAUDENS; "Rome as a Place of Schooling for a Decorative Painter," by Mr. E. H. BLASHFIELD; "The Significance of Rome to the American Architectural Student," by Mr. AUSTIN W. LORD. Reports were to be presented from the numerous committees of the Institute dealing with house and library, education and publication, foreign correspondence, contract and lien laws, applied arts and science, Government architecture, competitions, improvement of Washington, fine arts, municipal improvement, world's congress, metric system. With so much to be discussed three days are insufficient, and there is usually a large amount of business which has to be neglected or only partially dealt with at the conventions.

PUBLIC WORKS IN NEW SOUTH WALES.

A FEW years ago the colonies did not obtain much attention among ordinary Englishmen. They were supposed to be self-supporting. Grants were doled out to them with difficulty. Loans were not easily arranged. But now when they have assumed new, if rather indefinite, relations in respect to Great Britain, they must be considered under a different aspect. Claims are made and support is expected as if colonies ranked like English counties. One consequence is that the annual reports of expenditure are scrutinised instead of being passed over in a perfunctory way.

New South Wales is one of the colonies which to some extent was victimised. For years it was employed as a penal settlement, and on that account there was a prejudice against it as a home for honest emigrants. The stories about bushranging which prevailed a few years ago suggested that the criminal element was latent. Yet New South Wales can claim the distinction of being the first of all the colonies to raise a contingent for the purpose of aiding British troops, and the services rendered in the Soudan were creditable to the impromptu warriors.

As the colony rises the outlay must increase. The total expenditure in 1871 was 3,006,576*l.* For the year ending June 30, 1902, the expenditure on public works alone was 4,432,484*l.*, of which sum 3,262,537*l.* was provided from loan funds and 1,169,946*l.* from consolidated revenue. The costliest item was Darling Harbour. If the variety of undertakings be considered the sum must appear moderate. Besides establishment charges, works have to be carried out for railways, tramways, public buildings, roads and bridges, water conservation and public water-places, water supply of towns, sewerage, harbours and river improvements, dredging, wharves, telephone tunnels, pneumatic tubes, &c.

Whether economy is insured in the arrangements is likely to be doubted by some experts. In looking over the returns of work on railways, which amounted to 733,803*l.*, in nearly every case we find the stereotyped remark, "with the exception of station buildings all works on the line are being carried out by day labour." It is declared that, on the whole, the system has proved most successful. But, it is added, the result has only been obtained by increasing the duties and responsibility of the officers of the department. It is recorded also that works are completed within their estimated cost.

In the harbour works much circumspection has to be taken. The few Australian rivers are liable to send down a scanty supply of water in dry seasons, and then bars are likely to be increased and navigation impeded. Caution is therefore exercised to prevent expenditure which may not be efficacious. It is calculated that during the year 6,749,112 tons of mud, &c., were raised by the dredging plant at a cost of 4*l.* 11*s.* 4*d.* per ton. As much as possible of the stuff is used for reclamation, and in one place about 569 acres have been created, the land thus taking back the material which once formed part of it.

During the year 1,431 miles of roads have been constructed, bringing up the total in the State to 46,348. It is not to be supposed that the roads resemble those in England. Only about 16,000 miles, or a third of the length, are metalled, gravelled or formed. In this country havoc arises by the faulty construction of tyres, especially in the case of traction engines, and a wooden covering is sought by many surveyors. It has become customary with the officials in New South Wales to point out that the cost of maintenance is greatly increased by the common practice of using narrow tyres under heavy waggons, and relief can only be obtained by the passing of the Tyres Bill by Parliament. There is no hope that the wide tyre will be adopted except under compulsion, although all experiments tend to prove that its use is advantageous, and consequently the bulk of the traffic on the roads is impeded at present by the carelessness of the minority.

Credit is also claimed for constructing forty-six new bridges, the most important being the Pyrmont bridge across an arm of Sydney Harbour, which we have described and illustrated. It is a swing span 223 feet in length and 54 feet wide, weighing 800 tons, and is opened or closed in 44 seconds by two electric motors. Separate contracts

were let for abutments, side spans and swing spans, and the local contractors all carried out their work faithfully and satisfactorily in the opinion of the engineers. All operations connected with construction have to be analysed, and it is found that the cost of the preparation of plans, &c., for bridges has been 3.25 of the value of the work carried out. Water supply is of vital importance, and recourse is had to boring, which, however, is not always successful. It is estimated that the daily discharge of all the artesian wells in the State is 51,000,000 gallons per day, and the cost is put at 1*d.* per gallon.

The expenditure in the architect's department has been 280,786*l.* The amount is 92,736*l.* less than in the previous year, and no doubt the public in New South Wales will rejoice at the decrease. It is evident, however, that many public buildings are out of repair, and an increase in expenditure will hereafter be inevitable because of neglect of that proverbial stitch in time which saves nine or it may be ninety-nine stitches. In Great Britain and Ireland the expenditure on lunatic asylums is becoming alarming. But what is to be said when it is found that in New South Wales over six-tenths of the total outlay on the architectural department is required for the erection of a single building of that class? The outlay on the Kew Asylum has amounted to 171,012*l.* The decorations and illuminations for the Federal celebrations cost no less than 49,722*l.* 4*s.* 5*d.*, and those employed on the occasion of the Royal visit 14,109*l.* 15*s.* 4*d.* Mr. VERNON, Government architect, recognises that the day labour system is unavoidable, although no building contractor would adopt it. The defects are partly owing to the deprivation of power with those who are responsible for the works. Almost all the men are engaged through the State Labour Board, to which again a certain proportion is supplied through the Trades Hall agency. This leaves the officer in charge of the works, or his foreman, with no choice in choosing suitable men; and though no general conclusion can be made of the men engaged under the system as a whole, in many instances inability and want of application are not ascertained until after employment and consequent loss to the department. The regulation also prevents the employment of men well tried on one work from being engaged on a subsequent one is to an extent detrimental and adds considerably to the difficulties of the officer.

In New South Wales, as elsewhere, it is alleged that the buildings for public purposes are more expensive than in England. Mr. VERNON has prepared a calculation of the cost per head of population of court-houses. He has found that those erected prior to 1891 work out at 4*l.* 4*s.* 5*d.* per head, while those constructed since that date cost 2*l.* 15*s.* 11*d.* It is no doubt difficult to make exact comparisons in New South Wales, but a country which can spend 64,000*l.* on public illuminations is hardly wise in spending so much on public buildings to a brief excitement. The architect remarks:—"The repairs to the buildings remaining in the hands of the State are not progressing altogether satisfactorily; and I have to repeat, at the cost of a charge of tediousness, the urgent need of more liberal consideration for this necessary work."

The most important structure in a financial sense is the Central Railway station, of which the foundations were laid in April 1902. The cost of the work is estimated at 561,600*l.*, but owing to alterations it is estimated that the amount will be exceeded. The street in front of the station will be 165 feet wide, and other thoroughfares leading to it will be broadened to 80 feet. A car-house at Fort Macquarie has a castellated appearance in its construction. It is intended to accommodate seventy-two cars of the largest type. The reason for imparting an unusual character is that the residence of the Governor-General is close to the station.

At the present time there is in England agitation for the best system for administering roads. It may be interesting to explain the arrangements in New South Wales. The State is divided into sixty-four road districts, each presided over by a road superintendent, who in some of the more important districts is provided with an assistant clerk, and one or more foremen. Their duties embrace the construction and supervision of the roads, bridges, and works for the conservation or supply of water in their districts; they control all the labour employed

certificates for all payments, and report on all proposals for expenditure. The greatest length of scheduled road under direct supervision of any road superintendent is 1,402 miles, and the least 177 miles. Including unclassified subsidised roads, and roads under trustees, the actual mileage directly or indirectly under their control ranges from 1,402 miles to 239 miles. Road superintendents are responsible for the examination and proper maintenance of bridges and about 39,000 culverts, some of them of considerable size. They also control 134 ferries, and most of the tanks, dams, wells and artesian bores, together with the makers, ferrymen and others employed thereon.

In addition to the inspection of contracts and superintendence of roads, ferries, public watering-places, &c., the road superintendents have to devote a considerable amount of time to inquiring into and reporting upon applications for expenditure. Such applications usually come from individuals or small groups of residents more or less isolated from leading thoroughfares, and, with a limited sum available, great judgment and patient inquiry are necessary to determine the extent to which assistance can be given, and to separate genuine cases from bogus ones.

In the execution of their duties superintendents travelled 925 miles by road and 79,296 miles by rail last year, the assistants travelled 92,943 miles by road and 33,881 miles by rail, and foremen, overseers, &c., travelled 62,946 miles by road and 10,752 miles by rail. The total distance travelled by all district officers was thus 434,914 miles by road and 123,929 miles by rail, in all 558,843 miles. The average to the department was 2'42d. per mile. The greatest distance travelled in one district was 25,479 miles, and the average for all districts was 8,732 miles.

Judging from the report, the works would appear to be conducted in as economical a manner as is possible. Day labour is a costly system, but the overseers and other officers make the men understand that they are not privileged beings, but are expected to make a fair return for the money received. The State Labour Board is not a expensive establishment, and a large proportion of the money is devoted to provisions and clothing, seeds, tools, and blankets and other contingencies. The money is more wisely laid out than in English workhouses, and it saves men to tide over periods of stagnation. The engineer for water supply and sewerage says that on nearly every work a profit to the State has been secured by thus dealing with the contractor. The large claims for extra compensations which used to shadow nearly all contract work are now unknown, and it is also noteworthy that the number of accidents to workmen has diminished to a remarkable extent. In the comparatively small number of cases which have occurred the sufferers have been paid their wages until they resumed work.

There are many people in this country who consider New South Wales, in common with other parts of Australia, is too much disposed to pile up debts. That is a subject which admits of controversy. The public debt, which in 1880 was fifteen millions, in the course of twenty years increased to over sixty-five millions. But public works cannot be executed without loans, and it is quite certain that they are conducted on as economical conditions as can be devised.

ARCHITECTURE AND THE INFANT ACADEMY.

THE first exhibition of the Royal Academy was opened in the spring of 1769. In order that people might not be disappointed when they found a fee was charged for admission, the following note was prefixed to the catalogue:—"As the present exhibition is part of the institution of an Academy supported by royal munificence, the public may naturally expect the liberty of being admitted without fee. The Academicians therefore think it necessary to declare that this was very much their desire, but that they have not been able to suggest any other means than that of receiving money for admittance to prevent the Academy from being filled by improper persons, to the entire exclusion of those for whom the exhibition is apparently intended." The words reveal to us how slight was the

value which the public set upon a modern collection of pictures. JOHNSON a few years before, in referring to another exhibition of English work, said:—"Surely life, if it be not long, is tedious, since we are forced to call in the assistance of so many trifles to rid us of our time—of that time which can never return." There was, however, a change, and JOHNSON accepted the professorship of Ancient Literature in the new Academy.

As the pictures were brought together in a hurry the collection was more remarkable for its novelty than for its power. REYNOLDS sent a portrait of a "Lady and her Son in the character of DIANA disarming Love," and a portrait of a "Lady in the character of JUNO receiving the Cestus from VENUS," and other works. GAINSBOROUGH was represented by two portraits. WEST by his "Departure of REGULUS from Rome" and "VENUS lamenting the death of ADONIS." GEORGE BARRETT exhibited two Scottish scenes, one being "Part of Melrose Abbey on the river Tweed by Moonlight," which suggests that WALTER SCOTT was not the first to realise the beauty of the ruins on a fine night. We must not be detained, however, by the paintings, for the architectural views call for attention.

WILLIAM CHAMBERS, who was described as "Comptroller-General of the Works to the King, architect to the Queen and to Her Royal Highness the Princess Dowager of WALES, and treasurer of the Royal Academy," contributed the "Elevation and Plan of a Hunting Casino," belonging to the Right Honourable the Earl of CHARLEMONT, in Ireland; the "Ceiling of Her Grace the Duchess of BUCCLEUGH's Dressing room in Grosvenor Square;" the "Ceiling of the Right Honourable the Countess GOWER's Dressing-room at Whitehall," and the "Elevation of one of the Flanks of a Royal Palace." The casino was erected at Marino, Clontarf, in the suburbs of Dublin. It could hardly be called a hunting-lodge, and indeed its use has never been evident. Lord CHARLEMONT erected it in order to pass away the time in amateurish work, for, he declared, without some attractive employment he doubted whether he could have the resolution to stay in Ireland. Yet a few years afterwards he was taken to be the champion of Irish liberty. He had travelled in Italy, and could claim some share in the design. JOHN GWYNN was a friend of Dr. JOHNSON, who wrote a little essay for him on the difference between circular and elliptical arches when he was competing for Blackfriars Bridge, which he failed to carry off. He sent "An Architectonic Drawing, designed for the alteration of an old room in Shropshire."

CHAMBERS and GWYNN were the only professional architects who aided the earliest exhibition. THOMAS SANDEY, the first professor of architecture, held an official appointment as military draughtsman, and he was afterwards deputy ranger of Windsor Park. It is said, however, that the first Freemasons' Tavern was designed by him. He contributed two designs to the exhibition of 1769. There were other artists who selected architectural subjects. WILLIAM JAMES was a pupil or assistant of CANALETTI, and his three drawings bore the following lengthy description:—"The Remains of some Ancient Egyptian Temples, as they are now standing in and about Thebes in Upper Egypt, viz. A side View of the Great Temple of Osiris at Carnack, to which there were avenues of sphynxes half a mile in length, adorned with triumphal arches; on the right hand is a portico of a temple at Amara. The Temple of Osmanduas at Luxor. The Temple of Isis at the Isle Ell Hief, a little above the first cataract of the Nile; on the right hand is a small Temple of the Hawk, because Isis was there worshipped under that symbol." JAMES, no doubt, was indebted to some traveller for sketches, for he does not appear to have ever left England. ELIAS MARTIN, who, like CHAMBERS, by birth was a Swede, prepared a "View of Westminster Bridge with the King of Denmark's Procession by Water, taken from Mr. SEARL's Timber-yard." WILLIAM PARS is mainly known as a portrait painter, but in 1763 he was selected by the Dilettanti Society to accompany CHANDLER and REVETT as draughtsmen in their explorations in Greece. Afterwards he was maintained in Rome by the Society. He also went as artist with Lord PALMERSTON on the Grand Tour. His drawings in the first exhibition were:—"An

Arch at Mylassa in Asia Minor," "A Ruin at Troas in Asia Minor," "The Propylia; or, Entrance of the Acropolis at Athens," "The Castalian Spring at Delphi," "A Temple on the Island Ægina," "The Cave of Archidamus near Athens," "Miletus with the Ferry over the Meander." WILLIAM TOMPKINS, another draughtsman, had a view of a villa at Roehampton, which was designed and erected by CHAMBERS for the Earl of BESBOROUGH. It is now part of the college for Jesuit novices. He also showed views of residences of the Earl DE LA WARR and the Earl of FIFE.

The exhibition was held in two large auction-rooms opposite Market Lane, in Pall Mall. The offices were removed to the royal apartments at Old Somerset House in 1771, but the annual exhibitions continued in the rooms of Pall Mall. When the new buildings of Somerset House were sufficiently advanced, the Royal and Antiquarian Societies were united under one roof with the Royal Academy, and the first exhibition in the new premises took place in 1780.

In the second exhibition in 1770 we meet with the same exhibitors, with the addition of a few others. Under CHAMBERS'S name we find "Plan and Elevation of a Villa near London, for a Person of Distinction. A section of Earl GOWER'S Staircase at Whitehall. A ceiling at Woodburn Abbey. Various Vases, &c., to be executed in ormolu by Mr. BOLTON for their Majesties." By GWYNN were "A Plan, Elevation and Section of the Bridge to be built over the Severn at Worcester." WILLIAM JAMES continued his Egyptian series by "The Palace of Memnon at Medinet Habu, near Thebes, in the Upper Egypt. On the left hand is a Temple of Debonde, above the first cataract of the Nile; the Temple of Cous, where the ancient Egyptians kept and worshipped their sacred crocodiles. On the right hand is a small temple at Elephantine, where they worshipped a serpent called Knuphis." ELIAS MARTIN had "A Picture of the Royal Plaster Academy;" WILLIAM PARS "A View of the Great Temple of Minerva, built by PERICLES." THOMAS SANDBY was represented by "Elevation of a Country Seat for a Person of Distinction."

There were a few new-comers. JAMES WYATT, who was only twenty-two years old, had received a commission to alter the Panthéon in Oxford Street. He prepared three drawings for exhibition, viz. the front in the Oxford Road, a longitudinal section and a view of one of the angular piers. They must have made an impression on the Academicians, for WYATT was elected an Associate in 1770. In the preceding year there was a competition for the Royal Exchange in Dublin, which is now used as the city hall. THOMAS COOLEY was successful. One of the competitors was EDWARD STEVENS, a pupil of CHAMBERS. His drawings were exhibited, viz. "Plans of the Basement Storey and Principal Floor; Elevation of the Principal or North Front situated to form a termination to Parliament Street; West Front to face Castle Street." In addition were "Plan and Elevation for a Colonnade Bridge, in the manner of the Arcade Bridge on the River Nadir, in the Earl of PEMBROKE'S Gardens at Wilton," and "An Elevation for a Hunting Villa designed for a particular situation near the Forest of Needwood, in Staffordshire." STEVENS'S drawings were the earliest examples of competition work which appeared in the Academy. He also was elected an Associate in 1770, but as he died five years afterwards in Rome his name is almost forgotten. About GEORGE MULLINS little is known, except that in Ireland he painted trays and snuff-boxes. Besides three small heads, he was enabled to exhibit in 1770 a view of CHAMBERS'S Casino at Marino. Styles were not always discriminated with accuracy in those days, and the freely disposed Roman Doric structure was described as "The Gothic Temple in which is introduced the story of DIANA and ACTEON." From GEORGE DANCE, who designed the Mansion House, came "A Section and Plan of a Royal Gallery for Sculpture."

The year 1771 has an interest of another kind in the history of the Academy, for on St. George's Day the first of the annual banquets was held. GOLDSMITH, as professor of ancient history, was one of the guests. There was less formality than in subsequent years, for GOLDSMITH was able to relate the discovery of ancient poems at Bristol about which he was enthusiastic. JOHNSON laughed at him, and HORACE WALPOLE said he might have had the honour of

ushering the discovery into the learned world, as the wondrous boy THOMAS CHATTERTON had submitted to him. Then WALPOLE asked about CHATTERTON, and GOLDSMITH replied that he had committed suicide. In 1784 it is recorded that JOHNSON left his seat by the side of the Prince of WALES and went to the head of the table in order to have the honour of an introduction. In the third exhibition there were more representations of architecture than in those which preceded it. CHAMBERS described himself as "Knight of the Polar Star," showed signs for a chapel, a garden gate and a monument in a garden. GEORGE DANCE had the garden front of a house of a gentleman in the country. JOHN GWYNN contributed a design to make Whitehall a part of the British Museum, the addition of a Centrepiece opposite the Horse Guards, or in other words, to extend INIGO JONES'S fragment of a palace. RICHARD HOLLAND, who was a nephew of HENRY HOLLAND, the designer of the Pavilion, Brighton, the Albany, Piccadilly, and the portico and vestibule of Dover House, which is fortunately preserved in the transformation of the district, sent an elevation of a design for a villa. From THOMAS LEVERTON, the architect of Grocers' Hall and other works, came "A Design for Woodford Hall now building in Essex." THOMAS SANDBY sent a view from the arcade in Covent Garden. EDWARD STEVENS came "Elevation of the Principal Front of Doveridge Hall, the Seat of the Right Hon. Sir HENRY CAVENDISH, Bart., began anno 1769;" "A Casino and Shooting-box;" "Ground Plan of the (Roman) Villa of Laurentinum of PLINY, the Consul, as described in an Epistle to his Friend GALLUS;" "Elevation of the Principal or Front Entrance to ditto." JAMES WYATT sent several drawings, one a ceiling executed for Mr. ASHETON at Hagley in Staffordshire, the other the elevation of a house, intended for a nobleman, in Sussex. Nobleman those days were apparently the principal patrons of architecture. In 1771 JOHN YENN gained the gold medal of the Academy for his design for a nobleman's villa. He was first a pupil and then an assistant of CHAMBERS, showed in the exhibition a plan and elevation of a pavilion. There were several views of architectural subjects by painters, but it is not necessary to mention them.

We have some new names in the catalogue of the fourth exhibition. EDWARD BELK is credited with an elevation and plan of a temple in a garden. CLERISE, who was brought to England by ROBERT ADAM, and who was to be almost a centenarian, was represented by a design composed after the manner of the ancients; a sepulchral chamber, ditto; a view of the Forum of Nerva at Rome; a ruin of a triumphal arch (a composition)—subjects which suggest Italian studies. THOMAS HARDWICK, the father of PHILIP HARDWICK, and the grandfather of P. C. HARDWICK, made his début in the exhibition of 1772 with a design for the principal front of a casino, a subject that inspired many designs. He was a student of the schools and was then in his twentieth year. J. LEROUX was one of the transient contributors. His name was attached to "A Design for a Triumphal Arch, intended to have been erected where Ludgate Street was situated, to have honoured the King's entrance into the City of London;" and a design for a public chapel, the shops, forming a Forum intended to be built on the Peasants' Southampton. THOMAS SANDBY drew the garden front of the Royal Academy. EDWARD STEVENS supplied a design for a library, the decorations emblematical, according to heathen mythology, with plan and elevation of a design for the late Viscount HATTON, intended to be built in Northamptonshire. JAMES WYATT'S contribution was the south-east elevation of Heaton House in Lancashire, the seat of Sir THOMAS EGERTON, Bart., and an elevation of a garden pavilion designed for a nobleman of distinction in Derbyshire, with the plan and ceiling of same. JOHN YENN sent a plan and elevation of a gentleman's house and the principal front of a nobleman's villa. RICHARD HOLLAND also appears with the elevation and plan of a town house, with a design for a ceiling. The name of one noteworthy student appears for the first time. This was JOHN SOAN, who was afterwards known as Sir JOHN SOANE, and who was to hold high public offices of various kinds and to become pre-eminent in architecture. He worked his way up from an apprentice boy in DANCE'S office. He was employed by

D, and in 1772 he won the Academy's silver medal followed four years afterwards by the gold medal travelling studentship. SOANE in 1772 exhibited the front of a nobleman's town house. In the next year he was able to show "The Front next the Thames" at the Royal Academy, from actual measurements in 1770," which may be assumed to have been the first example of its kind that was required in the school.

The foregoing records are sufficient to suggest the efforts to assert the claim of architecture to have a share in the attention of the public visiting the Academy exhibitions. If they appear few in number, it must be remembered that the collection itself rarely contained 400 works. At the earliest exhibition there were only 136 items, and the second 245. The character of the works corresponded with what we yearly see in Burlington House, or many of the drawings were only projects which never appear to have been realised in brick and stone. There was one class of work which then was neglected, churches, but they could not be erected without the sanction of Parliament.

MANCHESTER SOCIETY OF ARCHITECTS.

At the 8th inst. Mr. J. W. Beaumont, president of the Society, gave his opening address at a special meeting in the board-room of the Chamber of Commerce, Manchester. He looked forward, he said, to the day when architectural societies may become so important that they may be consulted by the public in cases of proposed improvements or new streets to be laid out in those towns. It will never, he admitted, be a public body to say that the buildings in an immediate street shall all be carved out of a certain design, nor can an architect be appointed to carry out all the designs for such a street, nor would this be desirable. Variety in architecture was, to his mind, much better than uniformity. Generally each building had its own use, and should be designed to express the purpose for which it was erected. It was absurd to confine the elevation of a street to one architectural design, where one building may be used as shop, another as a set of offices or chambers, and another as a house. But it would be held that some control should be exercised to see that proper and suitable heights are maintained, and that materials are used in the various buildings to harmonise with neighbouring buildings. One thing that impressed on his hearers was that more control should be exercised by public bodies in seeing that all new streets erected in such a manner as to minimise the risk

of subjects of great importance had received a large amount of attention during the last twelve months, and that these were the question of the statutory registration of architects. The time is at hand, Mr. Beaumont said, when architects must make up their minds on this question. In order to ascertain the general feeling on the subject he had invited the opinion of various societies in different parts of the country, and out of twelve from which he received replies, six were in favour of registration, one was divided in opinion, and three had not discussed the question. The Manchester Society had already decided in favour of registration. Of course, as was the case with other professions, no form of registration would suffice to "quack," but it would enable the public to distinguish between qualified and unqualified architects. It would be an advantage to a man to employ an architect legally qualified, and against whom he would have no redress in case of neglect or incompetence.

In conclusion, Mr. Beaumont said it was important that all students should pass all the examinations of the Institute of British Architects, and not simply the first year. In this connection he referred to the establishment of a school of architecture in Manchester. He was glad to hear that a school had been established. The time of apprenticeship, perhaps, be shortened for those who had passed the school, but nothing in the shape of theoretical or practical training would enable a student to dispense with the training of an architect's office. He believed that the Manchester School of Architecture will become, under the leadership of Mr. S. H. Capper, one of the foremost centres in the country for the instruction of architectural students. Turning to the question of competitions, Mr. Beaumont suggested that there had been overdone. He recognised the value and importance of competitions in the case of public buildings, but in all cases should be conducted on an equitable basis. He suggested certain ways in which a useful reform in regard to competitions might be brought about.

Mr. Alfred Darbyshire (who has filled the office of president for the past two years) moved a vote of thanks to the President for his address, and that it be printed and circulated forthwith.

Mr. Capper, of the School of Architecture, in seconding the motion, gave the result of his experience of the working of a registration law in the province of Quebec. Whilst he was at the head of the School of Architecture in that province architecture was made a close profession in the same sense as the bar and medicine are close professions. Some of the results were not exactly what one would wish. One of the immediate results was to flood the profession with unqualified men, because every person who had had a sign-plate with the word "architect" upon it had to be admitted as a qualified architect. Of course time would cure such an evil. With regard to the School of Architecture here in Manchester, he fully appreciated the necessity of practical training. He suggested, however, that arrangements might be made whereby students, in some cases, might carry on their collegiate training side by side with their practical work.

STRANGERS' HALL, NORWICH.

IT is to be regretted, says a correspondent of the *Times*, that more has not been done in the past to preserve characteristic examples of our Mediaeval domestic buildings. The life and surroundings of the English nobility and landed gentry of the Middle Ages can be traced in many a fine old mansion which stands to-day, but illustrations of the home life of the wealthy merchants of those days are far to seek.

A successful effort has of late been made in Norwich to preserve a typical example of a city merchant's house of the fifteenth and sixteenth centuries. The Strangers' Hall, situated between the churches of St. John Maddermarket and St. Gregory, which for fifty years had been allowed to fall into a sad state of dilapidation, and was finally threatened with demolition, was purchased in 1899 by Mr. Leonard Bolingbroke, by whom, after a year devoted to its reparation, it was opened to the public, a small charge being made with the view of making the building self-supporting. The interest of the house, which represents a growth of nearly 500 years, and shows the changes which time has wrought in domestic customs and manners, has been greatly enhanced during the last three years by the collection within its walls of old household furniture and domestic appliances, so that it may more completely illustrate, even in the most homely details, the life of the past. Beneath the west end of the hall is a fine decorated crypt of three bays, to the east of which are passages and other cellars. These cellars were the crypts for the storage of valuables which usually existed beneath the timber-built houses of the fourteenth century, and they are probably the cellars of the house of Roger Herdegrey, burgess in Parliament in 1358 and bailiff of Norwich in 1360, which then stood upon this site. The kitchen and butteries, which are older than the rest of the building, may also have formed part of Herdegrey's house. The hall itself, with its groined entrance porch and oriel window, its kingpost roof and richly-moulded cornices and tiebeams, appears to have been built towards the close of the fifteenth century, when such halls were common enough in city mansions. It very soon came into the possession of Nicholas Sotherton, a grocer by trade and mayor of the city in 1539, whose merchant's mark is painted in two spandrels of the roof. The arrangement of the hall then was of the same nature as that of Haddon Hall, the screen crossing it at the eastern end, with a door in the south wall once leading into the garden, and two arched doorways in the east wall opening into the kitchen and butteries. A small portion of the original screen, which was painted bright red, is still in position under the south end of the present gallery. The parlour, containing a large open fireplace, is on the north side of the hall, and over it Sotherton may have had a bedchamber. But bedrooms in those days were a recent innovation, and doubtless the hall and parlour were used in part for sleeping. A century earlier a well-to-do merchant was well content that his house should consist of a large hall, a parlour, a kitchen and buttery. While the property was in the hands of the Sotherton family the settlement of Strangers, as the Dutch and Walloons were called, took place in Norwich, a settlement of which the Sothertons were the chief promoters. Early in the seventeenth century the building was sold to Alderman Francis Cock, also a grocer, and in 1627 mayor of the city, who built out a room into the garden and above it two other rooms, to give access to which he built in the hall the large oak bay-window and erected in it the beautiful Jacobean staircase and landing. It was not until a later date that this landing was extended across the end of the hall in a minstrels' gallery. The house, having passed through the hands of Charles George Cock, one of the Commissioners appointed in 1654 for the ejectment of ministers, came into the possession of Alderman Joseph Paine,

who was appointed mayor in 1660 and knighted by Charles II. Paine was a friend of Sir Thomas Browne's, and is frequently mentioned in Browne's correspondence with his son. It was then that the doorway was made at the west end of the hall, leading, by means of a narrow staircase of oak with twisted balusters and carved brackets, to the west tenement, which was thus made an integral portion of the house. This western part of the building dates from Tudor times, and in Paine's day the lower front room was a fine Tudor apartment with a richly-moulded oak ceiling. It is now panelled in the Georgian style, and the oak ceiling hidden from view by Georgian plaster, an alteration which may be attributed to the latter half of the eighteenth century, when the hall was in use as the Judge's lodgings. At the close of the eighteenth century the estate was acquired by the Roman Catholics, who used the hall as a presbytery; and during their occupation Mazotti, the Italian sculptor, had his studio here, and here for a time lived Thomas Deterville, who taught Borrow his French and Italian, and whom readers of "Lavengro" will recognise as "*exul sacerdos*, vone banished priest." It is thought that it is perhaps to its occupation by these men that the name of Strangers' Hall is due, for although in the sixteenth century the Dutch and Walloon "Strangers" resided in adjoining portions of the Sotherton's property, there is no evidence that they stayed in the house itself.

On the walls of several of the rooms is hung a large collection of etchings by Old Crome, J. S. Cotman, Daniell and others of the Norwich school, and there are also a few water-colours by Stark. Among the pieces which Mr. Bolingbroke has collected, and with which the house is furnished, are oak bedsteads with rush mattresses, settles, bureaux and ancient chairs and tables, while in the kitchen are to be found tinder-boxes, candle-moulds for making home-made candles, rushlights, smokers' tongs, sugar-breakers, Bellarmine jugs, pewter plates, old glass, old knives and forks, and many other things familiar to our forefathers, but long since disappeared from everyday use. There are also such curiosities as a watchman's tell-tale, a "perambulator" or surveying wheel, horn spectacles, a dandy-horse, and the Snap, or pasteboard dragon, formerly borne in the guild procession of the mock corporation of Pockthorpe, a hamlet of Norwich, the Snap of the real corporation being preserved in the Castle Museum. This year one of the rooms has been opened as a weaving-room, and contains a Norwich weaver's loom, identical in shape with that worked by Hogarth's industrious apprentice, a spinning-wheel, pattern-books of Norwich manufacturers of the past, water-colour designs for the once famous Norwich shawls, an old Suffolk lace pillow, needlework pictures, and bills and ballads relating to the now practically extinct Norwich weaving industry.

THE ARCHITECTURAL ASSOCIATION.

A PRELIMINARY meeting of the Association School of Design was held on Tuesday evening last, Mr. H. T. Hare, president, in the chair.

The PRESIDENT, in opening the proceedings, said the design classes were quite the most important in the course of work set out by the Association for students. The sole end and aim of an architect was to be able to design, and it was the most difficult part of his calling. All the other studies were subsidiary to that end, and the only way in which the architect could attain any facility in design was to constantly practice, and the young student therefore could not do too much of it. The large meeting was encouraging, and he hoped it meant the students of design would be numerous in the classes commencing. The committee found that although these classes began with a full attendance the numbers fell off towards the end of the session, and as a result few designs were submitted. The cause was not easily understood, because the subjects were not of such a nature as would call for a great sacrifice of time. He hoped the classes would be better attended in the present session, and that a large number of students would complete the course.

Mr. WALTER CAVE was asked to address the meeting. He said:—

I have been asked to say a few words to you to-night at the opening of the autumn work of the Architectural Association, and I find it no easy task to know how to begin or what to say. In the first place, the subjects to be dealt with this winter in the school of design will all be thoroughly discussed by the different visitors, and it would be impossible to enter into any of them this evening—within the few minutes at my disposal. In the second place, I feel, like all who work, a curious powerlessness to talk about what one is doing. I have often noticed that when an acknowledged expert on any technical subject attempts an explanation of his art or craft, he takes it for granted that either his audience knows nothing, or else as much as he does himself, and as a natural consequence either his explanations are extremely tedious, or else quite unin-

telligible to the ordinary listener. Now I cannot possibly claim to be an expert in any subject, but I am on the other side of the case, namely, that of the student who wish to learn, and so I am going to suggest some of the ordinary procedure and see what I can learn or suggest during that part of the autumn's work which has been entrusted to me, and in order to do this to our mutual advantage, I will indicate briefly this evening some of the points on which we may both benefit by special study. Tradition and experience are both very important words to the young and the old architect. Reverence for the first, tradition, is, I hope, to both, and experience is the fascinating goal to which we sometimes, alas! a bitter memory to the old. I have truly said that we can only learn by experience, but I can go further and say that it is only by paying for our experience (sometimes in actual cash) that our lesson is really learned. It is with some such object in view, *i.e.* of saving your memories in the future (if not your pockets also), that I offer a few hints on the work before you both in the school and in your after life. Let us first begin by reverence for tradition. You on your part will strive to make a use of it in working out your designs, carefully weighing its merits and seeing how it can help you in solving more difficult problems. And so by utilising intelligently the experience bought by practice of older and possibly wiser men, you will in your turn be adding another stepping-stone to the success for future generations. All really sound, fine, and successful architecture has been in the past built on the basis of what has gone before, and why should we not evolve from what has gone before, and why should we not have all the wealth of examples before us, ignore those lessons which tradition and experience alone can teach us? I, for my part, will endeavour to keep tradition in view when your designs come before me, not necessarily setting up a fixed and inflexible model on which I shall expect all your designs to be based, but seeing how far fresh views based on older ones can be fairly considered as improvements, and to which I will add intelligent and broad-minded study of the past can help in elucidating the problem in question.

Next I should like to say, Do not take anything for granted. You will find in every question which you have to solve, and every problem which you have to solve, both in your future practice, that at first sight certain elements appear inevitable. Do not trust these appearances without a very careful search and honest endeavour to prove that these things are inevitable. Certain methods, short cuts to success which you have seen used by others, personal predisposition for certain forms, will be apt to rise in your mind at the beginning of your work, but trust them without a severe mental cross-examination that they really are the best and most fitting solutions for the problem before you. Do not be content to do always exactly what you have done, even in the simplest matters, but endeavour to improve and advance. If you do this at the beginning of your work you will be saved the mortification of finding your drawings are approaching completion that with a little more thought at the start you might have produced a better design. You then may have to face the work of beginning over again or sending in a design which you know is not the best you could have done. I shall try to avoid any special arrangements when looking at your designs, and very possibly shall gain by admitting a different solution to the one which I had thought the most convenient. I shall avoid, on my part, the error of taking anything for granted. Avoid eccentricity. This is a warning which I know has been given, but it is of such importance that I must make an apology for saying it again. It is the besetting sin of many architectural students (and, indeed, of some architects). Originality and eccentricity are very closely related, and it requires an exceptionally strong character to adopt the first without the second. To the student who is of becoming eccentric in his desire to be original is one that I feel almost inclined to say, do not do it, but this would hamper all progress if followed literally. My earnest advice to you is not to strive for originality, but to grow naturally, as I have said before, from a careful study of the past, and be sure that your variations are improvements. A careful inspection of those designs which I have seen in my short experience of the Architectural Association which offend on the score of eccentricity, invariably show a large amount of imitation from some modern design. Work is labelled "original," and as a rule the points selected for imitation are the worst ones in the design, the unfortunate model selected. So I say again avoid eccentricity and any desire for originality for its own sake, and I may be saved from further learning the lesson of "what to avoid."

Next let your designs be suitable. This sounds very simple, but may not prove so simple as it appears. Think of the object for which you are striving, the uses to which the object will be put, and try and place yourselves in the position of the people who will use it. Do not think only of the

The Federal House of Representatives, sitting at Melbourne, by an exhaustive ballot has selected Tumut for the Federal capital. The contest lay between Bombala, in the south-east, Tumut, near the Murray, and Lyndhurst, one hundred miles from Sydney.

NOTES AND COMMENTS.

WHEN the means of technical education afforded to the Germans are discussed in this country, writers and speakers generally confine themselves only to the preliminary parts, which are to a large extent scholastic. We do not realise how much provision is available for those who have after leaving technical schools and colleges to take up some particular calling, and for whom it is well to suggest that instruction is not at an end. Let us take one instance. On last Monday evening the courses of lectures commenced in the Berlin Industrial (Kunstgewerbe) Museum. The first course by Dr. HERMAN LÜER is on bronze casting. It began with a description of antique processes in which wax was used as an auxiliary, and the successive improvements from age to age until the nineteenth century will be described and explained by examples. In the next course Dr. SWARZENSKI will describe the early Renaissance work in all departments of the Florentines. A third course will deal with lettering from the earliest times until the present. This is of more importance to the Germans than to us, for they still keep up the practice of using written or illuminated addresses in a vast number of cases, and the letter-painter or writer becomes a far more important craftsman than with us. Dr. GUSTAVE KÜHL will describe all the forms which are known to have existed, from those of the Chinese to those of WILLIAM MORRIS. In Germany there is now an endeavour to produce new forms, and the efforts of ECKMANN, SCHILLER, BEHRENS and the so called Vienna school will be explained. An interesting discussion is sure to arise about the effect of the form of lettering on the eyes of readers. Other courses will follow. In London similar lectures could only be heard at the Royal Institution, but in Berlin they are gratuitous. Their effect will be to conserve and deepen the impressions received by students when young, and to make them more gratified in being connected with industries which have such histories and from which art cannot be separated.

THE report of the Commissioners of His Majesty's Woods, Forests and Land Revenues refers, among other subjects, to the repairs of Tintern Abbey. The first work undertaken was the preservation of the beautiful arched openings between the sacristy and the cloisters, and the work, it is stated, has been carried out with the greatest care, without accident, and in such a manner as to preserve the old structure without any attempt to "restore" missing or decayed portions. The result is said to be very satisfactory, for it is difficult to see that anything more than superficial pointing has been done. At present attention has been directed to an even more dangerous portion of the abbey buildings—the groined entrance on the north side of the cloisters and the groining is now being covered with a layer of cement concrete, on which will be placed a coating of asphalt to completely exclude wet. The removal of the modern cottage built into the ruins on the north-west side of the abbey has opened out some most interesting remains of a former entrance. The removal of the modern buildings and obstructions to the west of the road, it is stated, is an immense gain, as a very fine and much extended view of the west front of the abbey is now obtained.

EDINBURGH University is unique in this country in having a lecturer on forestry. Colonel BAILEY, R.E., who holds the office, in his address at the opening of the session, spoke about the report issued by the committee on British Forestry. That committee, he said, found the conditions practically unchanged since 1885, when the last committee reported, though some scattered effort had been made to adopt methodical treatment and to organise instruction in forestry. There was a very large area available for profitable afforestation, which would give remunerative labour to an increased rural population. The world's supply of coniferous timber is approaching shortage, and afforestation has therefore become a matter of grave national concern. Timber of the kind and quality most largely imported could be grown in this country, and the preference of foreign timber was due to our neglect of sylvicultural principles. Additional facilities for instruction of owners and agents should be provided. The course

in Edinburgh should be carried considerably further. An area of from 100 to 200 acres should be provided for practical illustration by means of example plantations in accordance with the committee's recommendations. A State demonstration area of from 2,000 to 10,000 acres should be formed, as near Edinburgh as possible, the probable cost of 50,000/. As the benefit to landowners would be considerable they might co-operate by guaranteeing the interest of the purchase-money. Colonel BAILEY went on to describe the organisation and management of such an area, and to refer to the various recommendations of the committee for the propagation and preservation of timber.

THE possibility of Edwardes Square, Kensington, being used as a building site within a measurable period has excited alarm in various parts of the Metropolis. It has been made to induce the London County Council to regard certain squares as open spaces which are indispensable, but the prices are usually too high for the purpose. In some cases any change in the character of the ground would diminish the value of the surrounding houses, but as the leases may have several years to run there is temporary security that there will be no interference with the area enclosed by railings. The subject is, however, too important to be overlooked. Sooner or later it will have to be encountered, and it is wished to uphold such amenity as London possesses. The Council should organise themselves in order to discover what squares, which were so marked a characteristic of the city, can be preserved in their present condition.

ILLUSTRATIONS.

HOUSE, KINLEITH, NEAR EDINBURGH.

CHRIST CHURCH, HOLLOWAY, DERBYSHIRE.

THIS church was, with the exception of the tower, completed last year; it stands on a steep hill at a great height, overlooking the Derwent Valley. The walls are built of coarse millstone grit, quarried on the site, and the masons' work of Matlock stone. The roof is covered with Broseley tiles in mixed shades of colour. The nave roof is of pitch pine open to the ridge, and the chancel roof is ceiled with oak, with carved bosses supporting the Bromsgrove Guild. All the doors, seats, &c., are of oak, but beyond the seats the fittings are at present of iron, of a character. Advantage was taken of the slope of the hill to form a large parish-room under the west end. The contractor for the work was Mr. J. W. WILCOX, of Matlock, Mr. P. H. CURREY, of Derby, being architect.

VICARAGE HOUSE, HOLLOWAY, DERBYSHIRE.

THE vicarage is now being erected, from the plans of Mr. P. H. CURREY, on a site adjoining the church, and the slope of the land, rising very steeply on the east side, settled the general disposition of the plan. The elevations were kept very simple, both for reason of economy and to suit the coarse nature of the local materials. The contractors for the work are Messrs. FORD & Co., of Derby.

PAIR OF COTTAGES, DEVIL'S BRIDGE, CARDIFF.

THESE cottages were designed for Mr. F. J. JONES, a FOOT with a view to the accommodation of visitors. The walls are of local stone, quarried on the estate, and covered with cement rough cast above the eaves. The roofs are tiled. The architect is Mr. G. L. SUTCLIFFE, A.R.I.B.A., of the firm of Messrs SUTCLIFFE & SUTCLIFFE, 11 Argyll Place, London, W.

HOUSE NEAR BARNESLEY, YORKSHIRE.

THIS house, designed for Captain WALKER, is the work of G. L. SUTCLIFFE, A.R.I.B.A., 11 Argyll Place, London, W. It has not been built, as Lord WHARNCLEFFE is not disposed to sell the ground desired by Captain WALKER, and another site has not yet been obtained.

CATHEDRAL SERIES.—EXETER: SOUTH AISLE.

SUPERCOLUMNIATION.

The system of placing one range of columns above another is at variance with the practice of the Greeks, but it does follow that it is utterly absurd in its principle and ought to be discarded altogether. The temples and other public edifices of the Greeks did not allow a second range of columns, there being no upper storey within, as would have been thus indicated; there certainly is nothing contrary to architectural propriety in making the external appearance of a structure correspond with its internal disposition, and giving to each tier of columns into which it is divided a distinct order of columns to support the timbers that form the different floors. Still, although it would be nothing absurd in doing so, it remains to be considered how far such a mode of building is favourable to the eye, or the contrary. It is said, and said very justly, that two or more series of columns are employed the structure appears too much like so many distinct habitations placed one above the other. Undoubtedly it will; that is, it will appear as it really is, for nearly all modern buildings may be termed compared with the simple models antiquity has left us, very rarely consist of anything more than apartments, one on a level with the ground or raised on a moderate substructure. But the entablatures of the lower orders, it is again said, will, both by their depth and by exhibiting the same proportion of parts as that which denotes the external roof of the whole edifice, indicate more than an inner floor and a space between each storey—will, in fact, describe so many roofs successively constructed one over the other. Such indeed will to a certain extent be the case; yet something is to be conceded to the force of habit, and we are so accustomed to regard the entablature as essential to the column, even in situations where it is not so in fact, that any abridgment of it would appear as a mutilation, even should there be no particular propriety in retaining the whole. As a cornice exhibits the external rafters of a roof, if we must invariably find a meaning in everything, we ought to be offended with the appearance of a building wherever it is impossible that such roofing should exist. Nevertheless do tolerate, nay, affect cornices where they are merely ornamental adjuncts borrowed from the general effect of the fabric. The ancients themselves did this, and employed entablatures on a lesser scale to decorate the apertures of arches and windows, where being so much smaller and somewhat differently applied, they do not indeed recall the original effect so forcibly as either to remind us of it too strongly or to produce a monotonous rather than a harmonious repetition of the same form.

A continued entablature, however, upon the same or very nearly the same scale as what ought to be decidedly the principal one, is attended with a very different effect. In such cases we cannot help being impressed with the idea that the lower order is to all intents and purposes the same as the upper; whereas, in the other, we may consider the cornices to be as ornaments, &c., as ornamental ledges or shelves intended to protect the opening of the rain, rather attached to the external wall, and not forming a part of the framing of the aperture than the situation of any part within it. Another and still stronger objection is that an entablature above a first or lower order of columns will not only be actually larger than that above it, but will still more so by its being nearer the eye. This may, however, be in some degree remedied by varying the proportions of the orders, or less so as to accommodate them to particular circumstances. Some of the Italian architects have occasionally done this, placing on the summit of their façade a cornice, or rather a cornice, proportioned not to the order immediately beneath it, but to the entire elevation, which, although it may be deemed a license, can hardly be stigmatised as a solecism, and produces a very fine effect, at the same time that the departure from strict rule is justified by adherence to architectural principle. Had they never indulged in anything more capricious or fanciful they would not themselves need that licence from our toleration which they now require. Unless, however, the lower cornice or cornices be kept very subordinate to the upper one, they are apt to cut up a building too much, instead of appearing to shelter or protect it, seem to catch and collect the rain which would otherwise have no lodgment.

It is advisable, therefore, both on this account and for other reasons already assigned, to omit the cornice in the upper order, limiting the entablature either to an architrave and a plain fascia or frieze, or to an architrave and series of projecting mouldings, of which two divisions the lower would indicate the ceiling within, the other the thickness of the wall or above it.

Nevertheless, however, such a disposition is adapted only to columns or columns either engaged, or if entire, still placed intimately against the wall, and not to continued colonnades, perhaps at intervals or in some particular part. Two orders of insulated columns projecting from a building must inevitably have an unpleasant effect, appearing both insecure and insecure; and this air of weakness will be most conspicuous at the angles. When, instead of advancing from the wall, the columns are enclosed within the general plan

of the structure, as in the west front of St. Paul's, this disagreeable effect is considerably lessened, sometimes removed altogether.

If at any time two regular colonnades should be employed one above the other it would be desirable to adopt a pycnostyle system of intercolumniation, at least one approaching to it, since the closer the columns are and the nearer the quantity of the solids approaches to that of the voids, the firmer and more compact will the whole of such elevation appear. When on the contrary—as is the case in some Italian buildings—the distances between the columns are six or seven modules, or even more, the effect becomes particularly straggling and weak.

There is another disadvantage attending placing columns over columns, even when it is done with as little impropriety as possible, which is that the columns will appear minute both in proportion to the number of orders thus introduced and to the horizontal extent of the façade. This appearance will, moreover, generally be exaggerated even into incongruity by the windows to each order or storey being nearly as lofty as the columns themselves. In many examples of Italian design this takes place to such a degree that the columns or pilasters become little more than accessories to the windows themselves.

If to be tolerated at all, supercolumniation seems to be best adapted for narrow lofty fronts, and for structures partaking more or less of the character of a tower, because in such case the succession of storeys upwards assists the idea of altitude; whereas in façades whose length considerably exceeds their height, the separate orders will appear low in comparison with the horizontal extent of the different floors they decorate.

With regard to the succession of the orders above each other, it has been universally the practice to place the plainer and more robust ones beneath. Indeed, the bare mention of a reversed mode of supercolumniation would be scouted as a preposterous absurdity. But quite as much may be urged in favour of the latter as of the former. Would it not, then, be a gross solecism to place an order of stouter proportions above one that is less so? Certainly not; because the diameters of the upper columns will be less than those of the order beneath. Were the diameters the same, or those of the second order greater than in the first, then undoubtedly the effect would be contrary both to propriety and beauty. The fact, however, is that instead of being positively more bulky, the upper range of columns would be slenderer and shorter also than those below, which latter circumstance would in itself be rather an advantage than otherwise, because it will be better that the different orders or storeys should decrease in height as they ascend than otherwise. Now if we have three orders so arranged, supposing the respective heights of the columns to be ten, eight and six diameters, the columns of the second order will not be equal to eight diameters of the first, nor those of the third to six diameters of the second. The columns of the third order would in fact be only half the height of those of the first; this graduated diminution of the successive parts as they ascend in the elevation would also form a kind of artificial perspective, increasing the appearance of actual height. According to the usual mode, especially if the proportions of the columns vary not more than a diameter in each succeeding tier, there will be little variety as to the heights of the different parts of the elevation. Another circumstance in favour of the disposition here suggested is, that the richest order would be seen to more advantage, and even those who may consider such a mode of supercolumniation contrary to the rules of architectural grammar, must admit that there is something like propriety in placing the decorated Corinthian capital and cornice nearer to the eye than those of the plainer Doric. Still it may be alleged that it seems more natural to bestow a greater degree of embellishment on the upper than on the lower part of a building, and that this principle seems almost invariably to have been attended to by the architects of the Mediæval period, who frequently bestowed a profuse degree of embellishment on the summits of towers and other elevated parts, even where the rest of the building was not much distinguished by ornament. This must be admitted; nevertheless we ought at the same time to take into consideration the great difference between the two styles. The perforated parapets and enriched pinnacles of the one will not be rendered less distinct by their height above the eye, although they will certainly appear more delicate, but the carved mouldings of Grecian and Roman architecture would produce little if at all more effect than so many plain members—or rather, most of the smaller members would be entirely lost in such situations, particularly as we cannot enlarge them at pleasure so as to adapt them to particular distances, as may be done in Gothic architecture. When therefore several ranges of diminutive orders are piled up one above the other on the summits of steeples, as in the spire of St. Bride's Church, it becomes impossible to distinguish any difference of character.

The King will lay the foundation-stone of the King's Sanatorium for Consumptives at Lords Common, near Midhurst, on November 3.

CONVENTIONALISM IN PRIMITIVE ART.*

THERE is no more art in the mechanical figurations of primitive man and contemporary savages, or even of men who have advanced in barbarism—which is ever picturesque—and of semi-civilised and civilised men, than in the letters and numerals of their ordinary script; and most of the conventional “designs, so qualified, of savages are but meant to serve either as charms, or as crude hieroglyphs for the conveyance of information. Even the famous magical and religious symbols of Babylonia and Egypt, now known to have directly prompted so many of the artistic types of the Old World, cannot be said to be artistic in themselves, or, indeed, to have had any necessary or other than an accidental part in the assumed “evolution” of the beautiful types, “how beautiful beyond compare,” actually suggested by them. If the Greeks, who, as Goethe has said, “of all people dreamt the most enchanting dream of life,” had not copied their “palmette” and “honeysuckle” types from the religious symbols, conventionalised at first hand by the Egyptians and Assyrians from the palm-tree and the vine, and, again, from the lotus, they would themselves have devised these types direct from such natural forms of their own hills and plains and sea-shores as the honeysuckle, the cockle-shell and the cuttle-fish. The art of these consummate types has nothing to do with the stateliness of the palm-tree (“Odyssey,” vi. 165), or the splendour of the lotus, or the sweet, winsome, modest grace of the honeysuckle, or the refinement of the curves of the cockle-shell any more than with the abysmal monstrosity in form and texture and action of the loathly cuttle-fish. Their perfected loveliness is of “the vision beatific” that comes “like angel’s visits, few and far between,” only to exceptionally gifted men, who materialise the “spiritual body” of the absolute “archetypes” of all pulchritude and clothe them with a “natural body” of sensuous existence to be the world’s wonderment and joy for ever.

In brief, there is no such thing, certainly not in the narrow meaning of ethnological writers, as evolution in art. There is only individual, incalculable and miraculous inspiration; followed, alas! invariably by collective and continuous degradation of the ideals from time to time revealed to and realised by creative artists of the highest genius. A master soul founds a great school, and gradually this school of at first enthusiastic and disinterested, and at last sordid and perfunctory imitators, undermines the vital force of his work, and vulgarises it to the vilest uses, until, after generations, or it may be centuries, another master arises to revindicate and renew it. Alternate exaltation to the brightest heaven of invention, and abasement to the darkest Hades of mechanical mannerism, in some phase or other of “l’art nouveau”—this, in the patience of the all-disposing gods, has been the history of the arts in every country, including Greece and Italy, of Europe. There is overwhelming evidence in it of what ethnologists may be left to call “devolution”—“from top of honour to disgrace’s feet”—but never a tittle of “evolution.” Take the objects of Papuan art, illustrated in Professor Haddon’s monograph and those in Mr. Balfour’s scholarly handbook, surprised as we may be by the cunning of their contrivance and the manipulative skill expended on them, and prejudiced in their favour by the fact of their being for the most part of spiritual significance—the moving principle and distinctive note of all the greatest art—there is not one of them which is not frightful to look upon, and not only demoniac but demonic in its frightfulness. It is a profanation of the eyes to look upon them, and they have no association whatever with art, and their proper place is in the strictest seclusion of museums of ethnography.

The sense of art is universal among mankind. It is found in the earliest races of men, and, so far as the surviving proofs go, it was more developed in Palæolithic man, of both the “river drift” and “cave dwellings” periods, than in Neolithic man of either the “bronze” or the “stone” age, although the far more numerous remains of the bronze age show a very wide and familiar use of informative and symbolical, and, sometimes, of intentionally decorative conventional types of the mechanical order. The Esquimaux, who are believed to be a survival of Palæolithic man will, with a few scratches, figure a reindeer on a bone with all the truth to nature and all the artistic verve and flare of Landseer; while among all the remains of Palæolithic and Neolithic man there is not one that excites horror or that betrays a trace of those weird and convulsive contortions of line which characterise alike the decadent “art nouveau” of contemporary Europe and the assumed autochthonous “art,” so-called, of British Papua. I say assumed, for it may be reasonably presumed that all highly laboured ugliness, whether in informative, symbolical, or decorative types, indicates archaicism rather than true archaism, or primitivism, and a state, not of “evolution” in art, but of natural decay and degradation, or, in the language

of ethnologists, of “devolution.” My own suspicion is that the Papuan devices, depicted by Professor Haddon, are a depraved and sinister deformations of aboriginally Indian types, transmitted in the train of Buddhist mission, Mohammedan traders and Portuguese and Dutch navigators, filibusters, voyaging to and fro, through the centuries, between Southern India and Ceylon, and Farther India, the Indian Archipelago and China and Japan. The Portuguese, it may be added parenthetically, undoubtedly influenced, if they did not originally inspire, the fascinating, secular art—in flower-landscape painting—of Japan. It is quite distinct from ritualistic fruit and flower painting introduced, as I believe, into China and Japan by the Indian Buddhists. While, therefore, the æsthetic sense, using the phrase in its plain meaning (“aisthesis ton theon”), is latent in every race of men, and goes back beyond men to the animal kingdom, it is inherent in the very constitution of the “well-ordered” Cosmos, it is only in favoured races, and the most highly favoured individuals of these favoured races, that this sense instinctively self-moved—impelled—goaded on, to reproduce the true artist’s “passionate intuition” of his ideals in reality more or less closely answering to that “wonderous pattern” seen only of the inner eye—which, wheresoever it be—

Whether in earth, laid up in secret store,
Or else in heaven, that no man may it see
With sinful eyes, for fear it to deplore,
Is perfect beauty.

The Papuan devices figured by Professor Haddon are the most interesting to the student of art as suggestive of the prehistoric primitive, or, it may be archaic, origins of the historic decorative types of the Old World, which again would all have remained to this day dead, mechanical devices, even as the Papuan devices are, had not the quickening spirit breathed its healthful and elevating and refining life into them, and transformed their deformity into those exquisite creations of the pottery, jewellery, coins, engraved gems and architecture of the Greeks of the fifth century B.C., which continue to this day to be at once the inspiration and despair of the craftsman, the architects, the painters and the sculptors of the modern civilised, *i.e.* Hellenised, modern world.

But the Huichol designs for textile decoration are beautiful and embellishing, and alike in conception, in composition and in purpose, ornamental in the truest and best sense of the word. The types of the designs are taken direct from nature, from the local fruits and flowers, and with the objects they represent they are all prayers, the water-gourd and the water-lily and patterns derived from them being prayers for rain. This recalls the beautiful saying I am always quoting in the *Journal* attributed to “the Prophet of God” (Mohammed), “In the terrestrial Paradise, the Garden of God, every flower is an Alleluia,” and that other touching oriental thought in the reverse of the hymn of the Greek Church, translated by the *Journal*, “The Lord my Maker, forming me of clay,” of calling out the flowers of Eden to make intercession with God on behalf of Adam. There is not a flower in India—India of the Hindus—that is not thus sanctified by some moving association or by with one or other of the immemorial gods of the country. These Huichol designs are advanced far beyond the stage of charms, or religious symbols. In artistic quality of line and colour there is nothing to be compared with them in the whole range of the ritualistic devices of the Melanesians of Australia and the Xanthians of Farther India, the Indian Archipelago, China and Japan; and as conventional textile designs, at the very least, they could not be better inspired, planned or depicted. Compare, for example, the Huichol treatment of the “double-headed (Hittite) eagle” with that of the “frigate bird” of the Solomon Islanders, fig. 7, p. 462, of the *Journal*, April 27, 1901. The Huichol “Royal Eagle” is perfectly conventionalised, but is executed with something of the almost ferocious energy of the heraldic draughtsmanship of Germany as it is to be found in the *Münchener Kalender*, 1895-1903. The “double-headed eagle” of the Hittites, together with the “winged bull” and other seraph-beasts of the Assyrians, travelled into Southern India long before the modern rediscovery of that country by the Portuguese; and the type of the “Hittite Eagle” may have travelled westward on European coins in the proud train of the Spanish navigation, conquest and colonisation of the Americas. Mr. Carl Lumholtz expressly states that the crown on and between each of the heads of the Huichol eagle is of quite recent introduction from Europe, and the thoroughness of the assimilation of this detail, that is of its subordination to local “motifs,” models (isomorphs) and manipulations, more complete than that undergone in every instance by the ancient Assyrian types in Southern India—is of itself sufficient evidence of the natural force and independence of initiative and of the originality of the inborn and inbred artistic sense and technical skill of the Huichols.

Anyone familiar with the textile art of India will have

* From a paper by Sir George Birdwood, K.C.I.E., C.S.I., in the *Journal of the Society of Arts*.

by the remarkable resemblance, in their general artistic symmetry—dependent on similarity of material, patterning, and use—of the bags, cloths, ribbons, &c., of the cloths, as figured by Lumholtz, to the similar productions of the East. There is an extraordinary generic likeness between the Indian pouches, figured by Lumholtz, and the Assamese pouches, of which will be found in the chapter on "The Knop and the Tree of Life" and swastika patterns—"Industrial Arts of India" presented by me in 1902 to the Asiatic Society at Woking on the occasion of the opening of the cemetery there of the Wadia Mausoleum, and held in the hand of Assyrian kings, as they are represented on the "Nineveh marbles," worshipping before the "Tree of Life." This is of direct pertinence in the present connection, as it serves to accentuate the fact of the unrivalled position offered by India for the comparative study of the various decorative arts of the whole world. The country is the most varied structure, in more or less independent geographical areas, within the vast outstretched peninsula so long and so homogeneously defined by the Himalayas and the Indian Ocean. Its climates are of every degree of hot and cold, moist and dry, but all regulated by the force of the monsoon of the prevailing monsoons. Its inhabitants are of every race and nationality and religion, and in every stage of civilisation, but all more or less subdued to the physical, intellectual and moral type imposed on them by the ubiquitous and continuous operation, through 3,000 years, of the predominating system of the Code of Manu. Lying athwart the routes of ancient and modern overland and seaborne trade between the East and the West, and accessible to every power, in the course of this trade, from Central Asia and the Indian Ocean, it has been the arena of every form of commercial and political exploitation, gradually systematised, organised and rendered self-consistent by the long-continued operation throughout the Middle Ages of the easy-going supremacy of the Mohammedans, and the strenuous administration since the sixteenth century of the English. The result has been an extraordinary variety of local arts, each racy by its soil, but all one in the unity of the classical perfection imposed on them by the preponderating genius, as of "the irresistible air," of the great historical race of the classical Hindus.

I have written much on this point in the "Industrial Arts of India." But behind these classical arts of India—objects of the artists class as art—there are other manifestations of the aesthetic intuition of the people seldom observed by the classical artists, which should have a special interest for the study of art on a "biological basis." Such are the sectarian and aboriginally totemistic tattoos, largely reproduced in the "Industrial Arts of India" from Allen Moor's "Hindu Pantheon" and the symbolical marks tattooed on Hindu women, the so-called "drawings" (*kolam*, literally "beautiful," cf. *kalos*) traced with the fingers in sand, and coloured with ochre, on the almost daily occasions of public and private festivals, on the threshold or door sill of all Hindu houses. Henry Trueman Wood tells me that some twelve years ago, in passing one morning through the village of Knutsford, Cheshire, a decoration being treated in this manner on the doorstep of a house where a wedding breakfast was to be held. At such festivities in India a *toran*, i.e. cord or ribbon, decorated with leaves and flowers in rhythmical alternation, is draped across the lintel of every door, while before the doorway, as you approach it from without, the plank, or large stone, or the beaten and smooth earth which constitutes the threshold, is decorated with a variegation of symbolical designs in sand and coloured powders; the effect suggesting the origin of mosaic pavements and rugs and carpets of many kinds in some such practice of archaic antiquity. This mode of decoration in India is entirely a domestic art, hereditary in the families on the female side only, and the designs used are of a dateless tradition. I never saw any systematic or intelligible notice of these tattoo marks and domestic "drawings" until my young friend, Mr. B. A. Gupte, recently published in the "Indian Antiquary" his papers on "Female Designs in India" and on "Divali Folk-lore;" in the latter of which he reproduces a copy by Mrs. Gupte of the design with which she decorates the threshold of their house at the time of the annual celebration of the Divali (*dīpa*, "light," cf. "dips," and *avali*, a "row") the Hindu "Feast of Lights," held in the new moon of Kartik (corresponding to the present with October 28-30) in honour of *Lakshmi*, the goddess of Vishnu, and "Goddess of Good Luck and Prosperity."

The study of these tattoo marks and ritualistic devices led me to suggest at least two obvious conclusions. The first is that not only incoherent, almost amorphous, devices, but fully formed symbols, when bald and misproportioned, or badly and slipshod, or in any way unseemly, are all illustrations of artistic decadence; and the second, that a self-consistent, regularly designed symbol having once been created by a people, their natural tendency is to wrest the

familiar forms of nature about them to the canon of the established symbol, without any thought of endowing the later with the beauty of the former; just as Procrustes stretched out, or chopped down, his captives to the length of his murderous bed. Goethe has well said that the highest principle of art is significance, but he adds that the result of the right application of this principle is beauty; and this is achieved only through individual inspiration and technical mastery. As Pallas Athene sprang from the head of Zeus fully armed, so the work of every great artist passes out of his hands fashioned forth from the first to immortality, and without parentage of any "biological basis," or other pedigree than that of its divine descent. Lorenz Oken defined man as "the pantheistic animal." The phrase means more than the term Microcosm, when originally applied to man as the inexplicable compendium of the created universe, or Macrocosm. It means that man is not only the synthesis of the physical and spiritual creation, of all that is material and all that is individually spiritual (the *Karma*, —ego, of the Hindus), and therefore passing, but also of all that is divine and eternally abiding (*Atman* of Hindus—in Whom, not which, is the true *nirvana* of all created personality). In the physio-philosophy of the Zürich professor, therefore, art in its highest definition is the symbolical reflection of the design and ultimate purpose of creation as the probation of intellectual and moral beauty; and the artistic sense is the yearning latent in all men to realise, each for himself and for the world, the ideal which is the directing and operative "motive" of the visible universe. It is only in the noblest races that this sense becomes nascent; as, among the Hebrews, in their profound sense of holiness, among the Greeks of beauty, in the Romans of discipline and order, in the French of self-sacrifice for humanising ideals and of philanthropy in the English; and it is only among the most richly and rarely endowed men of these generous races that this transcendental artistic sense becomes expressive—in a Homer, a Plato, an Aristotle, a Phidias, a Julius Cæsar, a St. Augustine, a St. Francis, a Dante, a Fra Angelico—while for the inarticulate multitude of men and women there remains, as their privileged participation in divinity:—

The desire of the moth for the star,
Of the night for the morrow,
The devotion to something afar
From the sphere of our sorrow.

ENGLISH AND FOREIGN TRAMWAYS.

THE following report by Mr. R. H. Scotter on legislation in all countries relative to tramways and light railways was handed into the Departmental Committee on Highways:—

The study of the law with regard to tramways and light railways in various countries reveals the fact that although the general procedure is nearly the same in many parts of Europe, various obstacles are placed in the way by which the practical results are widely divergent.

After the perusal of some hundreds of letters, notes and reports which I had collated from all parts of the world, and also of the documents placed at my disposal by the International Union, I addressed a few questions on practical matters to practical men, hoping thereby to arrive at a better result than would be possible from a long perusal of the dry bones of laws and regulations.

The first list of questions which I prepared dealt mainly with the promotion of tramways and light railways, and from the answers I received I have prepared this preliminary report.

I may say that in my study I soon found that I was going over the same ground again and again, and I beg to state my opinion that the most profitable way of making use of this study of the law in different countries is to select a few points and collect the maxima and minima, the best and worst specimens, and to bring those prominently forward.

I asked myself the question, Of what use is this study? and I think I am correct in replying—(1) A complete collection of laws, acts, rules, regulations should be formed and deposited at the head office of the union. (2) Translations of the most useful and the most harmful points and clauses should be made as guide-posts for all of us. (3) An effort should be made by all of us to gradually standardise all regulations, especially those connected with electric traction.

Although we live in different lands, we are one in our aims and one in our methods. We have the improvement of the means by which humanity moves from place to place always before our minds, and therefore when any good rule is made in one country we should be ready, without jealousy, to help our brethren across the sea to adopt it. When a hardship presses on one of our group some others may be able to suggest a remedy. These actual facts would be immensely useful when, for instance, deputations wait upon a Minister to urge a change in the law.

This is the spirit in which I put before you the first instalment of a study which may, I hope, be spread over many years, but which at present has little to show for a great deal of work.

I appeal to members to help in every way this most important and interesting study.

Date of Laws.

In point of time England was the first of European countries to introduce the street railway system used in America. In 1860 Mr. Train put down the Birkenhead line, and I may add that this system has lately been electrified, and during the first year of its new system carried 6,000,000 passengers. But England has been the last to pass a law to facilitate the construction of tramways and light railways, I mean a law which brings her regulations in line with those of other European countries.

In 1870 an Act was passed recognising for the first time in English legislation the principle that rails may be laid on the public road. This Act simplified the process of obtaining power to construct a tramway by substituting the obtaining of a provisional order from the Board of Trade for the long and expensive process of promoting a Bill in Parliament. The Board of Trade afterwards embodies several of these orders in a Bill, which it passes through Parliament. The Tramways Act, 1870, contained one clause, however, which makes the veto of the local authority a *sine qua non* to obtaining an order. The result has been the local authorities have used this veto to effectively prevent the promotion of tramways unless they obtained very heavy compensation from the promoters. The consents of the local authorities or of the landowners "fronting" on the proposed line must also be obtained, and the refusal of one-third to agree to the scheme effectively wrecks it. A further clause limits the concession to twenty-one years, and then the local authorities can purchase practically at an "old iron" price. It is hardly to be wondered at that under these regulations the tramway enterprise in England did not flourish. In 1896 the Light Railways Act was passed to facilitate the promotion of light railways and to cheapen procedure and also construction. Hence for the first time England is brought in line with other countries in this matter. Bavaria has possessed her authority to construct light railways since 1855; Belgium since 1875 and 1885; and Italy in 1896 obtained her law respecting mechanical traction. But to Belgium must be granted the premier position so far as the successful carrying out of the law has been concerned.

Light Railway Authority.

We may all, I think, learn a great deal from the excellent system of *chemin de fer vicinaux* now working in Belgium. I am of opinion, from a practical point of view, this happy result is attained by the clever system of binding together three discordant elements, which separately are placing a great deal of hindrance in our way all over the world—I mean the Government, the local authorities and the public. Belgium has united these interests in such proportion that each one is alone relatively harmless. In my opinion no light railway or feeder line can be successfully worked unless these three interests are combined. Exactly in what proportions their help and influence are obtained is a matter for local arrangement.

I go further, and say that not one of these three elements alone can show good results as a light railway authority. Private enterprise represented by the investing public cannot see sufficient return for its capital from the districts which are most in want of light railways. There are many reasons why the State cannot single-handed supply money for the construction and working of these lines, because the beneficial results which will accrue are more local than national, and there are still greater reasons why local authorities—in England, county and district councils; in other countries, provinces and communes—should not embark in this enterprise. Their horizon is strictly limited, and their purses are as a whole already too heavily drained. But the principal reason is that our work needs the attention of an expert with world-wide experience of a life-long character, and where will you find such an one among the local authorities, and if you find him will he be able to sufficiently influence his colleagues?

In well-defined urban centres there are many arguments why the means of communication should be under municipal control. But this only applies to such passenger traffic as is confined to the municipal area. Once outside this artificial limit another authority claims to regulate the traffic. Hence the introduction of misunderstanding, jealousy and strife, and in the end the great work not done at all.

In England the battle between the advocates of municipal tramways versus private enterprise has become so acute that a deputation from the Institute of Electrical Engineers lately placed the grievances of private companies before the President of the Board of Trade, with the result that he has promised to bring in a Bill to curtail the reactionary uses made by local authorities of their very wide discretionary powers.

To conclude this point, I am of opinion that for inter-urban

and country districts the Belgium system of uniting the elements—the State, the local authorities and private enterprise—is decidedly the best.

In urban districts private enterprise certainly produces best results, because it secures the best and most economical management, and allows of that continuity in the carrying of the work which local authorities, subject as they are to periodical changes, cannot aspire to. But it is always best to accord to the local authority that equitable amount of consideration which will secure the most beneficial results to traffic facilities and payment for the concession. The traffic results can only be attained by linking up the whole of the country, and this is only possible where the whole is in the hands of one organisation. In France the railways are partly guaranteed lines, and partly lines worked by private enterprise. The former are, according to the lines which are most in need of assistance, as they are in the through poor districts. Their average expense for the year is 89 per cent.

General Regulations.

The general regulations with regard to light railways and tramways in all countries are so similar that I will not repeat them. One point in our English practice I have not mentioned in many other countries. Following the departmental plans and proposals, His Majesty's Light Railway Commissioners hold a local inquiry in the district proposed to be served by the line. This inquiry is an open court, and evidence of a formal and informal character is heard. All parties interested may attend and give evidence for or against the scheme. It is very surprising how good an effect this innovation has produced upon Englishmen. In many countries, and in England before 1896, the inquiry is held at the instance of Parliament, many miles away from the actual spot to be served by the line. Hence purely local circumstances are not so fully treated as they can on the spot.

Length of Time to obtain Concession.

A point which is of vital importance to all concerned is the actual length of time which it takes to obtain the concession for the line. In England the actual time varies from nine months to two years. Tramways, however, promoted under Parliamentary rules are dependent on the sanction of Parliament, and must be passed or rejected within nine months.

In Belgium two or three years is required to obtain a concession; in Turkey, with sufficient influence, two or three years; in Italy six to twelve months, and it is a matter of time and patience; German practice gives about one to one and a half years. Our American friends, with their proverbial swiftness, allow a franchise to pass "through" in thirty days.

Duration of Concession.

Upon the most important matter—the duration of a concession, the period of time granted for amortisation of capital—very wide divergence of practice is discovered. Naturally an important element in this consideration is dependent on the ultimate owner of the concession—that is, after the concession period has expired. This, again, entirely depends upon the ownership of the other means of communication in the country—whether they are State-owned or in the hands of private companies.

In England all the railways are private property, and at present there seems no immediate possibility of a change. Railway concessions are granted in perpetuity, but also tramway or light railway orders fix a limit of time upon the granting of any concession, as far as they relate to the promoters only. A local authority, on the other hand, grants a perpetual concession, and this naturally leads to the question of the ordinary commercial rules for providing for the depreciation of capital. Under the Tramways Act twenty-one years from the date of authorisation was fixed as the limit of time granted with each concession. At the end of that period the local authority has the right to purchase the undertaking at a price calculated on:—Cost at date of purchasing the undertaking, less of constructing a similar line, less an allowance for depreciation due to wear and tear or to neglect, plus an allowance actually paid for street widenings.

It was largely on account of the approach of the twenty-one years reckoning—the end of the twenty-one years—that tramway directors hesitated before adopting electric traction. Hence it is also that many electric tramways in England to-day are municipal undertakings. They were bought at a low price from the original promoters and converted by the local authorities. The new light railways bill gives thirty-three and forty-two years for the concession, and also directs that the ultimate purchaser shall acquire the line as a going concern. But even with this extension of time we are still behind other countries.

In Leipzig the period granted is forty years; in Italy forty and seventy, according to the character of the line, urban or suburban; in Brunswick and Bavaria nine years. Prussian law, too, differentiates between large thirty and

um size fifty to seventy-five, and for small towns
In Switzerland eighty years is allowed, and in
time limit is fixed, the concession is granted in per-

Gauge.

ge adopted for tramways and light railways varies
countries. Belgium used the metre gauge (3 feet
80 per cent. of its mileage. For the remainder
of the corresponding heavy railway is adopted.
elle also uses the metre gauge, which, with modifi-
ound in Italy, Brunswick and Turkey. Leipzig
is known as the ordinary or normal, 1'458 (4 feet
and no less than seven different gauges have been
ng adopted for light railways, namely, 1 foot
2 feet, 2 feet 6 inches, 3 feet, 3 feet 6 inches, 4 feet,
ches. At the present time, however, 80 per cent.
ge authorised for light railway construction is on
y gauge, 4 feet 8½ inches, and a very large propor-
ways use the same gauge.

opinion that it is advisable that each country should
at the most two gauges for light railways, in order
stock, locomotives, &c., may be more economically
and worked. In fact, by adopting such a policy,
sion of all parts of the system becomes practicable.
mind the ultimate linking up of the whole of the
ys into one vast secondary system, I think we
up our minds on the subject and use our influence
legislation to obtain our wishes.

before us the lamentable failure of the Govern-
d light railways in Ireland, where about 300 miles
ne been laid down under six different gauges, with-
erence whatever to each other. The consequence
ange of rolling stock is possible, although in some
he is overcrowded while an adjacent system has
riages standing idle.

ois the waste in having separate workshops, stations,
lds, &c., for each system, and we recognise the
ue of standardisation in the matter of gauge.

Width of a Roadway.

enes of light railway or tramway are laid upon the
most important that some minimum width should be
elected. At the present time much diversity of
ists.

and 27 feet and 24 feet (8.3 m. and 7.50 m.) of
y is required for ordinary roads. In addition to
s most English roads possess one or more foot-

rtice is by no means uniform, as each road authority
tain such road widening as may be necessary at
of the light railway. Tramway promoters are
ave 9 feet 6 inches between the outer rail and the
e of the footpath. This means that the ordinary
rsed by a tramway should be about 24 feet wide.
his width is obtained, but under exceptional circum-
rule is relaxed. Indeed, in Cork a tramway
street only 16 feet wide.

Ultimate Owner of the Light Railway.

a point to which I wish to draw attention is, What
ultimately become the owner of all concessions?
ntroduction of electric traction many important
varisen which make this a most important considera-
have already mentioned, the ultimate possessor of
ys within municipal areas in England will be the
orporation, and this practice will be followed at
Athen, Brunswick and several other towns. Under
ays Act they are empowered to take over the
he "old iron" price. Under the Light Railways
several tramways have been promoted under this
just at least pay its market value. Light railways
try districts pass into the hands of the local
laid in only one local district, into the hands of
d local authorities, if they all agree to purchase, if
rlyway traverses more than one district.

recent enactments the County Councils (Provincial
e empowered to become the purchasing authority
ration of the franchise. This introduces a great
or and one upon which we seek advice.

again leads the way in this matter, and its con-
granted in perpetuity, so that the National Society
it work out unfettered by the fear of coming dissolu-
is by far the best practice, but it needs a strong
to initiate it.

mind, light railways and tramways will prosper in
to the number of liberal facilities for promotion,
and working which are granted to their promoters.
it thrive if laid under such cast-iron fetters as are
heavy railways. Granting this proposition, it is
mulate such rules and regulations, such clauses and

sections in Acts of legislature, as will most effectively carry
these points in the actual working of the lines.

In conclusion, I wish to point out that the study of the law
is the most extensive of all other studies. It embraces all
others. It focuses all others in a point. We have only to
remember what an enormous influence the alteration of one
word in a law has to convince ourselves of this fact. But in
order to alter that one word we have to impress the Govern-
ment with many instances of its application.

Therefore I propose that a few subjects be selected, say,
the evils of municipal trading, uniformity of gauge, length of
time for concession, or any others, and that we obtain actual
examples of the working of the law for or against these, which
when tabulated and printed become the most effective means
we can possess of attacking the powers that be, in order to
obtain what we all strive for—the best and most economical
means of pursuing our most important profession, that of pro-
viding for the rapid transport of passengers and goods, by
means of a secondary system of tramways and light railways.

QUEEN'S COLLEGE, OXFORD.

DURING the long vacation important works have been in
progress, including the installation of the electric light
throughout Queen's College, Oxford, and the overhauling of a
part of the drainage. In introducing the electric light it was
convenient to pass a cable through the crypt underneath the
apse of the chapel which was erected in the north-east corner
of the great quadrangle in 1714. On opening the crypt it was
found to contain on a stone rest a leaden casket with the
remains of the founder, Robert Eglesfield, chaplain and con-
fessor to Philippa, Queen of Edward III, from whom the
college derives its name. Eglesfield died in 1349, aged 43,
and was buried in the college chapel. Cut deep in the lead on
the top of the casket are the words "Reliquiæ Fundatoris," a
peculiarity being that the letter "D" is turned backwards. No
date accompanies the inscription. In front were coffins of
Provosts Brown, Fothergill and Collinson; and in a recess to
the right on entering were the coffin of Provost Smith and the
remains of Provost Haltom. The latter was buried under the
old chapel in 1704, but his coffin was removed when the new
chapel was built a few years later.

There were also in the crypt some curious memorials which
had formerly been placed in the old chapel, and at its demoli-
tion were probably for safety transferred to this spot. One was
a broken stone, to which was attached a small brass represent-
ing a tun or barrel, with a musical note known as a "long"
upon it, with the capital letter "R." This is a rebus of the
name "Langton," Robert Langton having been a doctor of
laws and nephew of Bishop Langton, who at one time was pro-
vost of the college; Robert built the large antechapel to the old
chapel in the year 1518. The stone had also upon it a depres-
sion in which the head of the figure of Langton had rested. In
the muniment-room of the college was a brass which in the last
century was believed to be that of Robert Eglesfield, the
founder of the college, but archæologists described it as of later
date, and no doubt correctly so. The head of this brass fits
into the depression in the stone on which is the rebus, and it is
certainly that of Robert Langton.

Another interesting discovery was a brass representing the
figure of a man with an inscription below. The features and
the details of the inscription are all rubbed quite flat. This has
been identified as the memorial of Nicholas Hyenson, fellow of
the college in 1477. In addition there was found a stone with
an inscription of "Radulphus Hamisterley, Master of Uni-
versity College." Above the inscription in the depression of
the stone there was evidently originally a figure, but this has
disappeared. In the crypt were the three gravestones, which
formerly rested on the floor of the old chapel, of Provost Airay
(provost, 1599-1616), Provost Christopher Potter and Provost
Langbaine. Airay's stone has a brass plate with an inscription
upon it, and the other stones are engraved with the arms of the
provosts. In the identification of these memorials an engraving
by Burghers representing the ground plan of the old chapel
was found useful. This plan also facilitated the determination
of the position of the west front of the ante-chapel, which was
disclosed in the excavations made for drainage purposes in the
line of the path leading from the great gate of the college to
the chapel passage.

The drainage works also disclosed some feet below the
surface two passages, one in the front quadrangle and the other
in the back, the object of which at first seemed doubtful. It
was conjectured they might have belonged to an older building
occupying the site of the present college. Mr. James Parker
(president of the Oxford Architectural and Historical Society),
who was consulted, satisfied himself that the tooling on some
of the stones corresponded with the tooling of some of the
stones which were laid when the college was rebuilt. It is now
looked upon as certain that the passages were conduits leading

to large blind wells intended to receive the surface water from the college roofs and quadrangles, and that the conduits were made so large to hold the flood water in case of an exceptional rainfall.

The crypt has been closed, the leaden casket and coffins being left as they were found. The remains of Provost Haltom, from which the coffin had fallen, have been deposited in an oak casket and the gravestones have been placed in the ante-chapel. The brasses found in the crypt, with the stones to which they are attached, are fixed in the wall of the apse, together with two other brasses that have long been preserved in the muniment-room. They will form an additional feature of interest in the chapel, the foundation-stone of which was laid on February 6, 1714, the dedication taking place on All Saints Day five years later. The illuminated windows in the chapel by Van Ling (1635) are in good preservation, and were removed from the first chapel. They depict scenes in the life of Christ. The westernmost windows are earlier, and two of them bear the date (1518) of Robert Langton's ante-chapel. Some tiles of an ornamental character were discovered *in situ* near the western entrance of the old chapel, some of them adorned with the same rebus as is on the brass which formed part of Langton's memorial.

LANCASHIRE AND CHESHIRE ANTIQUARIAN SOCIETY.

AT a meeting of this Society held in Chetham's Hospital, Manchester, on the 9th inst., Mr. W. E. A. Axon delivered his presidential address. The address was, in effect, a survey of the history of antiquarian research in Lancashire and Cheshire. He mentioned that the Society was formed in 1883, under the presidency of Dr. Boyd Dawkins, and that the results of its labours are recorded in "Transactions," which now fill "a shelf of goodly volumes." It might be asked, he said, if the various societies which had been actively at work in the nineteenth century had left anything in the way of antiquarian enterprises for the twentieth century to accomplish. Those engaged in antiquarian study, at any rate, knew that there was still an almost unlimited field before them. Much, indeed, had perished for lack of observation. If, for instance, in the seventeenth century there had been a systematic examination of all that was then to be seen of Roman and Mediaeval Manchester, our knowledge of the city's past would have been infinitely greater. And the same thing might be said of every district in the two Palatinates. There was all the more reason therefore why in the present day they should carefully glean and garner what remained. There was great need for the systematic arrangement of the results of antiquarian research. A short paper was read by Mr. Ernest Axon on "Walter and Margaret Nugent," the founders of the Nugent Charity, which is "the oldest and almost the smallest of the numerous funds which go to make up the Lord Mayor's charities."

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

AT the annual meeting the president of the Association (Mr. Arthur Harrison) delivered his presidential address. He took as his subject the housing question, and dealt at some length with the construction of block dwellings. At the outset he alluded to the evils of overcrowding, and to the necessity, in the interests of health, of a clearance being effected as far as possible in insanitary areas. He explained various schemes which had been suggested for bringing about an improvement, and pointed out that a scheme which might be suitable for one town might be unsuitable for another. The flat system in Birmingham, for instance, seemed to be regarded with disfavour, but that was largely on account of its novelty. Still, the fear that the people would not take to flats no doubt influenced the Corporation when they produced the Milk Street tenements, as they were in the nature of a compromise. They were built on the principle of flats, but only two storeys high, and that he regarded as a mistake. Whether there was any prejudice against four-storey flats would soon be proved, because two schemes of block dwellings were being carried out in this city. He had inspected the buildings of many municipal and private enterprises, and had been disappointed with the block dwellings because better results might have been obtained for the money expended. The two schemes which were in progress in Birmingham, however, were different. He described in considerable detail the erection of these dwellings, explaining the improvements and conveniences which were secured in comparison with other dwellings, and said the tenements could be let at remarkably cheap rents to the poorest tenants, and still yield a return of 5 per cent. on the capital. Judging by the number of applications for the tenements, he did not think there was anything to fear from prejudice. As municipal cor-

porations had facilities for borrowing money at cheap rates, it would be possible for them to do much towards solving the housing problem and in bringing about an amelioration of the condition of the working classes, but most corporations had already borrowed up to the hilt. Moreover, it was probable that Corporation work was more costly than private enterprise. Still, whoever undertook the problem would have to be carried out. It was probable that the problem would be found ere long, and in the case of the work the architects would play a by no means unimportant part.

Mr. Harrison was cordially thanked for his address.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE first ordinary meeting of the fifty-sixth session of the Liverpool Architectural Society was held on the 11th inst. evening. The president, Mr. John Woolfall, delivered an interesting address, in the course of which he alluded to the great importance of impending architectural developments in the city, as shown in the proposed new offices for the Board, the new Cotton Exchange and the Cathedral. He mentioned the immense schemes in progress and contemplated by the City Council. Referring to existing buildings, he expressed the desire that St. George's Hall should be used as a people's hall, with exits on to the new terrace gardens adjoining, where music could be heard through, and that new law courts should be built on the same scale as a people's hall, with a removed into it, and where the enjoyment of the one would mar the business of the other. The opening-out of the Gardens and William Brown Street, in his opinion, enhanced the architectural impressiveness of the surrounding buildings. The Art Gallery was, however, only a poor example compared with those in continental cities which were so important as Liverpool, and it would no doubt have to be replaced by one much more pretentious and commodious. He said the Corporation would watch the streets which lead to the proposed cathedral, as opportunities might occur to lay up a grand thoroughfare from the centre of the city to the housing question, Mr. Woolfall said he thought the housing of the middle classes should command greater attention. The pitiful line of ugly streets, the everlasting want of grouping and planning was the main defect in the suburbs. There was a demand for more artistic surroundings. He also thought the importance of residential flat dwellings, the difficulty of erecting them under the present by-laws of the city were well worthy of discussion.

On the motion of Mr. Hartley, seconded by Mr. Willink, a hearty vote of thanks was tendered to the president for his address. Mr. Hartley expressed the opinion that the corner of the Old Haymarket and St. John's Lane was a very eligible site for a new council chamber.

TURTON TOWER.

THE approaching sale of the Horrobin estate at Appleton has lately had the effect of reviving the interest in Turton Tower, a building, says the *Bolton Courier*, which has so long and justly been held in high esteem by antiquarians of Lancashire as one of the most ancient in the United Kingdom. Few edifices in the county have been the subject of greater and more diligent research, and have carried the archaeological student further back into the past. Turton Tower is a link between the feudalism of the present age, and its possession has inspired the interest of ancient associations in the breasts of many men. The date of its erection is given in the annals of the county as 1101 (the second year of King Henry I.) when it was licensed for castellation. The exigencies of lawless age rendered necessary the construction of fortified buildings of its type, which were as much a necessity of defence for their owners and dependents as a source of utility. When predatory bands of Scots penetrated into the county of Lancashire and family feuds were kindled, events and more sanguinary than they are to-day, it was certainly a truism that an Englishman's home was his castle. There is authentic knowledge of Turton Tower in 1194-95, when, according to one of the records of the Society, "Richard, son of Robert (de Lathom), held the half carves of land, viz. three in Childwall, one in Turton, and a half fee in Brochels." In the thirteenth century the Tower, set in its forest environment, must have been regarded with great respect by the inhabitants of the

probably chiefly armed retainers or the class of serfs typified by the author of "Ivanhoe" in the chivalry and Wamba. Tournaments (there is a record of 1361), banquets and the excitements of the chase were the time of the Tower family and their dependents was not sterner business on hand. Since then, changing times and customs, the building has lingered a year of grace, when, still strong in its age, the only sound that falls upon it from the outside world is the noisy roar of an express as it carries the descendants of the marauding Scots through Lancashire on more legitimate errands.

According to the "Notes on Turton Tower" issued by the Rev. C. Scholes, the manor of Turton was held by Roger (de Holland), who was most likely brother to John, one of the twenty-five conservators for public highways by Magna Charta. At this time it became the property of Henry, Duke of Lancaster, from whose family it passed into the knightly family of Orrell, who owned Turton very early in the fifteenth century, and who came from the ancient family of that name at Orrell, near Warrington during the reign of Edward IV. (1461-83) the family claimed the manor of Turton, but Lord Derby's will on October 1, 1500, was in favour of Ralph Orrell, William of Turton, by his first wife Elizabeth, daughter of Robert, a family who, 150 years previously, held the office of a knight's fee in the ancient manor of Turton. The property remained in the Orrell family until the reign of James I.—(1628)—Turton Tower and lands were purchased by the last of the Orrells for 4,000*l.* by Humphrey, a Christian manufacturer, Clayton, near Manchester, to whom the estate was considerably mortgaged.

Chetham, as is well known, was a munificent benefactor. One of the Bolton parish church was in his possessions. A man of modest nature, and when commanded by James I. to proceed to London to accept the honour of knighthood, he declined, and was waited upon at Turton by the king's messengers to "compound with those for not appearing to the king's crowneation." He was told that "you are not to answer the contrary at your peril." With a fearful threat over him, it is to be presumed he was glad to escape with "the option of a fine." It is recorded that he was in 1634 appointed High Sheriff of Lancashire, "greatly to his annoyance." Humphrey died and the manor passed to his nephew, George, who was an Alderman and Sheriff of London. The property remained in the family through some generations. One of the Humphreys was noted for the peculiarly morose aspect in which he looked upon life. It is stated that his coffin by him, and pleasantly would discourse of his "bed" in his study (there his coffin stood). It was "improved" by a sermon of 40,000 words by the Rev. John Livesey.

With the death of Edward Chetham, a partition took place, and printed records of the names of the owners of the tower slightly differ. Families of Bland and Brierley appear to be intermingled. Ultimately a Mr. James Brierley came into possession, and relieved himself of the mortgage in the old parish church to Robert Knowles, a clergyman. He left five daughters, one of whom, born in 1700, married Mr. Edward Frere (father of the well-known Sir Edward Frere), whilst the second married Mr. John, of Kelsey Park, Kent, son of Sir Richard Hoare. The third fell to the lot of the eldest, the wife of Edward Frere, the husbands of Mr. Greene's daughters were at the disposal of Turton. Mr. Greene died in 1814. The Turton property was acquired by Mr. James Brierley, the only lord of the manor, the Tower being the occupation of Mr. Wm. Horrocks as tenant. A portion of the estate was sold to the Lancashire and Yorkshire Railway Company for their Bolton-Blackburn line, on June 13, 1848. Soon after the purchase of the property Mr. Kay took up his residence in the Tower, and on June 15, 1835, held his first court leet—a court of record, which preceded by two centuries the institution of the leet. All persons resident within the leet were to appear, and a day, and being above twelve years of age, knights, prelates, barons, people of religion, and all persons of the leet and were compellable to attend. The business was practically that now discharged by the magistrates. Mr. Kay was born at Edge Fold Farm, near Bolton, and his ancestors are stated to have settled down during the reign of Henry VIII., and it was said to have been his great-grandfather who became Lord of Turton. He was first attached to the Tower but afterwards became an inventive flax and cotton spinner. His death occurred in February 1857, and he was buried in Turton Church, the manor afterwards passing to his son, of whom he had six. The Tower was occupied by Robert and James, but probably on account of the incapacity to govern the property his brother James Brierley, the acknowledged Lord of Turton. It is recorded of him

that he "led the life of a country gentleman and was loved by his tenantry." He died in November 1876 at the Tower, and left his brother Robert and his own son James in possession. In February 1878 Robert died, and his nephew James was left in full possession. During the ownership of the Kays it was fully restored. In 1890 it entered into the possession of Miss Appleton, and has latterly been in the tenancy of Mr. W. R. Rigg.

Architecturally the chief interest of the building lies in the solid grim-looking tower, which is about 45 feet long and 28 feet wide. It is built square to the points of the compass. The lower portion of the Tower, including in height the present dining and drawing-rooms, is built of rough rubble stone with massive quoins at its main angles, and may be assigned (says Henry Taylor in his "Old Halls of Lancashire and Cheshire") to the first part of the Perpendicular period, or even to an earlier date. The tiny Mediaeval windows suit a building whose main purposes were those of defence. It was, in fact, like Radcliffe Tower and other houses in the district, practically a castle. Its walls are about five feet in thickness. The original fortress appears to have been three storeys in height with very low rooms, but at the end of the reign of Queen Elizabeth, William Orrell partially rebuilt the place, and one of his first proceedings must have been, acting in the spirit of that age, to endeavour to get loftier and better lighted rooms. He added to it another stage, built with the stiff and regular masonry of that period, and space was given for the insertion of the present large windows. In the Elizabethan or Jacobean recasting the bottom stage of the Tower became the great hall, with the usual passage through at its north end. It is entered by a spacious porch on the east side. The fine Jacobean staircase is to the north of the porch. The building contains many quaint apartments, with handsome oak wainscoting and fine plaster ceilings and friezes, which offer a special charm to the lover of antiquity. Near the tower, standing on Dove Hill, is a pedimental turret with doorway and arched window, which is said to have been an outlook in the time of Cromwell.

In these matter of fact times it is the practice to discount anything in the domain of the legendary, and it is unlikely that the prospective bidders for the ancient Tower at Turton will find in the catalogue of the sale any reference to the "invisible" effects of the place. Every self-respecting mansion with a pedigree stretching back into centuries has its own peculiar "something" about which its occupants speak with bated breath and awesome look, and it would be a pity to rob Turton Tower of its valuable supernatural asset. Tradition, that wrinkled old dame who hovers about these haunts of ancient days, has left a gossip record that "the Tower at Turton is haunted by a lady who can occasionally be heard passing along the lobbies and into the rooms as if dressed in very stiff rustling silk, but is never able to be seen. It is said that the sound is most distinct as she sweeps along the broad massive oaken staircase which leads from the hall into the upper rooms." Many traditions also prevail in the neighbourhood respecting the wealth and expenditure of Sir Humphrey Chetham during his residence at the Tower, and certainly they are quite justified by those portions of the structure which bear his name. Ben Brierley, the well known Lancashire writer, in his interesting "Journal," has associated the place with one of his quaint stories. There is also a very romantic legend dating back to the Norman epoch of a Lady Orrell who night after night maintained a lonely silent vigil in one of the upper chambers of the Tower, and kept a lamp burning in the lantern of the building to give light to her wandering son (who had fled the country with the Duke of Normandy), should he by any chance return at night. Her younger son Sigismund declared that the halls of Turton should never more resound with the clank of the heavy boots of Ralph, the heir, but his designs were frustrated by two stalwart Saxon retainers of the family. The missing Sir Ralph of course returned, and amid great rejoicings and banqueting to give a happy conventional end to the story, and his mother in her thankful heart bade "every Lady of Turton place a light in the Tower for her absent Lord"—an enjoinder which it is said was observed in honour of the Lady Orrell for many generations. There is no doubt that the ancient house has witnessed many strange scenes, and if its walls could give utterance they might many curious tales unfold. As to the aforementioned ghost, its appearances have ceased, and the only noise that is likely to disturb the sleeper is the rustling leaves near the old window casements. Whoever may be the future possessors of Turton Tower they will acquire an heritage which (to quote Mr. Scholes's "Notes") has been handed down from some of the most noble and opulent families in the country for more than 800 years, through times of terrible civil and national wars as well as through the brighter and more sunny days of peace and prosperity.

It may be incidentally mentioned in closing this article that there is a legend (which we give for what it may be worth, and which the curious will find noted in Harland and Wilkinson's "Lancashire Legends and Traditions") concerning the farm-

house situated a short distance from the Tower, known by the name of Timberbottom, or the Skull House. It is so-called from the circumstance that two skulls are or were kept here, one of which was much decayed, and the other appeared to have been cut through by a blow from some sharp instrument. Tradition says that these skulls must be kept in the house or the inmates will never cease to be disturbed. They are said to have been buried many times in the graveyard at Bradshaw Chapel, but they have always had to be exhumed and brought back to the farmhouse. They have even been thrown into the adjacent river, but to no purpose, for they had to be fished up and returned to their old quarters before the ghosts of their owners could once more rest in peace.

TESSERÆ.

Colours of the Ancients.

THAT the painters of the earliest period had not such abundant resources in this department of art as those of the later is quite consistent with experience, and does not require demonstration, but to suppose that they were confined to four pigments is quite a gratuitous supposition, and is opposed to both reason and evidence. Sir Humphry Davy analysed the colours of the so-called "Aldobrandini marriage," all the reds and yellows of which he discovered to be ochres; the blues and greens to be oxides of copper; the blacks all carbonaceous; the browns mixtures of ochres and black, and some containing oxide of manganese; the whites were all carbonates of lime. The reds discovered in an earthen vase containing a variety of colours were red oxide of lead (minium), and two iron ochres of different tints, a dull red, and a purplish red nearly of the same tint as prussiate of copper; they were all mixed with chalk or carbonate of lime. The yellows were pure ochres with carbonate of lime, and ochre mixed with minium and carbonate of lime. The blues were oxides of copper with carbonate of lime. Sir H. Davy discovered a frit made by means of soda and coloured with oxide of copper, approaching ultramarine in tint, which he supposed to be the frit of Alexandria; its composition, he says, was perfect—"that of embodying the colour in a composition resembling stone, so as to prevent the escape of elastic matter from it or the decomposing action of the elements; this is a species of artificial lapis lazuli, the colouring matter of which is naturally inherent in a hard siliceous stone." Of greens there were many shades, all, however, either carbonate or oxide of copper, mixed with carbonate of lime. The browns consisted of ochres calcined, and oxides of iron and of manganese and compounds of ochres and blacks. Sir H. Davy could not ascertain whether the lake which he discovered was of animal or of vegetable origin; if of animal, he supposed that it was very probably the Tyrian or marine purple. He discovered also a colour which he supposed to be black wad, or hydrated binocide of manganese; also a black colour composed of chalk, mixed with the ink of the sepia officinalis or cuttle-fish. The transparent blue glass of the ancients he found to be stained with oxide of cobalt, and the purple with oxide of manganese.

The Mediæval Contractor for Art.

Rude and uncouth descriptions of works of art during the Middle Ages, corresponding in character with those works, are to be found in some of the contracts respecting their execution contained in the histories of art of that period. Works of art were then bargained for and measured out, and, indeed, executed as mere pieces of furniture, and were so regarded, and, in fact, thus only did they deserve to be considered. In the 25th of Edward III., in the Rolls of the Exchequer, September 26, 1351, there is a charge to "William of Padyngton, for making twenty angels to stand in the tabernacles, by task-work at 6s. 8d. for each image, 6l. 13s. 4d." In the early ages of painting, and, indeed, as late as the time of Henry VIII., an artist of even first-rate powers in his day was looked upon as a mere mechanic. Works of art were bargained for and measured out like commercial articles; pictures were done by contract and paid for by the square yard. Very curious documents are now extant relative to agreements made for the execution of works of this description. In the fifteenth century we are informed of a contract which the Earl of Warwick made with his tailor for the painter's work to be displayed in the pageantry of his embassy to France. Among the items in this artist's bill is one "for a grete streamer for the ship of xi yerdes length, and viii yerdes of brede with a grete bere and gryfon holding a ragged staffe, pondred fule of ragged staves, and for a grete crosse of St. George: for the lynming and portraying 1l. 6s. 8d." This age, indeed, produced little beyond mere decorative painting; to this period, however, belongs a famous painting of the "Dance of Death," which was executed in the cloister of St. Paul's, and which is supposed to have furnished the prototype of Holbein's celebrated design.

The Society of Architects will hold its nineteenth annual general meeting on Thursday next, at St. James's Hall.

GENERAL.

The Board of Education have received a communication from the Foreign Office intimating that an International Art and Horticultural Exhibition is to be opened at London on May 1, 1904. A hope is expressed that England will contribute largely to this Exhibition.

The Authorities of King's College Hospital have approved of the proposal to remove the hospital to a new site in South London. Application will be made to the House of Lords against the recent judgment of the House of Commons for an Act to contain any powers necessary to effect the proposed removal of the hospital, and power to sell or otherwise dispose of the present site.

The Corporation of London have agreed to purchase the Bridge House Estates committee 50,000l. for the purpose of widening the road between Albion Place and Blomfield Street between Albion Place and Blomfield Street. The money will be paid from the consolidated fund.

The Metropolitan Public Gardens Association have decided, in view of its detrimental effect upon public health, to urge the Paddington Borough Council to appeal to the House of Lords against the recent judgment of the House of Commons in reference to St. Mary's Recreation Ground. It was decided that a public body holding public space has the same rights as a private owner has of putting up buildings to a reasonable distance from the boundary of public space, instead of building right up thereto, as is done in Paddington.

The Architectural Association will hold a convention at the Royal Institute of Painters in Water-Colours on Wednesday, October 28, at 8 o'clock.

M. Léon Benouville died suddenly in Paris last in his forty-third year. Although so young a man obtained high standing in the architectural profession as inspector of historic monuments, member of the Society of Fine Arts, vice-president of the Society of Artists. At the last Salon he exhibited furniture designed for his class dwellings.

The Late Mr. George Gilbert has bequeathed his colour drawings and oil-paintings by his brother, to John Gilbert, R.A., to the London Corporation for a gallery, and if declined to the Tate Gallery.

The Boring of the Simplon Tunnel, it is expected, will be finished next May, and the tunnel will be complete by the end of the year.

The Royal Society of British Artists elected the following members:—W. B. Lamond, Forbes Watson, E. Anderson, Paul Montford, Carruthers Gould, C. Fletcher Watson.

The First members' meeting of the Liverpool Art Society (56th session) will be held at the Public Rooms, William Brown Street, on Monday next, the 19th inst., at 6 P.M., to hear a paper by Mr. Peter Cowell, City Engineer, on "Venice," illustrated by lantern slides. Mr. John F.R.I.B.A., in the chair.

Mr. Henry Marc Brunel, whose death at the age of sixty-one occurred on the 7th inst., was the second son of I. K. Brunel, the engineer. He became a partner with Wolfe Barry, and was associated in the construction of the Dock, the railway bridge over the Thames at Blackfriars, the bridge recently erected at Connel Ferry, as also the Tower Bridge.

A Confectioner of Marseilles has brought an action against the municipality claiming 390,000 francs damages for loss of trade owing to the smell of the tar of the paving, which flavoured his stock.

The Excavations in connection with Glastonbury Village, which were commenced in 1892, are to be continued next year under the joint superintendence of Mr. Bulleid, F.S.A., and Mr. H. St. George Gray.

The Council of the Institution of Civil Engineers have decided, in addition to the medals and prizes given for competition, to discuss at the meetings of the Institution in the future the following awards in respect of other papers presented with in 1902-03:—A Telford gold medal to George J. (London); Crampton prizes to A. B. Brady (Brisbane); Maxwell Lawford (London); Telford premiums to T. O. Bourne (Tien-tsin), R. H. Rhind (London), H. (Marikuppam), G. A. Hobler (Cairns), A. J. Goldsmith (London), F. H. Frere (Derby), R. Appleyard (Leeds), Hamilton, B.Sc. (London). For students' papers the prizes are:—The "James Forrest" medal and a Millepied medal to Waude Thompson (Burton-on-Trent); the "James Joule" medal and a Miller prize to I. V. Robin (Hartlepool); Miller prizes to H. A. Bartlett (London), Morgan (Glasgow), H. S. Watson (London), J. V. (Gloucester), O. B. Rattenbury (Doncaster) and C. I. (Newcastle-on-Tyne).

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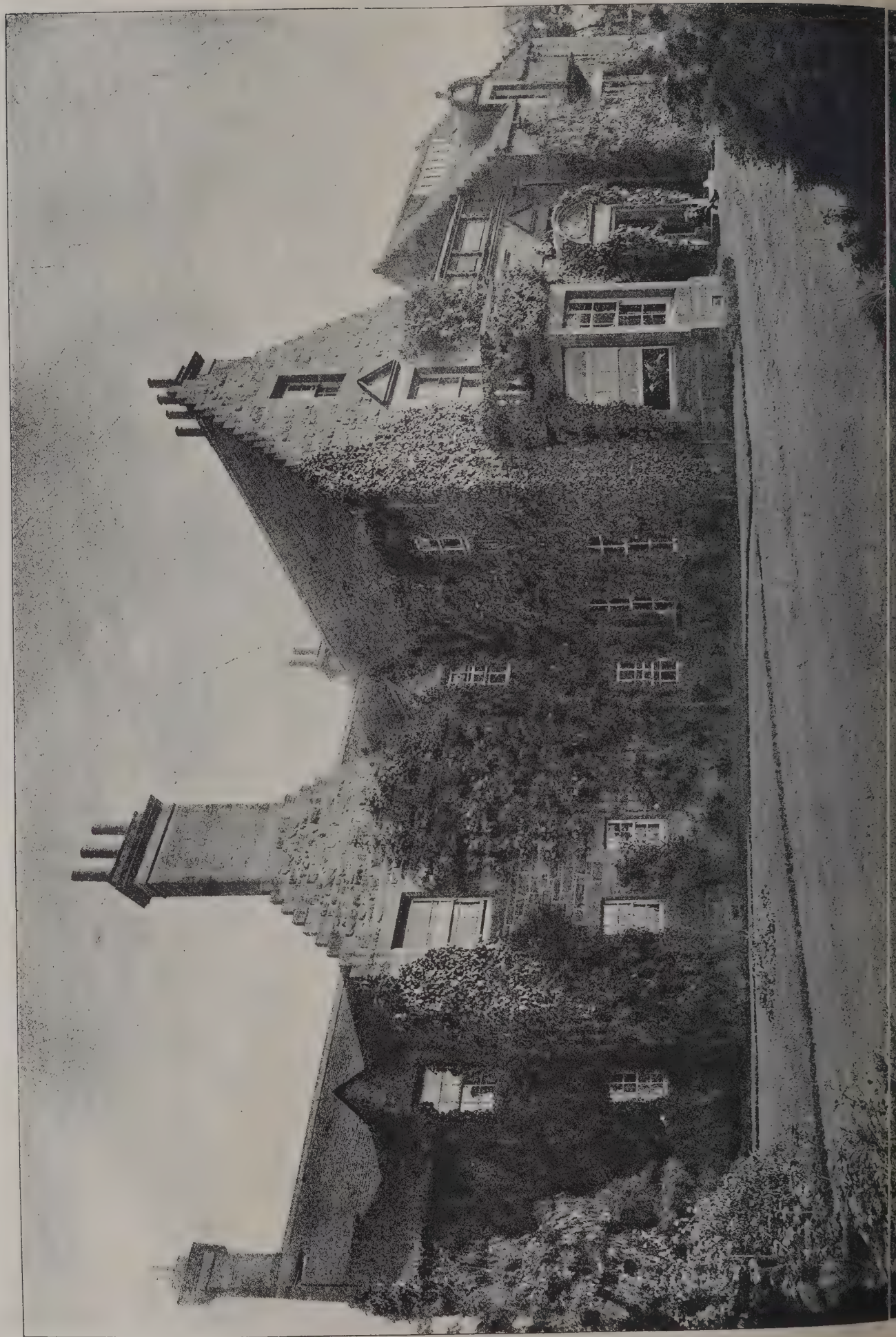
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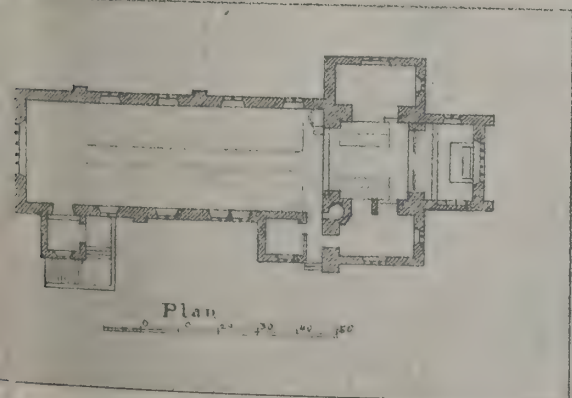
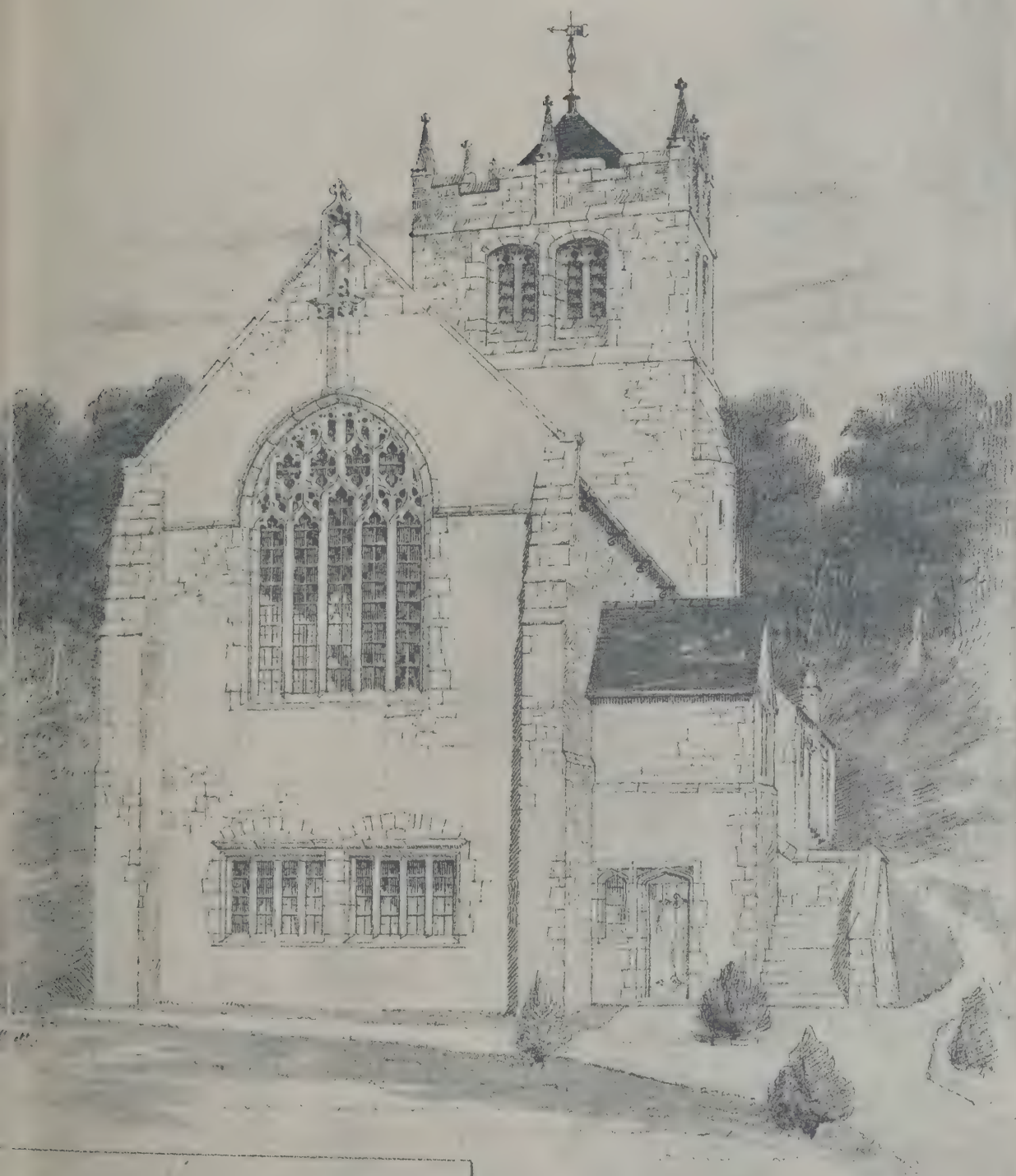




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THE
Architect and Contract Reporter.

EDITORIAL NOTICES.

of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff **A VERY EMINENT BARRISTER**, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our **LEGAL ADVISER** will further answer any legal question that may be of interest to our readers. All letters must be addressed "**LEGAL ADVISER**," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London
a' the Provinces results of Competitions and Tenders
a' other particulars of Works in progress in which they
may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Readers are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

A great disappointment is frequently expressed at the non-appearance of Contractors Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

R. H. TON.—Nov. 9.—Designs are invited for a new
Premiums of 50%, 30%, and 20% will be paid to the
second and third premiated designs respectively. Par-
up to Sept. 29 on receipt of 1 guinea, which will be
on receipt of design. Mr. Leonard Holmes, hon.
Brighton and Hove Hospital for Women, 76 West
Brighton.

HARROGATE.—Oct. 26.—Competitive designs are invited for a new iron and glass pump-room and colonnade in the Victoria Gardens. Mr. F. Bagshaw, borough engineer, Municipal Engineer's Office, Harrogate.

LIVERPOOL.—The Liverpool Cotton Association, Ltd., invite Liverpool architects only to send in plans in connection for the proposed new Cotton Exchange. Mr. Peter J. W. Secretary, 50 Brown's Buildings.

LAND.—Nov 9.—Competitive plans for the erection of shops and workmen's dwelling-houses and belonging to the Corporation in Fore Street are Premiums of £15 15s, £10 10s and £5 5s. will be for the sets of plans and certificate which may be for the first, second and third respectively. Mr. W. Macdonald, town clerk, Kilmarnock.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100*l.*, 50*l.* and 25*l.* will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20*l.*, 10*l.* and 5*l.* will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WALES.—The Llwynypia Workmen's Institute invite tenders for the preparation of plans and specifications of a workmen's hall to seat 1,500. Secretary, Workmen's Institute, Llwynypia.

WALES.—Nov. 9.—Competitive designs are invited for a public library to be erected in Evelyn Road, the total expenditure, including fixtures, not to exceed £2,000. A premium of £10,10s will be paid for the approved design. Mr. Samuel Jones, clerk, Old Road, Skewen, Neath.

CONTRACTS OPEN.

ACTON.—Oct. 20.—For the erection of an engine-shed, &c., at Old Oak Common, Acton, Middlesex, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

ASHINGTON.—Oct. 21.—For additions to the bakery department, Ashington (Northumberland) Industrial Co-operative Society, Ltd. Mr. John Magin, secretary.

BATLEY.—Oct. 20.—For the erection of retaining and fence walls in Carlinghow Lane. Particulars may be obtained at the office of the Borough Surveyor, Branch Road, Batley.

BEXHILL.—Oct. 24.—For the erection of a Coronation clock tower upon the West Parade. Mr. George Ball, borough surveyor, Town Hall, Bexhill.

BRADFORD.—Oct. 19.—For the erection of new district baths, Wakefield Road, Bradford. Mr. F. E. P. Edwards, city architect, Whitaker Buildings, Brewery Street, Bradford,

BRADFORD.—Oct. 19.—For the erection of new boundary walls and tool-shed at the Daisy Hill Board school. Mr. Tho. Garbutt, clerk, School Board Office, Manor Row, Bradford.

BRADFORD.—Oct. 26.—For the erection of a hospital pavilion at the union workhouse, Horton Lane. Mr. Fred Holland, architect, 11 Parkinson's Chambers, Hustlergate, Bradford.

BRISTOL.—Oct. 22.—For the erection of a school at Air Balloon Hill, St. George. Messrs. La Trobe & Weston, architects, 20 Clare Street, Bristol.

BRISTOL.—Oct. 31.—For the erection of a new central library at Deanery Road, Bristol. Mr. H. Percy Adams, architect, 28 Woburn Place, W.C.

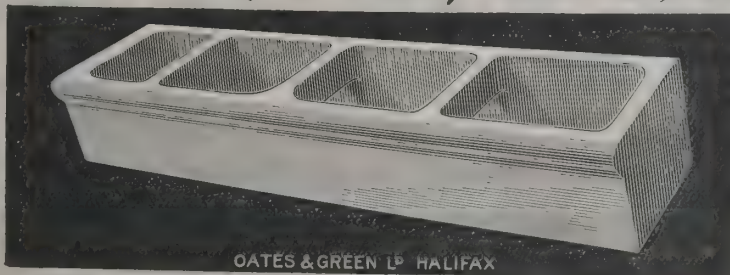
BURY (LANCS).—Oct. 27.—For the taking-down and re-erection of shop and premises, 10 Water Street, Bury. Mr. John Haslam, town clerk, Municipal Offices, Bank Street, Bury.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

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DARFIELD.—Oct. 26.—For the erection of nine houses at Darfield, Yorks. Mr. A. B. Linford, architect, Carlton Villa, Wombwell.

DARLINGTON.—Oct. 19.—For rebuilding a boundary wall at the Haughton Road store-yard. Mr. George Winter, borough surveyor, Town Hall, Darlington.

HALIFAX.—Oct. 29.—For the pulling-down and rebuilding of warehouse and the refronting of shops 16 and 18 Bull Green. Messrs. Richard Horsfall & Son, architects, 221 Commercial Street, Halifax.

HUDDERSFIELD.—Oct. 22.—For the erection of a mill chimney, main flue and other work at Globe Works, Colne Road, Huddersfield. Messrs. John Kirk & Sons, architects, Huddersfield.

HULL.—Oct. 30.—For the erection of Beverley Road baths. Mr. A. E. White, city engineer, Town Hall, Hull.

ILFORD.—Oct. 26.—For the erection of dépôt buildings, stables, &c., in Ley Street. Mr. H. Shaw, surveyor, Town Hall, Ilford.

IPSWICH.—Oct. 29.—For the erection of a public convenience at Alexandra Park. Mr. E. Buckham, borough surveyor, Town Hall, Ipswich.

IRELAND.—Oct. 19.—For the erection of a new station building at Malahide, a stationmaster's house (two-storey) at Goraghowood, a stationmaster's house (one-storey) at Hamiltonsbawn, for the Great Northern Railway Company, Ireland. Mr. W. H. Mills, Amiens Street Terminus, Dublin.

IRELAND.—Oct. 19.—For the erection of a Methodist manse at Kinsale. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Oct. 24.—For internal alterations to First Presbyterian Church, Antrim. Mr. W. D. R. Taggart, architect, 11 Bridge Street, Belfast.

IRELAND.—Oct. 31.—For the erection of a Methodist church and manse at Clonmel. The Rev. H. Kevin, Clonmel.

JOHANNESBURG.—Oct. 19.—For the supply alternatively of gas generating plant or steam generating plant, and of gas motors or steam motors, with electric generators and all accessories, to the following specifications:—Specification No 2.—Section A: Gas producer plant, capable of gasifying $7\frac{1}{2}$ tons of Transvaal coal per hour, with coal conveyor, cleaning and cooling plant and all accessories; sections B, C, D and E: Four gas-engines, each for driving a 1,350 kw. dynamo

(2,000 B. h.-p.); one gas-engine for driving a 675 kw. dynamo (1,000 B. h.-p.); three gas-engines, each for driving a 675 kw. two-phase alternator (1,000 B. h.-p.); two motor generators each consisting of a 250 kw. two-phase alternator and 150 kw. dynamos; two balancers, each consisting of two 150 kw. dynamos. Specifications, forms of tender, and a plan of the site may be seen on and after September 7, at the offices of the Town Clerk, Johannesburg, or at the offices of the Council's consulting engineers, Messrs. Mordey & Davison, 82 Victoria Street, Westminster, S.W.

KENDAL.—Oct. 21.—For enlarging premises, Sedgemoor, Mr. Stephen Shaw, architect, Highgate, Kendal.

LEEDS.—Oct. 19.—For the provision of stalls in the market hall, and for an electric lift to the hotel. Messrs. Leeming & Leeming, architects, Victoria House, 117 Victoria Street, S.W.

LEEDS.—Oct. 24.—For the erection of boundary wall and putting-in concrete foundations for new purifiers at Dewsbury Road Gasworks. Mr. R. H. Townsley, general manager, Offices, East Parade, Leeds.

LEICESTER.—Oct. 23.—For erection of two district sheds, offices and all other buildings and works in connection therewith, for the tramways committee. Mr. E. C. Mawbey, engineer, Town Hall, Leicester.

LONDON.—Oct. 25.—For the construction at the corner of Blackwall Lane of an underground convenience for both roads. Mr. Francis Robinson, town clerk, Town Hall, Greenwich, Road, S.E.

LONDON.—Oct. 27.—For the erection of a block of 100 one-storey working-class dwellings at Jerusalem Square, Mile End Road, Hackney. Particulars at the Architect's Department, Housing Section, London County Council, 19 Charing Cross Road, W.C.

LONDON.—Oct. 27.—For the erection of a block of 100 one-storey working-class dwellings and one block of seven cottages near the junction of Nine Elms Lane and Wandsworth Road. Particulars may be obtained at the Architect's Department, L.C.C., Housing Section, 19 Charing Cross Road, W.C.

LONDON.—Oct. 30.—For the erection of the superstructure of the new postal stores at Islington. All information may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

MANCHESTER.—Oct. 22.—For the erection of 17 cottages in Dashwood Road, Prestwich. All particulars may be obtained at the Architect's Department, Manchester City Council, 1, Exchange Buildings, Manchester.

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e Prestwich.

SDEN BRIDGE.—Oct. 26.—For the reconstruction of
en bridge. Mr. Urban A. Smith, county surveyor,
l, Herts.

NER.—For the restoration of the cemetery chapels and
tion of a mortuary building in the cemetery grounds.
Harrison & Ward, 66 Victoria Street, S.W.

TLAND.—Oct. 27.—For additions to the police station
land, Dorset, including the erection of six cells and
c. Mr. E. Archdall Ffooks, clerk to standing joint-
tee, Sherborne, Dorset.

TSMOUTH.—Oct. 23.—For the erection of a school of
epartments (boys, girls and infants) in place of the
Milton school building (mixed and infants). Messrs.
Cogswell, architects, Prudential Buildings, Landport.

SEY.—Oct. 21.—For the erection of a pair of semi-
d houses in Bankhouse Lane, Pudsey, Yorks. Mr.
elson, architect, Sun Buildings, 15 Park Row, Leeds.

CHESTER.—Oct. 21.—For alterations and additions to
exchange, and the erection of a workshop adjoining in
ate, Rochester. Mr. William Banks, city surveyor,
ll, Rochester.

COLUMB MINOR.—Nov. 3.—For the erection of
an church at St. Columb Minor, Cornwall. Mr. Samp-
H, architect, Green Lane, Redruth.

CLAND.—Oct. 23.—For the erection of a villa at
el. Mr. John Wittet, architect, Elgin.

FFIELD.—Oct. 23.—For the erection of shops and
is in Gibraltar Street. Messrs. Hemsoll & Chapman,
ts, 18 Norfolk Row, Sheffield.

UGH.—Oct. 20.—For the erection of a court-room and
ans to existing buildings at Slough police court. Mr.
omas, county surveyor, County Hall, Aylesbury.

TENHAM.—Nov. 3.—For the construction of three
round conveniences—(a) junction of Seven Sisters Road
gh Road, (b) junction of Park Lane and High Road,
n Lanes, on common, Duckett's Green. Mr. W. H.
c, engineer to the Urban District Council, Coombes
ouse, 712 High Road, Tottenham.

WES.—Oct. 19.—For the erection of minister's house at
Minera, Wrexham. Mr. David Roberts, Wern Cottage,

WALES.—Oct. 23.—For the erection of a coastguard
detachment, consisting of houses for two men, at St. Govan's
Head, near Pembroke, in Pembrokeshire. The drawings and
specification can be seen there or at the office of the Civil
Engineer, H.M. Dockyard, Pembroke Dock.

WALES.—Oct. 28.—For alterations and additions to the
Pontygwaith and Wattstown Working-men's Institute. Spec-
ifications, &c., can be seen at the Institute, Pontygwaith.

WALES.—Oct. 29.—For the erection of boundary walls,
railings, &c., and formation of new playgrounds at Penydarren
schools, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect,
Aberdare.

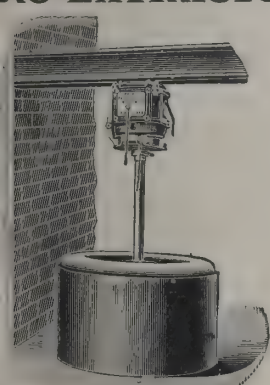
WALES.—Oct. 30.—For the rebuilding of the Castle inn,
Pontywyll. Mr. C. M. Davies, 12 High Street, Merthyr.

WALES.—Oct. 30.—For altering and refitting the interior
of Trefgarne Owen chapel, Brawdy, Pembrokeshire, and some
external alterations. Mr. D. Edward Thomas, architect,
Haverfordwest.

WESTMINSTER.—Oct. 28.—For the reconstruction of slipper
baths at the Marshall Street establishment, including the pro-
vision and fixing of new baths, valves and supply pipes, also
new floor and sanitary work. Particulars may be obtained at
the Works Department, Westminster City Hall, Charing Cross
Road, W.C.

THE Wandsworth Council have under consideration a
scheme for providing bath-houses as distinct from swimming-
baths. Municipal baths invariably comprise one or more
swimming-baths and a number of slipper-baths. It is proposed
in Wandsworth to build a series of slipper-baths in a separate
building, and to erect these bath-houses in poor populous
quarters, available for the use of the inhabitants at moderate
charges. Twenty or more such bath-houses could be provided
for the cost of a single institution like the modern baths and
washhouses. Some time ago an architect, who has dis-
tinguished himself by the number and variety of municipal
baths and washhouses he has constructed, wrote in favour of
spreading out in sections throughout a district the various
things which are now grouped in huge buildings under the
general name of baths and washhouses. It remains to be seen
whether Wandsworth will begin to carry out the idea.

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TENDERS.

BRIDLINGTON.

For the erection of a shelter round the bandstand on the Prince's Parade. Mr. E. R. MATTHEWS, borough surveyor.

Accepted tenders.

T. Sykes & Co., Guiseley, ironfounder	£875	0	0
Sampson & Siddall, mason	426	11	0
Sampson & Siddall, bricklayer	368	10	0
E. E. Yeomans, joiner	347	11	7
F. Braby & Co., glazing	213	16	8
W. A. Walker, plumber	121	13	0
T. Riley, painter	121	9	0
J. Dogson & Son, tiler	44	0	0

For the ironwork in connection with erection of a shelter round the bandstand on Prince's Parade. Messrs. MANGNALL & LITTLEWOODS, architects, 42 Spring Gardens, Manchester.

Lion Foundry Company	£1,500	0	0
H. Barrett & Sons	1,500	0	0
J. Monk	1,418	0	0
Wright & Sons	1,398	0	0
Storr & Sons	1,299	10	0
Norton Bros.	1,361	0	0
J. Allen, sen. & Co.	1,271	5	5
Naylor Bros.	1,248	3	0
Heenan & Froude	1,212	2	6
J. Gill	1,153	0	0
R. Bailey & Sons	1,135	12	0
D. Powner	1,124	8	9
Schofield & Hancox	1,090	0	0
Sloan & Davison	1,038	10	0
J. & A. Law	1,030	0	0
T. W. Ward	950	16	0
Jones & Sons	950	0	0
T. & F. Everingham	940	0	0
A. Dougill & Co.	932	5	6
T. W. SYKES, Guiseley (accepted)	875	0	0

BRISTOL.

For the supply of electrical plant.

Accepted tenders.

Babcock & Wilcox, Ltd., boilers	£9,324
Alley, Maclellan & Co., condensing plant	3,285
Oliver & Co., Ltd, arc lamps	2,556
British Westinghouse Electric and Manufacturing Co., Ltd, exciters	774
British Westinghouse Electric and Manufacturing Co., Ltd, transformers	723
C. A. Hayes, erection of arc lamp standards	575
Newton Electrical Engineering Co., Ltd, motors	509
J. P. Hall & Sons, pumps	408
Ferranti, Ltd., switchgear	395
Doulton & Co, Ltd, water-softening plant	352

CAMBERLEY.

For drainage and street works in Upper Park Road, Camberley. Mr. F. C. UREN, surveyor, High Street, Camberley.

Osenton	£640
H. Prescott & Co.	583
Free Bros.	540
W. H. Wheeler	473
W. Norris	460
T. Turner	419
Mott & Sons	410
R. CUNNINGHAM, Fleet (accepted)	388

CARLISLE.

For the erection of four houses in Eldred Street. Mr. J. HODGKINSON, architect, 9 Lowther Street, Carlisle.

Accepted tenders.

Gordon & Logan, Lamplugh Street, builder	£405
S. Ferguson & Son, Denton Street, plasterer	104
J. W. Smith, Globe Lane, plumber	90
J. Hewitson, St. Nicholas, slater	65
S. Allan, Globe Lane, painter	46
J. & J. Wharton, Mary Street, ironfounder	18

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Birkill 1,709 9 0
& C. Harris 1,645 2 9
Dickinson 1,634 2 7
U. SIMPSON, Burton Leonard, Leeds (accepted) 1,554 12 7

DARTMOUTH.

For the erection of retaining walls, steps, piers, &c., in connection with the Manor House improvements at South Town, Dartmouth, and the pulling-down and removal of the dwelling-house and buildings now on the site. Mr. ARTHUR SMITH, surveyor.
R. T. Pillar £256 10 0
R. H. Watts 220 0 0
R. C. PILLAR, Castle House (accepted) 200 0 0

HALIFAX.

For the erection of silversmiths' works at Mile Cross, Halifax. Messrs. JOSEPH F. WALSH & GRAHAM NICHOLAS, architects, Museum Chambers, Halifax.
Accepted tenders.
T. Mitchell, Warley Town, mason.
Fielding & Bottomley, South Parade, joiner.
R. P. Stafford, King Cross Street, plumber.
Rushworth & Firth, New Bank, slater and plasterer.
J. Berry, New Bank, iron and steel.
G. Greenwood & Sons, New Brunswick Street, concreter.
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For street works. Mr. GEO. W. THOMPSON, surveyor, Hipperholme, Yorks.
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D. R. Paterson	£23,490	0	0
Johnson & Son	21,900	0	0
C. R. Price	20,403	0	0
Sabey & Son	20,390	0	0
W. J. King	20,279	0	0
Wall & Co.	20,091	0	0
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J. Wyse	£158	0	0
J. Taylor	158	0	0
J. Slattery	153	10	0

LEEDS.

For the cleaning down and painting the interior and exterior of the judge's lodgings, Hyde Terrace.

E. GREAVES, 222 Woodhouse Street (accepted) . £63 0 0

For the erection of a boundary wall and entrance-gates at the new workshops, Street Lighting Department, Springwell Street.

W. WADE, 125 Hyde Park Road, Headingley, Leeds (accepted) . £261 12 3

LANCASTER.

For the erection of a cricket and bowling pavilion on Lune Road ground. Mr. J. PARKINSON, architect, 67 Church Street, Lancaster.
W. HUNTINGTON & SONS, Lancaster (accepted) . £750 0 0

LEYTON.

For the supply and erection of about 700 yards of split-rail fencing 7 feet high, with one double-hung gate and 8 posts. Mr. WILLIAM DAWSON, surveyor.

J. Ruggles	£469	0	0
J. T. Brooker	466	1	0
A. Turner & Son	429	1	0
Rowland Bros.	420	1	0
M. Marshall	415	1	0
J. & S. Agate	415	0	0
R. Batcheller	406	1	0
E. C. WHITE, Canal Wharf, Basingstoke (accepted)	403	1	0

LONDON.

For providing and laying about 5,000 yards of tar paving footways at Bowes Road (East), Bowes Park, and Bowes Road (West), New Southgate. Mr. C. GRIFFIN LAWSON, surveyor.

GODDARD & CO, Great Northern Railway Depôt, Caledonian Road, N. (accepted).

MARPLE.

For the erection of ten houses. Messrs. GARLICK & WYATT, architects, Stockport Road, Marple.

J. T. Pott	£2,980	0	0
Yarwood	2,965	0	0
Norgrove	2,895	0	0
J. Waite	2,827	0	0
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Vessey, Openshaw & Vessey	2,750	0	0
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MORLEY.

the construction of an exit staircase at the Co-operative Hall, Morley. Messrs. CASTLE & SON, architects, Cleckheaton.
W. SOMME, ASKHAM & CO., Anchor Foundry, Batley Carr, Dewsbury (accepted).

NELSON.

street works in Lowther Street. Mr. B. BALL, A.M.I.C.E., thorough engineer and surveyor.
W. ARMSTRONG, 6 Vernon Street (accepted).

NEWTON-IN-MAKERFIELD.

the construction of an elevated reservoir in ferro-concrete the water-pumping station at Newton-le-Willows, to hold 300,000 gallons of water.
DUBITT & CO., 258 Gray's Inn Road, London (accepted) £5,920 0 0

SCOTLAND.

pairs to farm steading at Ardmedden, near Oldmeldrum. Mr. WILLIAM CLARK, architect, Methlick.

Accepted tenders.

Paterson & Marshall, Pitmedden, Udney, mason.
F. Fraser, Hillbrae, Methlick, carpenter.
Smith, Craigdam, Tarves-by-Old Meldrum, slater.
Total, £321 17s.

the construction of a new timber dolphin at the south-west corner of the ferry passenger pier, Burntisland. Mr. ROBERT HENDERSON, engineer, 5 High Street, Burntisland.

Henderson £323 0 0
THALMERS, Burntisland (accepted) 276 19 4
nters' work of nurses' home and pathological laboratory now being erected at Woodilee Asylum, Lenzie, Glasgow.
AWRIE & CO., 130 Wellington Street (accepted) £448 14 0

SEVENOAKS.

the construction of the Kemsing sewerage works, consisting of about two miles of stoneware pipe sewers.
RAYNER, Croydon (accepted) £1,239 0 0

SEDBERGH.

For the erection of new premises at Sedbergh, for the Lancaster Banking Company, Ltd. Mr. J. PARKINSON, architect, 67 Church Street, Lancaster.

Accepted tenders.

Brassington Bros. & Corney, Sedbergh, mason and slater £1,261 0 0
J. Dent, Sedbergh, joiner 471 0 0
R. B. Abbott, Morecambe, plumber 158 11 0

SELBY.

For lifting existing Yorkshire setts and constructing about 240 square yards of whinstone sett paving, &c. Mr. BRUCE MCG. GRAY, town surveyor.

G. Curtis £181 10 0
S. Speight 174 0 0
D. Speight 168 0 0
D. & S. Speight 168 0 0
W. Illingworth 156 0 0
G. Brunton 149 0 0
W. WADDINGTON, Castleford (accepted) 132 0 0

SHERINGHAM.

For street works for the Urban District Council. Mr. T. I. GOLDIE, surveyor.

Accepted tenders.

West Cliffe.—Baker, £54 7s. 11d.
The Driftway.—Baker, £195 17s. 7d.
Crown Inn Plain.—Edwards, £255.
Church Street.—Baker, £27 18s.
South Street.—Edwards, £267.
Vincent Road.—Edwards, £404.
George Street.—Edwards, £138.
Cremer Street.—Burgoyne, £112 19s. 10d.
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Victoria Street.—Rackham, £203.
Leicester Place.—Baker, £48 10s.
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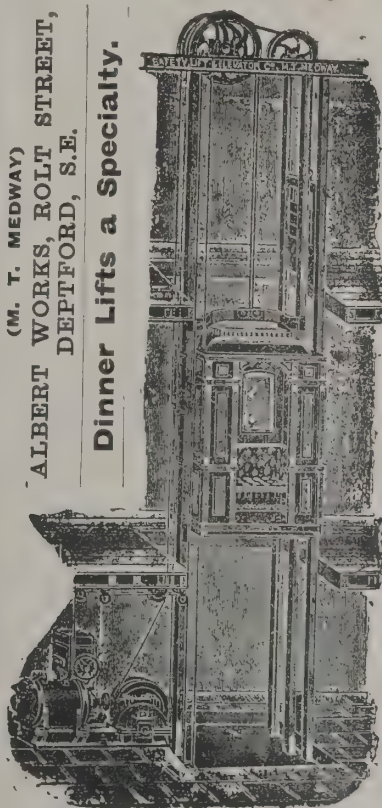
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SOWERBY BRIDGE.

For alterations to Sowerby Bridge town hall. Mr. S. WILKINSON, architect, Sowerby Bridge, Yorks.

Accepted tenders.

J. Riley, Clifton Street, mason.
H. Whiteley, Rishworth, joiner.
A. Farrar, West Street, plumber.
G. Whiteley, West Street, plasterer.
E. Whitehead & Co., West Street, painting and decorating.

TONBRIDGE.

For constructing new surface-water sewers, Kent. Mr. Wm. LAURENCE BRADLEY, engineer.

Strange & Sons	£3,736	0	0
K. C. Jarvis	2,850	0	0
Dixon & Co.	2,708	0	0
Punnett & Sons	2,487	0	0
Martin & Co.	2,397	0	0
Arnold & Sons	2,310	0	0
W. Iles	2,220	0	0

WALSALL.

For street works in Borneo Street.

J. ATKINS, Ryecroft Hill (*accepted*) . . . £305 0 0

WINWICK.

For laying a fire-main at the county asylum, Winwick, near Warrington, Lancashire.

Webster & Winstanley, Wigan.
Heaton Bros. & Son, St. Helens.
Water Department of the Warrington Corporation (*accepted*).
R. A. Crowe, Manchester.
T. Stringer, Warrington.
W. Rose & Co., Salford.
L. Hill, Liverpool.
Bennie & Thompson
Shawcross & Orr, Ashton-in-Makerfield.

WOLVERHAMPTON.

For street works, &c., Balfour Crescent, for the Corporation.

J. Owens	£118	8	3
H. R. READING, Wolverhampton (<i>accepted</i>)	95	16	0

WORTHING.

For the erection of an iron bridge at Worthing, Norfolk. Mr. E. J. SILCOCK, engineer, King Street, King's Lynn.

Dodman & Co.	£839	0	0
J. W. Collins	756	0	0
Barnes & Pye	742	0	0
J. Springall	729	10	0
Rogers & Wood	658	0	0
T. H. BLYTH, Foulsham, Norfolk (<i>accepted</i>)	694	9	0

YORKS.

For sewerage works in Wakefield Road and other places. Featherstone. Mr. FREDERICK B. ROTHERA, surveyor.

Ives & Co.	£409	0
J. Benton	349	15
A. Gates	269	14
J. Totty	221	0
J. W. Broadhead	217	2
G. CLEMENTS, Featherstone (<i>accepted</i>)	256	12

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LONDON SCHOOL BOARD.

For exterior painting at the Turin Street school.

C. Willmott & Son	£525	0
Belcher & Co., Ltd.	499	0
W. Shurmur & Sons, Ltd.	475	0
W. Silk & Son	470	0
Woollaston Bros.	450	0
A. Porter	446	0
W. Chappell	375	0
WALES BROS. (<i>accepted</i>)	327	0

MESSRS. R. CUNDALL & SONS, LTD., folding machine and oil-engine makers, Shipley, whose works were destroyed by fire in July last, have secured land in the immediate vicinity, some 23 acres in extent, on which they are erecting much larger premises, of which the main building, which is for the engineering department, is 400 feet long by 120 feet wide, and will be completed in a few weeks, and a separate building already finished which is destined for the pattern-making and wood-working department, and is 90 feet square. The most modern machinery, labour-saving appliances and plant will be installed throughout.

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TRADE NOTES.

more fires speedily extinguished by the "Titan" in Yorkshire have just been reported to Messrs. Mills & Co, of Radcliffe, proprietors of the "Titan"

September 26 a fire was found to have broken out in on chamber at the Arkwright Mill, Hamer, Rochdale. has recently been fitted with the "Titan" sprinkler, as not until the sprinkler alarm gong sounded, owing el sprinklers having commenced to throw water on the hat anybody was conscious of the fire. The fire was to the cotton and was completely extinguished.

regret that in our notice of the opening of the new ough Theatre we omitted to mention that Messrs. F d & Co, of "Impermeable" Stone Works, Coopersale Homerton, manufacturers of impermeable concrete and artificial stone stairs, steps, cills, copings, &c., e manufacturers of the whole of the artificial stone es, and that Messrs. Diespeker, Ltd, of 57 and 60 i Viaduct, carried out all the beautiful mosaic work, ing been selected by the architect owing to its durable t, only the hardest marbles of their respective kinds ed in its construction.

B. and S. Folding Gate Company, of 19, 20 and er Street, Upper St. Martin's Lane, sole manufacturers e B. and S. patent folding gates, have recently secured owing contracts for the supply of their folding gates, doors and shutters, &c.:—*Pall Mall Gazette* building, Street, W., five B. and S. patent folding gates and inner-steel rolling shutters; Corporation of Leicester ing station, four Kinnear steel rolling doors; Corpora- Manchester, Stuart Street generating station, one r steel rolling door; the Underground Electric Rail- London, Ltd., generating station, Lots Road, Chelsea, inner doors; Corporation of Lowestoft, car sheds, one r steel rolling door in addition to those already fixed; eation of Pietermaritzburg, Natal, 13 Kinnear steel n doors; Corporation of Burnley, car sheds, twenty-two r steel rolling shutters; Corporation of Rochdale, old car shed, twenty Kinnear steel rolling doors; opation of Colchester, car sheds, six Kinnear steel rolling ts; Corporation of Derby, car sheds, nine Kinnear steel doors; Admiralty Buildings extension, Whitehall, eight S. patent folding gates. As an instance of the many

classes of work for which these shutters are used, the Company direct our attention to the fact that they recently supplied four of them to a coach and motor car house at a large range of private stables at Addlestone. They have also a contract in hand at the present time for nine shutters for the principal entrances and windows on the ground floor of a large private mansion in Ireland.

VARIETIES.

THE new Sunday school in connection with the Cheetham Hill Congregational church, which has been erected at a cost of 1,800*l.*, was opened on the 3rd inst.

AS a result of the recent heavy rains twelve of the arches of the massive stone viaduct, 40 feet high, which crosses the western valley of Monmouthshire at Risca have collapsed. It is feared that other arches over the river Ebbw will also give way.

ON the 8th inst. the Bishop of Leicester dedicated the restored south aisle of the church of Holy Trinity, Rothwell. This is the third section to be completed of the important work of restoration of the fine old church, and the event excited a large amount of local interest.

THE LONDON COUNTY COUNCIL have approved the estimate of 1,340,000*l.* for the construction of a tunnel under the Thames between Rotherhithe and Shadwell, and authorised the committee to prepare the specifications and plans and to take other steps for carrying out the work.

THE housing committee of the Marylebone Borough Council reported on Tuesday that they had prepared a scheme under the Housing of the Working Classes Act for submission to the London County Council. It is proposed to acquire, at an estimated cost of 23,000*l.*, an area in Devonshire Place, Devonshire Street and Salisbury Street, and erect thereon four blocks of dwellings to contain 360 rooms and eleven shops.

IN the Birmingham Architectural Association's annual report, just issued, it is stated that the question of registration had been much discussed, but, owing to opposition in the profession, the prospects of a Bill being passed are for the present remote. The report also states that an advisory committee has been appointed, the business of which is to consider and advise the Council on matters such as professional practice,

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questions raised by the Master Builders' Association, and questions referred to it by the Council. A protest has been made against the licensing committee's new by-laws regulating the building of public-houses and alterations to existing ones.

THE new church for the populous district of Malvern Link known as Newtown was dedicated by the Bishop of Worcester on the 3rd inst. The Church of the Ascension is subject to the parish church of St. Matthias, which is situated but a short distance below the new church. The choir is 18 feet wide, 36 feet long and 36 feet high. In place of an east window there are paintings representing the Incarnation. The altar screen is composed of elaborately ornamental ironwork in black and gold, surmounted with a triptych representing the Crucifixion. There is a carved pulpit and a lectern. In lieu of aisles there is a stone arcade built in the walls on either side, at a height of 13 feet from the floor. There are sittings for 400. At the west end there is a small tower containing a baptistery, the font being ornamented with paintings and carved figures, an organ chamber, and the belfry in its three successive stages. The vestry is constructed underneath the choir.

A NEW town hall was opened at Oundle, Northants, on the 7th inst. The front of the building is of stone, with Weldon stone facings. On entering, a vestibule is reached by a few steps, and on either side are cloak-rooms, &c. From the vestibule a staircase leads to a gallery, which looks upon the main hall, but can easily be shut off by sliding glazed sashes. The main hall, a handsome room, is about 60 feet by 40 feet, and a convenient stage, 13 feet deep, is also provided. Beneath the stage is a dressing-room. The roof is of matchboarding, perforated for ornamentation and ventilation purposes. A system of hot-air heating has been arranged. The new hall promises to prove a convenient room in which to hold concerts, lectures, &c. It is in fact, a better room than the town has yet possessed; and it is hoped it will prove a great success. The original scheme, with furnishing, &c., was estimated to cost 2,500*l*, but it was afterwards somewhat modified, and two retiring-rooms from the stage and other minor matters were deferred, and the cost thus reduced by several hundreds of pounds. The contract for the present work was 1,523*l*.

At Hanley on Monday, October 12, a fire test of Uralite was carried out on ground adjoining the Grand hotel (by kind permission of the manager), in the presence of a number of members of the North Staffordshire Institute of Mining

and Mechanical Engineers, borough surveyors, architects and other gentlemen interested in fireproof building construction. The test consisted of an ordinary partition constructed of timber protected by Uralite slabs, against which a huge pile of wood soaked in petroleum was erected and set fire to. The temperature to which one side of this partition was subjected at times reached 1,850 degrees, whilst the other side of the partition remained at atmospheric temperature. In the middle of this raging fire was also placed a deed box constructed of timber and Uralite. Inside this box paraffin, wax, fusible metal and sulphur, also a bundle of papers, were placed. The fire was afterwards extinguished and the box opened; the contents were examined and found unharmed, and the inside of the box was not even warm to the hand. The spectators expressed great satisfaction at the result, and predicted a great future for Uralite in the pottery district, where a fire-resisting building material is greatly needed for a variety of purposes.

BUILDING AND BUILDERS.

MR RITCHIE, ex-Chancellor of the Exchequer, has suggested the 27th inst. as the date on which he should perform the opening ceremony of Pwllheli harbour works.

THE mayor of Deptford (Mr. Councillor Alexander Dickson) laid, on Wednesday afternoon, the foundation-stone of a new town hall for the borough, which is to be erected on a new site in the New Cross Road.

A SCHOOL to cost nearly 5,000*l*, and having over two hundred classrooms, is to be built by the King Cross West End Halifax; 116 ladies took part in the sod-cutting ceremony and each contributed a piece of gold.

THE corner-stone of the new church which is to be built at the Whaley Bridge end of the parish of Chapel-en-le-Frith was laid on the 3rd inst. The building, which will be named Christ Church, will be of a plain character, and is estimated to cost about 800*l*, and seat about 250 persons. A tower will be added when funds admit.

THE corner-stone has been laid of a new church in Whittaker Lane, Heaton Park, to be dedicated to St. Hilda. The church is to be built in a thinly-populated working-class district of the parish of Prestwich, and is to accommodate at first some 315 persons. The proposed site

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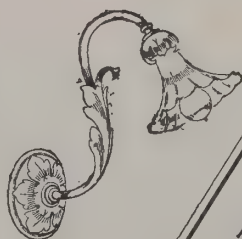
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CATHEDRAL SERIES.—EXETER: SOUTH AISLE.

Later on it is intended to add a chancel to the new tower to be erected, at an additional cost of some 2,000*l*.

FACTORY progress is being made with the rebuilding of the bridge. A temporary footpath has been erected on the north side, while the demolition of the massive granite bridge has been completed, and the property necessary for the new bridge bought and cleared. The bridge now being constructed was opened in 1839, and itself took the place of one built by Queen Matilda, and which for generations has been the oldest stone bridge in the country.

St. James Urban District Council an offer of 97*½**l*. from the Corporation for repair of the main roads and footpaths was accepted. Messrs. Hill & Sons, engineers, Manchester, wrote that the work of constructing the new Stanley Moor bridge, which will cost 100,000*l*., would be shortly completed. Contracts were sealed with Messrs. G. & T. Earle for the supply of cement, with Messrs. Oates & Green for the supply of coal with the Staveley Coal and Iron Company for cast-iron.

SPECIAL meeting of the parishioners of St. Peter's Church, Burnley, has been held to consider alterations at the church. These include the taking out of the west gallery, which has now been done, the erection of a clergy vestry, the removal of the baptistry under the tower, the installation of the new organ, &c., estimated to cost about 4,000*l*. The Bishop of Exeter (Barnes) presided, and explained that there was a recommendation from the church officers to modify the scheme now proposed and to pull down the south gallery and extend the vestry to the west end of the church. This, he said, would mean a net loss of seventy-six sittings. The recommendation was adopted, and it was also decided to remove the organ from the north to the south side of the church.

THE new public baths which are to be built at a cost of 75,000*l*. by the Liverpool Corporation, if the City Council adopts the scheme, will be among the finest in the country. The accommodation consists of one swimming bath 150 feet by 50 feet, one 75 feet by 40 feet and one 60 feet by 40 feet, and one 60 feet by 30 feet (for ladies); 125 private slipper, spray and hydropathic baths; two suites of Turkish baths, one to accommodate fifty-six gentlemen and the other eighteen ladies, and two suites of Russian baths for ladies and gentlemen. Between 500 and 600 bathers will be accommodated at one time. Consideration of the scheme is postponed for a month in accordance with the City Council's standing order.

NEW CATALOGUE.

MESSRS. R. MELHUISE, SONS & CO., of Fetter Lane, have issued in very attractive form their new catalogue of ironmongery, electrical supplies, &c. This useful and compendious volume of upwards of 300 pages contains some thousands of illustrations of all kinds of useful furnishing and other ironmongery, bolts, nuts, door springs, draught excluders, turnery, lightning conductors, stable fittings, ventilators, chimney-pots, smoke cures, tallboys, cowls, &c., gas stoves, gas and electric fittings, electric batteries and numerous other goods of an equally diverse character.

A CREMATORIUM FOR THE CITY OF LONDON.

THE foundation-stone was laid on Wednesday of the first crematorium to be erected within any cemetery in the United Kingdom. The ceremony was performed by Mr. Robert W. Edwards, chairman of the sanitary committee of the Corporation of the City of London, and excited a large amount of interest. The site selected is within the area of the City of London Necropolis at Little Ilford, and the work is being carried out from the designs of Mr. D. J. Ross, the city engineer, by the sanitary committee of the Corporation, acting as the Burial Board for the City of London. The new building is in a somewhat secluded part of the cemetery, and the design provides for a hall 27 feet in length by 24 feet in width for the mourners to assemble in, with a waiting-room adjacent and leading from the hall. The catafalque upon which the coffins will rest will be placed in the centre of the hall, and an ante-chamber is provided for the attendants between the hall and the cremating chamber. The latter is at



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the rear of the hall, and will be of sufficient size to admit of two cremating furnaces being erected, with an arrangement for the bodies being placed in either furnace by means of a traverse. At present it is intended to erect only one furnace, the flue of which will be carried up in the centre of an ornamental tower about 80 feet in height. A small auxiliary furnace will be placed at the base of the tower for the more perfect combustion of the gases arising from the cremating furnace, and a staircase is provided for access to the summit. There is to be a basement under the cremating chamber from which the furnace will be attended to, also stores for fuel, the entrance being at the rear of the structure. The building will be constructed principally of stone, the walls being faced with Kentish rag with Portland stone dressings, and the roof will be covered with Broseley tiles. The hall will have an open timber roof, and the interior will be faced with red pressed bricks with an ornamental tiled dado, the floor being paved with artistic tiles. The design is Gothic in style, and is intended to harmonise with the existing chapels and buildings in the cemetery. The cost of the work, including the furnace, will be about 7,000*l*.

A CANADIAN CANAL.

THE following description of a hydraulic lift lock on the Trent Valley Canal, near Peterborough, Ontario, Canada, has been furnished to the *Glasgow Herald* by a correspondent in Ottawa:—

This lock, which is now nearly completed, is said to be the largest of its kind in the world. It may be premised that the Trent Valley Canal is a waterway partly natural and partly artificial, which, when completed, will furnish a short route across the Ontario peninsula from Georgian Bay to Lake Ontario, effecting a saving of several hundred miles. This canal was commenced a number of years ago, but has progressed very slowly for some time past, as the Government was bending all its energies towards the completion of the main water route, *via* the Welland Canal and the St. Lawrence River system of canals. As the completion of this system has not by any means met the expectations of the Government in the direction of increased traffic, and the American routes to New York, both rail and water, are still holding what is thought here to be a disproportionate share of the traffic of the Great Lakes, especially when the saving in time by the Canadian routes is taken into considera-

tion, the authorities are beginning to take a renewed interest in the Trent Valley Canal. It is, in fact, evident that within a year or two, unless all the indications prove false, the shipments from the Canadian North-West will have immensely increased in volume as to tax every possible route to the seaboard, both rail and water. Consequently it will before long become a matter of absolute necessity to complete the Trent Valley Canal or build the Georgian Bay Canal, *via* Lake Nipissing and the Ottawa river to Montreal, more probably both will be found indispensable. Either of these routes would effect such a saving in the time from Arthur to Montreal, and consequently from Port Arthur to Europe, as would be sufficient to hold all the Canadian trade, and probably even to capture a percentage of the American traffic that now goes *via* rail or the Canal to New York.

Now, as to the new lock on the Trent Valley Canal are two watertight steel boxes or chambers, 33 feet in diameter by 140 feet in length, with 8 feet of water in the clear at each end, closed at the ends by means of gates hung on the lower rollers. Similar gates also close the ends of the reaches. The gates are carried by means of heavy trusses supported by a top of two rams, 7 feet 6 inches in diameter, which work on steel watertight presses, one under each chamber. The presses are connected with each other by a pipe 12 inches in diameter, in the centre of which a valve is placed for the purpose of regulating the motion of the chambers. For the purpose of making up for the small quantity of water lost in the working of the main presses an accumulator is installed in one of the side towers. This accumulator has a ram 20 inches in diameter, with a stroke of 30 feet 6 inches, working at a pressure slightly greater than that of the main presses. The pressure is also used to operate the gates, capstans and pumps. The junction between the ends of the reaches is made watertight by means of a continuous rubber hose placed on the sides of the ends and bottom of the gate of the reach. The hose is inflated with compressed air from a Taylor & Co. pressor installed in the main wall.

The mode of operating the lock is as follows:—Suppose both chambers are at a standstill, one up and the other down, both gates toward the reach open ready for the vessel to enter. When the chambers are thus the bottom of the upper chamber will be about 10 inches lower than the bottom of the lower, and has, say, 8 feet 10 inches of water on the sill.

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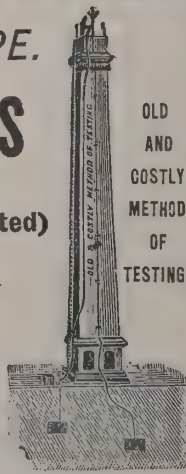
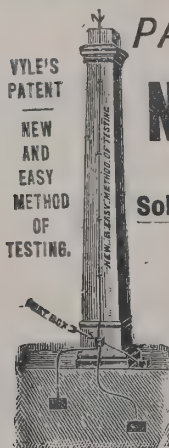
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After remarking that every case differed in many of its component factors, and that therefore the costs of motor transport, as compared with horse transport, or railway charges, could not be stated with mathematical accuracy, the author gave a table of costs, the figures given being the mean of those obtained in actual practice, the cases having either come under his own experience, or the figures having been afforded by the users themselves. Placing these costs in tabular form, the allowance for each item was shown separately for motor waggons capable of taking a paying load of 2, 3, 4, 5, 6, 7, 8, 9 and 10 tons. The ton mileage per day of 10 hours (proper allowance being made for the time usually consumed in loading and unloading) was also given, and the cost of doing the same work by horses. Those figures showed that if the loads were less than $5\frac{1}{2}$ tons the horse was the cheaper, but that above that the advantage lay with the motor.

SEND FOR CATALOGUES.

The author then urged the necessity for a better and stronger form of road wheel, to stand the strain of motor work, and also impressed on inventors the great future that lay before the internal combustion engine when it could be made to work with crude petroleum or residue.

He observed that the new regulations of the Local Government Board would be awaited with some anxiety, and suggested that whilst they should specify wider tyres and driving wheels of larger diameter, the speed of motor waggons should be left unrestricted, so that each size could be run at the speed that proved most economical and best suited to the traffic encountered.

The wear and tear produced on the roads was treated at some length, the conclusion being that if the roads were of a proper standard, there was less wear and tear from the use of motor vehicles than from any other form of transport.

The subject of the paper was then summarised from the point of view of various users, the author emphasising the importance of confining motors to hard roads. For contractors, he concludes that they are only of use in very limited circumstances, and that for gravel hauling, bricks, new roadwork or discharging barges, they can very seldom be used. In municipal work he considers they can seldom, if ever, be more economical than horse cartage, and for mineral water deliveries he considers the horse the cheapest. If the journeys are too short or the loads too light, he is of opinion they will only be used when economy is not the first consideration, but the ideal load he places at from five to ten tons for distances exceeding ten miles.

In conclusion, he pointed out that motor transport was essentially an expert engineer's business, and that the user of one or two motors would do better to put his work out to contract than to employ his own motors.

"SYMPATHETIC STRIKES."

THE advisory board of the Master Builders' Exchange of Philadelphia have fixed January 1, 1904, as the day on which systematic warfare by means of lock-outs against sympathetic strikes will begin. The advisory board represents the 300 members of the Master Builders' Exchange and 1,000 sub-contractors, whose signatures are on record. This means that on and after January 1 any sympathetic strikers will have to face a lock-out not only of the Employers' Association but of all of the leading individual employers.

This action is the most important ever undertaken in the structural trades in the city. The Philadelphia employes of this line did 30,000,000 dollars of business in the city alone in 1902. This is only a small part of the work controlled by them. The builders who are to participate in the lock-out plan have operations in every part of the United States and often in foreign lands.

The above-named sum represents the money involved in work for which permits are necessary in this municipality. The largest contract let last year, the State Capitol, was 4,000,000-dollar work under the supervision of a Philadelphia firm.

The sympathetic strike situation is not local, but has caused trouble and dissatisfaction all over the United States. The decision made on September 8, say the master builders, positively sounds the doom of the sympathetic strike, and will go far towards obliterating it wherever Philadelphia men are at work.

The subject has been pending since November 25, 1902. The advisory board was then created and was approved by the Master Builders' Exchange on April 24, 1903, by the presidents of the employers' associations. Since then the labour atmosphere, though clarified in some quarters, has again darkened, and the prospects are little or no work will be done in the coming year.

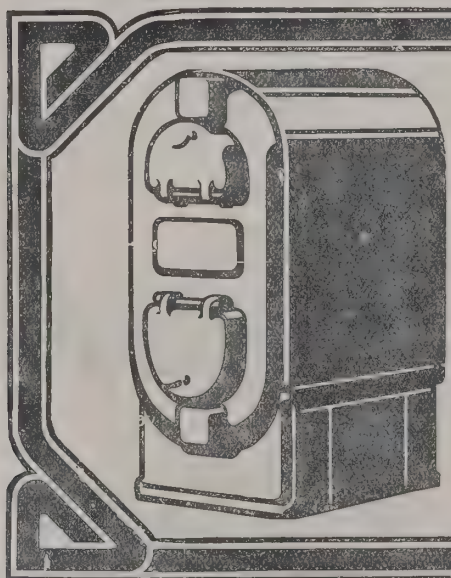
The text of the resolution adopted on September 8 follows:—

In pursuance of the authority given the advisory board of the Master Builders' Exchange by the resolution of the Exchange passed November 25, 1902, subscribed to by the employers' associations and by a number of individual employers, and further urged by a meeting of the presidents of said associations held April 24, 1903, at the Master Builders' Exchange, at which a resolution was adopted as follows:—

"Resolved, on and after a time to be fixed at the discretion of the advisory board of the Master Builders' Exchange, no workman shall be employed on any of our buildings in Philadelphia unless he is willing to agree not to engage in a sympathetic strike and to arbitrate any difference that may arise, work to continue meanwhile."

We have determined that on and after January 1, 1904, the above resolution shall be enforced.

Sympathetic strikes have demoralised the building trade. One trouble is no sooner adjusted than another branch of trade finds some cause for complaint, and all building operations are brought to a standstill again.



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PLUMBERS' REGISTRATION BILL.

Plumbers' Company intend to press forward the Registration Bill in the next session, and hope to have better success. Mr. Long, when president of the Local Government Board, gave its proposals his warmest support. It is well known that considerable mortality and a vast amount of ill-health as domestic discomforts, are due to defective plumbing. The waste of water from the same cause is enormous. It was recently estimated by Dr. Mansel Howe that on alone the waste amounted to 26,000,000 gallons in Birmingham has recently been able to save 100 millions per day by renewing fittings and plumbers' work. Long ago as 1883 the subject of defective plumbing was discussed by the British Medical Association, which suggested technical instruction and registration of plumbers on grounds of public health. Other learned bodies have since taken the same view, and while the company has been quietly engaged in the work of education—there are now 12,000 registered plumbers—it has never allowed legislative action to be lost sight of. The Bill has been singularly unfortunate with the Bill, which was introduced for the first time in the session of 1892. It was passed in the session after session, and in 1897 was referred to a select committee by the standing committee on trade. It had the support of the Local Government Board in committee and on the floor, but as a private members' Bill failed to obtain a majority that session. They hope to be more successful in the next session.

BUILDING IN GLASGOW.

The Glasgow City Council has made his annual statement as to the building during the past year in Glasgow as follows:—The total valuation of the linings granted did not differ from that of the previous year, which constituted a record. The valuations of the linings are the next highest. For the previous year the valuation of the linings amounted to 2,549,698*l.*, while for the current year which has just been completed the valuations amounted to 2,609,773*l.* The number of linings granted was 1,260,773. The number of cases dealt with at each Court was 84, the highest number at one Court being 84. Of these 70 were for dwelling-houses and shops, 12 were for churches, 19 for churches, halls and schools, 134 were for alterations and additions, and 228 were for new streets, amounting to 11,683 yards,

or equal in length to between six and seven miles. In this latter respect it is a significant fact that there has been no falling off in comparison with the previous year in regard to the linings for streets, which proves that the city is more and more extending its boundaries, and that provision is being made for extensive building operations in the near future.

Of the dwelling-houses no less than 765 are of one apartment, being yet again an increase upon previous years, and these are mainly in the Eastern, St. Rollox and Maryhill districts; 2,117 are of two apartments, mainly in these districts also; but when you come to three-apartment houses and upwards, by far the greatest number are in the Queen's Park district. In fact, of the three-apartment houses and upwards nearly the half of the total valuations are in the Queen's Park district, again showing what a very large number of our better class population are moving towards that direction, induced no doubt by the modern character of the buildings, and by the facilities which are being given to that neighbourhood. Besides the ordinary applications for the erection and alteration of buildings, the Court has also had to consider fifty-one petitions at the instance of the Procurator-Fiscal. There have been in addition thirty special diets for debate, and the Court has made fourteen visitations and taken six proofs. With reference to the visitations, I may mention that these have been mainly in connection with applications for buildings in what are known as hollow squares, and I take this opportunity for stating that in a general way the feeling of the Court is greatly against the granting of linings for the erection of buildings in hollow squares except in exceptional cases. It seems in every way desirable that in the more thickly populated districts of the city in particular there should be the greatest possible amount of open space within the bounds of hollow squares, not only for sanitary reasons, but for the general well-being of the large population which is in many instances thronging the buildings on the four sides of the squares, and to whom light and air space must be of the greatest consideration. It is, therefore, most desirable that workshops and other buildings of a similar nature should not be erected within these squares.

In connection with the applications to the Court there has been nothing of a special nature to which I need refer, except, perhaps, in the case of the erection of stands upon the occasion of the visit of their Majesties the King and Queen to Glasgow in the month of May last. At that time forty stands were passed after inspection, and six were not permitted to be used, but even in the case of the majority of those stands which were

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passed alterations had to be made to meet the requirements of the inspectors. This involved a large amount of careful work on the part of the master of works and his assistants at that time, especially as the erection of stands was carried out under considerable pressure owing to the time being limited; but it is satisfactory to record that in no single instance did any accident occur. In connection with the question of stands generally, I may remark that very great care has been exercised by the Court in passing plans for the erection of all stands which are intended for the occupation of the public. Not only have the plans for these stands been very carefully examined, but it is intended that, as far as possible, provision shall be made for their periodical inspection after their erection. You will no doubt recollect that on the occasion of the retrial of my predecessor some allusion was made to the alterations which were proposed in connection with the procedure of the Court, and it is satisfactory to know that such alterations as were adopted have been the means of facilitating the work of the Court, and have conduced to the prompt and methodical despatch of business.

CHELTENHAM WATER SUPPLY.

AN anxiety which lay heavily upon the mind of the local governing body with regard to the water supply of Cheltenham has been relieved by the sanction just received from the Local Government Board to a scheme for duplicating the main from the Severn at Tewkesbury to the town. The necessity for supplementing the present supply has been pressed upon the Town Council for some time. Up till some ten or twelve years ago, says the *Birmingham Daily Post*, Cheltenham was, so far as the public service was concerned, supplied exclusively from the gathering grounds of the high levels at Hewletts, Leckhampton and Dowdeswell. This hill service sufficed for some ten years only; a succession of dry seasons reduced the yield of the springs to an alarming extent, added to which the energetic action of the Health Department in closing a large number of shallow wells in the older parts of the town put a strain upon the diminished public supply which it was unable to bear, and resort had therefore to be had to other sources. Fortunately for the town, among the assets which it took over from the water company was the highly valuable right of abstracting from the river Severn just above the ancient borough of Tewkesbury no less than 4,000,000 gallons of water

a day, and spite of the opposition of several of the leading medical practitioners of the town, it was to the Severn that the local authority went for the water necessary to supplement the hill supply. Already the Corporation, as successors to the Tewkesbury company, were supplying the river water to the town of Tewkesbury; and it is a curious commentary on the agitation promoted against the introduction of the Severn service to Cheltenham that in after years, when an abnormal rainfall would fill the hill reservoirs and enable the Corporation to make some of this water to Tewkesbury from Cheltenham instead of receiving any part of the supply for the larger town from the river, the Tewkesburians would make complaint through their governing body, and thus emphasise their decided preference for a commodity which some of the medical profession would one time disposed to distrust. The Severn supply, such as it is at the Tewkesbury works to the most modern and efficient systems of filtration, is now universally admitted to be one of the best in the kingdom. The present proposal is not to go to the length of discarding the hill supply, though the fact duplication of the main will enable the authority, in the event of need, to dispense absolutely with the hill supply. It is somewhat difficult to understand why the Local Government Board should have hesitated about giving their approval to the scheme, which merely involves the laying of a second main alongside the first, and therefore on exactly the same principle. But, acting presumably on legal objection raised by the advisers, the Board at first declined to sanction a loan for the works. The Town Council did not, however, accept the refusal, but through both the late town clerk (Mr. E. T. L.) and their present legal adviser (Mr. Owen Seacombe) they insisted in their application, and have at last convinced the Board to this extent, that formal sanction is given to the proposed loan subject to the condition that the Town Council accept all legal responsibility. This condition the Council had already consented to undertake, and the way is therefore now clear for a commencement of the works, which will, it is little doubt, be completed before the need of the additional supply becomes urgent.

NORFOLK COUNTY ASYLUM EXTENSION.

IMPORTANT extensions which in the aggregate cost £70,000 have recently been carried out at the Norfolk County Asylum under the auspices of Mr. A. G. Wood, architect.



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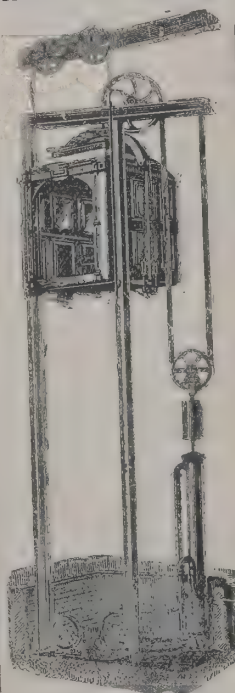
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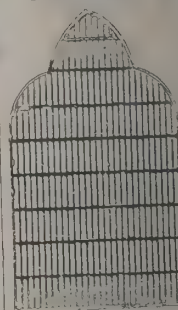
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Taden, engineer. The chief features of the new work the enlargement of the annexe and its conversion into an asylum for male patients, retaining the original female; the rearrangement of the stables, artisans' and boiler-house; stables for medical superintendents; cottages for the head attendant and engineer; the rearrangement of the boiler power and general rearrangement of the work, the installation of electric light and new stables.

Conditions at the male asylum comprise new blocks for sick and infirm, the enlargement of the east wing for acute patients, new workshops, mess and recreation-rooms, new bakery, photographic studio and alterations in the administrative offices. The wards for the epileptics and for the sick and infirm are on the new building, within easy access of the administrative offices and the medical officer's quarters. They are thoroughly planned for the acute wards, and are so planned as not to interfere with the outlook or working of the old western wing, which is reserved for working patients. The new blocks are arranged in buildings, and each comprise a self-contained ward for their respective classes. The day-rooms have uninterrupted outlooks, and they, together with the wards, are thoroughly lighted and ventilated. The arrangements are placed in spurs at the back of the building, which they are separated by cross ventilated inter-rooms. Staircases of artificial stone are built at the end of each block, thus affording two means of exit to the wards. The workshops comprise shops for upholsterers, shoemakers and tailors. They are arranged for supervision and access, have cheerful outlooks, and are so planned that after working hours they are off from the rest of the building. The mess and recreation-rooms for attendants are placed at the back of the main block, within easy access of the various wards. The kitchen contains two ovens, and a kneading machine driven by an electric motor, also flour store, &c. The alterations in the administrative offices comprise a new dispensary, and portions of the original building into quarters for the medical officer, offices for medical officer, head attendant, and visiting-room.

The boiler-house block, artisans' workshops and stables, which were more or less mixed up together, have been to a great extent rebuilt and rearranged, and are now

kept distinct from each other to admit of effectual working and supervision. The stabling comprises separate stables for the committee, visitors and asylum horses, coachhouse and carriage-shed. The workshops contain carpenter's, plumber's, painter's and glazier's shops, bricklayers' shed and store, artisans' mess-room and clerk of works' office and store. The engineers' department comprises a new boiler-house, pump-house, coal-bunkers, electric-plant room, engineers' shop, stores and office.

The superintendent's stables, which are situated off the back road to his house, comprise a stable for three horses, coachhouse, harness-room and washing-shed. The head attendant's cottage is built at the back of the new blocks, and contains on the ground-floor parlour, living room, scullery and the usual offices, and on the first floor three bedrooms and a bath-room. The cottage for the engineer has similar accommodation to that of the head attendant, and is situated off the old road to the annexe in close proximity to the boiler-house.

As it was necessary to provide additional boiler power for the male asylum for heating and hot-water supply, and as new boilers working at a higher pressure than the old ones were required for supplying steam to the electric-light engines, it was decided, instead of building a new boiler-house at the male asylum, to concentrate the whole of the steam supply in a new boiler-house at the main building. Three Lancashire boilers, each 28 feet long by 7 feet 6 inches in diameter, with a Green's economiser, have been provided. Two of these boilers are sufficient for raising the whole of the steam required for the electric lighting, pumping, cooking, laundry, hot-water supply and heating in both the male and female asylums. Originally there were thirteen boilers, which were placed in various parts of the building. The length of steam main from the boiler-house to the centre of the male asylum is 2,290 feet, and with the whole of the work on there is only a drop in pressure of from 1 to 2½ lbs. The extreme length to which steam is carried is 2,467 feet. The condensed water throughout is returned to the boiler-house. The whole of the hot-water supply in the main building which was previously heated by separate boilers in the different blocks, is now heated entirely by the exhaust steam from the electric-light engines, and circulated by means of pumps through mains to the various wards, &c. The hydrant system has been reconstructed and is now so arranged that pressure from the tank in the tower at the male asylum is always available for immediate service in the hydrant mains. On the alarm of fire being given the

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pumps can at once be made to deliver direct into the hydrant main, giving an increased pressure sufficient to throw a jet over the tower at the male asylum. The cooking apparatus has been extended and rearranged to make provision for additional patients.

The generating plant consists of three of Messrs. Laurence, Scott & Co.'s (Norwich) steam dynamos, each having an output of 50 kilowatts, and three of Messrs. Reavell & Co.'s (Ipswich) high speed engines, each giving 100 indicator horsepower when running at 500 revolutions per minute, and supplied with steam pressure at 120 lbs. The engines are directly coupled to the dynamos, being fixed together on one bed-plate, and make a compact and efficient combination. The engines are compounded on a patented principle, owned by the makers, which enables the high economy of a compound engine to be obtained with considerable simplicity in construction. The working parts revolve in a bath of oil and water, which is splashed over the working parts by the cranks as they dip into this bath on each revolution, thus insuring perfect lubrication in an economical manner as the oil is continually used over and over again. The plant, besides generating current for the lighting of the buildings throughout, will supply power to the motor for driving the machinery in the laundry and to the motors driving sewage pumps, pumps at male asylum and kneading machine in bakery. A battery of accumulators of sufficient capacity for the night load and motor work is provided. The buildings are wired throughout on the two-wire system at a pressure of 200 volts.

The Local Government Board having requested the committee to provide some efficient means of treating the sewage, it was decided as there was no land available or suitable for the purification of sewage, to adopt the closed septic tank system followed by continuous filtration. The Local Government Board stipulated that twice the dry weather flow of sewage should be treated through the septic tanks from twice up to six times, the dry weather flow should discharge on to a storm-water filter, and that the volume of storm water, when it exceeded six times the dry weather flow, should discharge direct into the outfall drain. The sewage works which are now on the point of completion have been designed accordingly. The sewage from both asylums up to twice the dry weather flow is collected in a well, from which it is pumped by motor-driven pumps automatically controlled to the septic tanks. The tanks are in duplicate, and are properly ventilated to prevent the possibility of an explo-

sion. The effluent from the tanks discharges on to a continuous filter, which is composed of washed clinker and irregular material. The effluent is conveyed over the filter by means of Stoddart's distributing plates. These plates consist of a large number of small horizontal V-shaped gutters, the sides of which the liquid flows until it meets a series of vertical drip points, from which it falls on to the surface of the filter in a fine rain. In this way the sewage is made to fall on its course in a state of intimate admixture with air. The effluent, after gravitating through the filtering material at the bottom of the filter, is conveyed to collecting channels on either side the filter, from which it discharges into the outfall drain.

OILING ROADS.

DURING a part of this year and last year experiments have been conducted in Liverpool by Mr. J. A. Brodie, the engineer, in order to ascertain if there are advantages in the use of macadam roads.

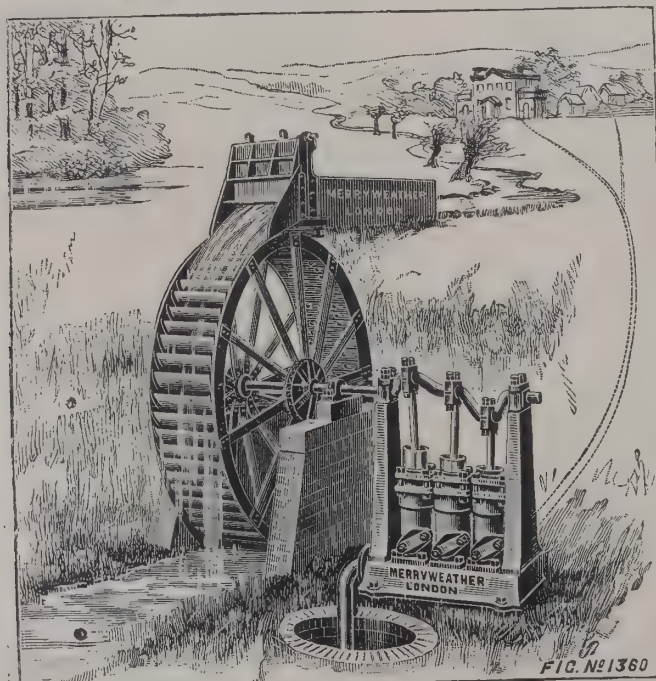
The materials experimented with have been as follows: Creosote oil (hot), creosote oil (cold), creosote oil mixed with small proportion of pitch, creosote oil mixed with small proportion of resin, creosote oil mixed with small proportion of tallow, coal tar (hot), cheap waste oil from coal tar, crude petroleum, crude Texas petroleum.

The roads on which the experiments were made were portions of Prescott Road, Derby Lane, St. Oswald Road, Rathbone Road and Edge Lane.

The oil was in each case sprinkled by hand from a wheelbarrow, and it was found that 1 gallon covered an average of about 8 superficial yards without lying in pools on, or soaking into, the surface. As it was found that the oil took some time to soak in care was taken to sprinkle one side of each road at a time, the other side being left for use so that rubber-tired vehicles need not pass over the newly oiled surfaces. The cost of the material used, the smaller cost being that of the cheap oils, costing about 2½d. per gallon.

Some complaint was made as to the smell of the creosote oil, but as against this it was stated that as long as the smell remained flies had practically disappeared from premises adjoining the roads. One complaint was made as to the injury to rubber tyres and to coach var-

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ce having the cleanest and whitest appearance was with the creosote oil mixed with resin, whilst that a creosote oil mixed with tallow had the least surface coated with ordinary petroleum was the dust, the next in order being the mixtures of with resin and tallow, and the hot creosote oil creosote oil mixed with pitch, the cold creosote oil and creosote oil mixed with a small quantity of pitch gave results, but the portions of the road coated with creosote had the worst appearance. The heavy black waste oil) lasted slightly longer than the creosote, of course, much cheaper. The crude Texas gave the most lasting results, and portions of the were heavily coated showed a somewhat glazed road of oil and dust. The coating of hot coal-tar rably situated, the dirt carried from adjoining road under repairs spoiling its value as an point of view of saving in street watering the unfavourable, as during the three weeks which the dust was again visible on the surface the water- it on four days only on the adjoining macadam h sweeping labour was, however, much reduced as with corresponding areas:—Thus, on 6,500 yards as reduced from a total of seven days to four days, material removed from the surface was reduced from five loads, the total reduction in cleansing and ing 13d. to 055d. per superficial yard over a period of days. Experiments showed that the dust was satisfactorily experience gained will probably enable future carried out more economically. From the point of e and tear of the road surface, the oiling was, on advantageous; the wear appearing to be less, the e road drying more quickly after rain, and the picked up were reduced; the combination of oil e the surface also appeared to form a somewhat rice. The first sprinkling kept the surface in good e weeks, at the end of which time it was thought re-cover the area. The second coating similarly a down for a period of about five weeks, and the ct of the oil on the surface had not entirely disap- end of that period. Experiments referred to in the foregoing state-

ment, some further oiling experiments have been carried out on two important macadam roads in Liverpool, which require a considerable amount of watering, and the results have proved satisfactory from an economical point of view as compared with watering.

The method of applying the oil was by means of ordinary syringes with fine roses at intervals of about three weeks, and as a result the surface of the roadway was kept in better condition than if watering had been adopted.

The area experimented upon was 12,847 superficial yards, and the total cost of oil sprinkling was 7l. 15s. 1d., or equal to a rate per superficial yard of 0 46d per single sprinkling, which kept the road surface free from dust for a period of three weeks.

These roads when treated by water were sprinkled three times per day, and the cost of this work over a period of three weeks amounted to 70d. per superficial yard, so that an ample margin is left for wet days, when no watering is required.

The reduction in the cost and quantity of materials removed in the cleansing operations was again noticeable, though the figures have not been separately kept.

The cost of oiling could no doubt be reduced if a larger area was spread and the oil purchased in larger quantities than was the case in the above-mentioned experiments.

Oiling experiments have also been carried out in connection with wood pavement in one of the principal carriage roads in the city. The work was done in the same manner as in the case of the macadam roads, and the dust was satisfactorily kept down—a result which in this case could not be obtained even by watering four times per day—and the surface of the road maintained in good condition during dry weather without gravelling, but the surface becomes somewhat slippery during the first part of a shower of rain, and in such cases it has been found necessary to sprinkle a little gravel.

SLAG ROADS.

In August of last year some very interesting object-lesson road work was carried out near Chester river, Queen Anne county, Maryland, which is a good illustration of the impetus which the Office of Public Road Inquiries of the Department of Agriculture is giving to road improvement throughout the United States. This piece of road near Chestertown, says the *Engineering Record*, was built from slag obtained from the iron

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furnaces at Sparrows Point, this slag being transported down the Chesapeake in barges. The road was built under the direct supervision of Mr. A. N. Johnson, highway engineer of the Maryland Geological Survey, and no specifications were made for it, as the labour was for the most part contributed by farmers in the neighbourhood, while the county paid the cost of the material. The organising of the work was in charge of a committee of the local citizens, of which, Mr. W. I. Walker was chairman. The length of the road constructed at this time was 1,100 feet, and its width 15 feet.

The slag from which the road was built is the material run off from the furnace before the iron is drawn; it cools in a sponge-like form. Its chemical composition is complex, and varies with the different ores and fluxes used. It is composed for the most part of an anhydrous lime silicate with sulphur compounds to which its peculiar odour is due. The action of the weather on this slag is to harden it, and because of its cementing properties it readily compacts and becomes harder the longer it is down. The slag was put on the road 10 inches thick in the centre and 7 inches at the sides, measured loose. There were 458 tons of slag used, and about 45 tons of fine material or ladle scrapings were spread upon the surface. This fine material when wet becomes hard and cements the pieces of slag firmly together. The roller used on the work was a 3½-ton horse roller lent by the Good Roads Machinery Company, of Kennett Square, Pa. A heavier roller would have been better, but could not be easily obtained at that time.

Mr. Johnson considers that in preparing specifications for this kind of road, the subgrade should be prepared in the same manner as for a road built of broken stone. The experience gained from building this road and a sample one of the same material in Baltimore county five years ago, leads him to believe that it is unnecessary to be so particular as to the size of the pieces as in the case of a broken stone road. Care should be exercised that the occasional large lumps should be either thrown to one side or raked ahead and put in the foundation. The slag requires much less rolling than broken stone, but more water; in fact, Mr. Johnson considers that too much water cannot be used. After the material has been given a thorough drenching it should be allowed to stand for ten or twelve hours before rolling, and after the roller has passed over it once or twice it may then be watered again. Three trips over every part of the road with a 10-ton steam roller is considered sufficient to consolidate it.

An examination of this road early in March showed that,

although built on a soil which affords in wet weather about the worst possible foundation for a road, it nevertheless gave no signs of yielding or cutting through, and it should be noted that this past winter in eastern Maryland was especially severe one on the roads owing to almost constant freezing and thawing. The surface when inspected was covered with a thin layer of mud, evidently caused by softening of the coating of fine material with which the road was dressed, together with the mud which had been trapped to it. One of the most serious disadvantages of this layer of mud is the plainness with which all the wheel tracks show, causing horses to follow one another and leave slight ruts. This action would probably not have been so pronounced if a heavier roller had been used in construction. At a point where the travel had been forced to turn to one side, no ruts at all have appeared, and the surface appears to be firmer and harder than when the road was built. Mr. Johnson considers that a width of 12 feet would have been ample for this road. He believes that increased durability will make it in the end a cheaper construction than oyster shells, which is the only material that has been used hitherto in that part of Maryland. The accompanying table gives an estimate of the cost of such a road for the several counties on the eastern shore of the Chesapeake based on the actual cost of this road in Queen Anne's county. The price of the slag is that given by the steel company, which can be made as low as 41 cents per ton owing to the fact that the company would put in special arrangements for crushing and loading it, which would save entirely the cost of digging up, as was done in the work just described.

Estimated cost of slag road.

Slag on barge at Sparrows Point	PI
Freight, 100 miles by barge	
Unloading barge	
Hauling (average, 1½ miles)	
Spreading	
Rolling and water	
Total cost of slag in place on road	
Slag for 1 mile (15 feet wide, 2,400 tons)	\$
Shaping road-bed, 8,800 square yards	
Total cost per mile, 15 feet wide	\$
Total cost per mile, 12 feet wide	\$



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The Architect.

THE WEEK.

of the County Council on Tuesday relating to the improvement of the Strand is sufficient to make the view that the amenity of London is to be dispersed forth in Spring Gardens. The report of the committee concluded by saying:—"We have been convinced that by throwing open to view the views of the Law Courts buildings the architecture in the Strand would be considerably improved, whether this would be so or not, we feel that it would not be justified in incurring so large a sum as would be involved in securing a doubtful improvement of the architectural view in the Strand." But the Council in approving the report it is to be noted that there is a belief that the concealment of the Law Courts is an advantage. If one is rejected, its opposite has to be accepted. Mr. ROBERT's plan, however excellent, involved a cost of 360,000£, and on that account there was its rejection. But when the suggestion of the Institute of British Architects could be realised, the fact of that sum lovers of economy need not be annoyed. The County Council, however, considering the sum as exorbitant, and maintaining without any setting back the thoroughfare would provide for the traffic. A recommendation that the Council should be accompanied by an expression of opinion for financial reasons could not make a difference in the boundary proposed was rejected. We wonder some members of the Council would have seen that the church of St. Clement Danes was taken down, for its presence and awkward position under the new arrangements will always be a hindrance to their inability to realise one of the simplest and best planning.

Along the Holborn to Strand highway are not the facilities that was anticipated, and the subject of the last meeting of the County Council. The report of the corporate property committee, Mr. ROBERT, stated that speculators hesitated about accepting the architect's decision as final and the conditions were not more stringent than those of other buildings in London. The Ecclesiastical Commissioners, insisted on plans for new buildings by their own architect. Mr. WALTER EMDEN and the builders considered that the conditions were too stringent, and they did not distrust the architect they did the Council. He suggested that the Council should see if they could not bring their clauses in accordance with those of other large estates in the Strand. Mr. MULLINS promised to bring the matter before the property committee. It is easy for the Council to impose conditions on buyers are exaggerated and the conditions are sufficiently satisfactory. If so, it is to be noted that there are misgivings of some kind about the future action. Speculators would hardly be so easily gained because they are indifferent to the architectural standard.

Mr. HORSLEY, a useful and honourable career, died at his house in the Strand on Sunday last. As a painter he was known for his illustrations of simple incidents in rural life, and his pictures which recalled Puritanism in its most simple forms. They were always bright in colour, and in an unaffected style. Seen in foreign exhibitions they were accepted not only as true English life in past and present times, but as English art, which never attempted more than to be true. When a young man of twenty six Mr. HORSLEY received the call which was made by the Committee for the Decoration of the Houses of Parliament, and he painted the fresco, *St. Augustine Preaching*, which won him the Victoria Medal. He obtained a commission to paint a picture for the House of Lords, the subject being *The*

Spirit of Religion, and in the upper waiting hall he painted one of the illustrations from English poets, viz. *Ithuriel's Spear*, from MILTON. Another work, produced about the same time, was *Prince Hal assuming the Crown*. But he recognised that his gifts were not adapted to high art, or that there was less demand for such pictures than for those on a small scale, and he returned to the class in which he had succeeded from his first attempt. Mr. HORSLEY was also one of the artists who had aided in launching the schools of design. His works were well adapted to be ornaments in English houses—we might say in English parsonages. There was nothing in the subjects which could not be discussed. Although he only once, we believe, attempted religious themes, it could be claimed that the spirit of religion was suggested by many of his pictures. Born in 1817, he became an Associate of the Academy in 1855 and an Academician in 1866. He rendered loyal service to that institution not only by acting as treasurer for several years, but also by his zeal in the organisation of the winter exhibitions. Mr. HORSLEY was happy in having the desired accompaniments of old age, "love, honour, obedience, troops of friends," and he well deserved them.

THE present age must be allowed credit for endeavouring to revive interest in people whose names and claims were ignored. Among the latest discoveries is OTTO VON GUERICKE. He was the inventor of the air pump and lived between 1602 and 1686. It is proposed to set up a memorial of him in his native city, Magdeburg, at a cost of 60,000 marks. The competition is confined to three Berlin sculptors, viz. Professor GÖTZ, Professor VON NECHKRITZ and Professor UPHUES, who are to send in models before New Year's Day. Little is known about VON GUERICKE. He was a studious philosopher who gave his attention mainly to pneumatics. In order to obtain a space entirely void of air he filled a barrel with water, and having closed it all round began to draw out the water by the aid of a sucking-pump. The air, however, burst into the barrel with a loud noise. Other trials failed, and it was only when he employed a glass sphere that a vacuum was obtained. The event occurred about 1650. He was summoned in 1654 to repeat his experiments before FERDINAND II. Afterwards ROBERT BOYLE substituted for the sphere a receiver of a more suitable form, and a pump which could be more easily worked.

THE Metropolitan Water Board have shown they can appreciate fitness by inviting Mr. H. W. LONSDALE to design a seal for them. The design was submitted at the last meeting. It shows a figure representing London drawing water from a reservoir of masonry, which is supplied by a stream issuing from a rock, symbolising the artificial distribution of water obtained from a pure source. In the background are seen St. Paul's, the towers of Westminster, &c., indicative of the Metropolis generally. The inscription as amended is "Metropolitan Water Board, 2 EDWARD VII." It is to be hoped a competent engraver will be selected to translate the design on metal.

M. COQUELIN will have to be alert in constructing his theatre, which is guaranteed to be unflammable, for other managers appear to be dealing with the same problem. The municipal theatre of Nantes has already inaugurated a system which is supposed to be perfect. The building was tested on the 3rd inst. in the presence of official delegates from Paris, lessees and directors of theatres with other experts. Testimony has been given about the success of the system. All parts of the theatre are traversed by conduits with branches. Each of the latter is furnished with automatic extinguishers, which can be set in action by an increase beyond the normal heat in the building. At the same time electric bells and other announcements are set ringing to summon the attendants and firemen, and the exact position of the evil is indicated. Torrents of water saturated with carbonic acid are also put in movement. In the experiments which were made a fire was suppressed in 45 seconds. The system has been carried out in the Grand Theatre Municipal under the direction of M. PONTET, with the co-operation of M. GOUZÉ, the chief of the fire brigade.

ROME AS AN ART SCHOOL.

THE Convention of the American Institute of Architects, as we mentioned last week, was to be occupied at Cleveland, Ohio, with a consideration of such subjects as the Advantages of Rome to Mural Painters, Sculptors and Architectural Students. It is not a little remarkable to find busy men in so modern a place and so remote from Rome in the beginning of the twentieth century turning their attention towards the ancient capital with as much eagerness as an inhabitant of Western Europe might have shown in the tenth century. We must remember also that Rome and all it still possesses can become more familiar than in any former age to every student of painting, sculpture and architecture without undertaking a voyage across the Atlantic and a journey across Europe. There have been countless descriptions of the city, its buildings and its treasures published in English as well as other languages. There is hardly a picture or statue which has not been made the subject of an engraving or a photograph, and the representations are of unquestioned accuracy. What more does a student need than to sit down in one of the public libraries in America, which are so richly endowed, and there to become acquainted with the appearance of every model which is likely to be useful to him? He can also learn with but little research how many artists have been successful in Europe without spending one day in Rome.

While all this must be admitted, it has been shown by experience that impressions are received by a visit to the city which can be gained in no other way. What GRAY, the poet, said of the Tiber is applicable to much else belonging to the city. The river, he wrote in one of his letters, is made more considerable than any merit of its own could have done. Anywhere else it would be little more than a muddy stream, but in Rome it becomes Father Tiber, and we do not wonder at the people praying to it. If the TOWNLEY and other marbles in the British Museum could be brought back to Rome and set up in some ancient villa, they would all gain in majesty and beauty.

The peculiar state of mind which we have suggested will be familiar to many of our readers. It has been often noted by travellers from all lands, and never more accurately than by JOSEPH WOODS, the English architect, in 1817. "In spite of all that may have been seen elsewhere of magnificent buildings, and all the views and drawings which have been published of the eternal city, Rome is still," he said, "a new world to an architect. You may know in detail the appearance of every building here, but you can feel nothing, you can imagine nothing, of the effect produced on seeing, on finding yourself thus amongst them. A vague feeling of admiration mixes itself with every perception and every recollection, and the mind forcibly rejects all inharmonious ideas. It is not any one thing that you see any more than it is one point of history that you have to remember; multitudes of fragments are included in one view, not very perfect and distinct in their forms, yet sufficient to excite the imagination. They crowd on the eye as the scenes of history on the memory. The strong emotion and the high tone of feeling excited leave no power of criticising. There seems to be a magic in the mere names. The first eight days I spent in Rome were all hurry and confusion. I could attend to nothing systematically, nor even examine anything with accuracy; a sort of restless eagerness to see everything, and know something about everything, gave me no power of fixing my attention on any one particular."

It is well to experience an emotion of that kind, although it may sometimes be accompanied by disappointment. It is only when we begin to realise how many revolutions and how much confusion in the world were necessary to bring about the tumble-down condition which we still can see before us in several parts of the city that Rome can be properly recognised. All the troubles and outbreaks, civil wars, invasions of enemies, which elsewhere were spread over immense areas, appear to have been concentrated in this one spot. On that account it must be allowed the student of archæology can no longer have the same sentiments in modern Rome that he used to feel before Italy was united. Logically and politically it is right there should be tall new buildings and broad streets, con-

venient railway stations, tramways, and so on, for the concomitants of a modern city, an imitation of which would be a kind of Paris. It used to be said to be home to us in a more convincing way than was possible in any German treatise that if the streets were as they were in Rome was because the Romans, like most southern people, cared little about their own firesides, and were willing to live in small rooms in tall houses so long as there were open spaces like the Forum, where they could congregate, or theatres like the Colosseum, where they could see spectacles, rarely of a refined kind, and where they were operated on not merely by the stage but by vapours, where they could witness exercises or theatrical performances, lounge over paintings and statues, or, if they were studious, enjoy the pleasures of a library. The contrast between the present and the past, which is now so apparent, may cause visitors to undervalue the remains of antiquity; but of all the transformations, enough yet remain to make Rome unique as a representative of the past whose influence continues potent.

It is still repeated so often that the Romans originate anything great in art, there may be some truth at Americans going there for inspiration. But the system practised by the Romans prevalent in Italy. We continue to be in the fullest sense heirs of the Romans, and if it were not for our predecessors' wealth and power, we should indeed so far as the arts are concerned be poor mechanical and other inventions the Americans need to go to Rome; but for painting, sculpture and architecture they are wise in following the example of the Romans, and to take their share of the spoils of the past. Nowhere are they more abundant than in Rome.

If the Romans were not inventive they displayed at least surprising powers of adaptability. That their forms were stereotyped is not entirely true. There is infinite variety in their arrangements and details; and, if we possess more refined tastes, we can let us surpass them. In modern times Domestic architecture is most in request. Unfortunately there are no revivals of the Roman houses, but the Renaissance villas are an excellent substitute for them. The Roman style prevails beyond all others throughout the world. In Rome some of its noblest examples are standing.

There may be cities like Florence and Venice, but some will maintain afford better schools for the study of Italian architecture. But there can be no question of the superiority of Rome as a school of sculpture. FLAXMAN it was recorded that "whether he was making from the antique, or making studies from the groups and figures abounding in the venerable ruins of its environs, each object, animate and inanimate, seemed to him beautiful or noble and all-inspiring; no day was suffered to pass without some improvement in his art, and except his health and strength failed, no day was suffered to pass without some improvement in his art. The value of Rome as a means of inspiration, was tested by his own progress, was always present in his mind. He never failed to recommend a study of the masterpieces when he was lecturing on art. It is true, when he lectured on Egyptian, Grecian, Gothic, or Roman sculpture he did not attempt to treat that of the present. It was doubtful whether the artists of the Roman Empire were competent to produce works worthy of survival. The Roman compositions owed no inspiration to the Muses. Describing the columns and arches, he said "the forms of the limbs are interrupted by mail or plate armor, the heads are so brutal and savage as to excite compassion for the barbarians who have fallen into their hands. There are, however, incomparable Greek works. It is true, casts of them are to be found in the museums, but who can deny that a wide gulf separates them from the people who gaze on them? In the statues do not appear as strangers or intruders from modern life. Imagination easily makes a connection between them and the Romans. In the same way the Gothic figure does not seem strange in an English town. The value of the sculpture is enhanced, for it ceases to be a representation of the past, beyond the world. To those who know Rome, it is to be no absurdity when HAWTHORNE, in his

...n," makes one of his characters—an American lady inter—say that their friend DONATELLO was the son of the Faun of PRAXITELES, and ask whether the influence extends to the very tips of his ears. DONATELLO was probably a representation of THOREAU of Concord, but for the occasion his New England character was modified, and he became a Roman with the groves within him. And thus it happened that the girl and the youth improvised a dance in which joined, "it seemed the realisation of one of those bas-reliefs where a dance of nymphs, satyrs or bacchanals is round the circle of an antique vase; or it was like a pictured scene on the front and sides of a sarcophagus, often as any other device, a festive procession of the ashes and white bones that are treasured up. Anywhere else the dance would be commonplace, but in Rome it was subjected to the *genius* and became sculptural. No modern writer has the assimilative virtue which we have claimed for Hawthorne, and his "Transformation" always exerts influence on his countrymen who possess instincts.

Weeks ago we gave some extracts from the letters of THOMAS LAWRENCE, President of the Royal Academy. This will he went to Rome to paint a portrait of a man, and he was not in a mood to be smitten by its charms. But no sooner was he in Rome than the blasé world who was laden with cares was conquered by the imagination. As he said, he became more and more at home with Rome as the period approached when he had to paint it. All Rome, according to REYNOLDS, is an open-air museum, and it is no wonder that in its early days students of the Royal Academy were sent there as if it were a necessity in the education of a painter. Of ancient Rome there is little to show. But of the periods of its greatness it is a true treasury. Strictly speaking, there was no Roman School, but for the modern student the advantage, for all the schools of Italy have taken from it. Reaching the city. What is of great importance in the principal works are to be found in the positions in which they were painted. There is in consequence a richness which is not to be understood from seeing works in a gallery amidst surroundings which were never conceived by the artists.

There is no doubt that in contemplating the possibility of going to Rome for painters, sculptors and architects our own architects have shown they possess a large share of the shrewdness of their countrymen. All the countries of Europe, with the exception of Great Britain and Turkey, have made arrangements by which the student should be provided with opportunities to derive from Rome. In some cases the gain has been in all human affairs we must calculate on a probability of failures. There are artists who can dispense with studies. But the experience of those most likely to judge has been favourable to a sojourn in Italy. Americans will do well to assert their equality with France, Germany, Spain and Russia by sending representatives who will utilise its artistic wealth.

ARCHITECTURE AND THE INFANT ACADEMY.—II.

Referred last week to the absence of churches from the four earliest exhibitions of the Royal Academy. In the fifth we find EDWARD STEVENS, A.R.A., on "Elevation of a Sepulchral Church, designed by the late Royal Highness the Princess of WALES." It was the first example of its class, and seems to have been carried out, although the artist was the mother of GEORGE III. By the same artist was a design for a temple dedicated to painting, and architecture, which he had prepared for the artist GREY. Temples of the kind were often set in gardens. More surprise was likely to be shown in a plan and elevation of a cold bath by WILLIAM HAYDON, and a design for a public bath by JOHN HAYDON. Neither public nor private baths were then appreciated. JOHNSON advised a friend who showed him a

bath not to make use of it, and he expressed his own conviction of their inutility by saying, "I hate immersion."

In 1774 JAMES GANDON, who won the Academy's first gold medal for architecture as a student, appeared for the first time as an exhibitor, with a design for a villa for a gentleman in Ireland, and a sketch design for a church. He is principally known by the noble buildings he erected in Dublin, including the Custom House, the Four Courts, and part of the Parliament House. For its architectural character the city owes much to him. J. JAEGER sent the elevation of the north front of the new bridge at Bath. About that time there were two THOMAS MALTONS, and both were represented in the exhibition of 1774. The elder prepared a view of the interior of Walbrook Church. In the same year he published "The Royal Road to Geometry," and in 1775, his treatise on perspective; he also delivered a course of lectures on the subject in his house in Poland Street. THOMAS MALTON, the younger, was an Academy student, and he exhibited a view on the Thames from the Adelphi Buildings to Blackfriars Bridge. He afterwards produced several aquatint views of London and Oxford, and was one of JAMES GANDON'S assistants. The improvement of Lincoln's Inn was then contemplated. Stone Buildings were erected under the direction of Sir ROBERT TAYLOR in 1790. In the exhibition of 1774 were "Three Designs for a Forum, for the Four Courts of Judicature, designed to be built in Lincoln's Inn Fields," by THOMAS RAWLINS. The scope of the Academy was not then rigidly defined, for GEORGE RICHARDSON, architect, the author of "The New Vitruvius Britannicus" and other works, was allowed to exhibit a design for a carpet as well as two designs for ceilings. THOMAS WHETTEN sent a design for a park gate. He was a pupil of CHAMBERS and won both the silver and gold medal for architectural drawings and design. Fortunately for him he inherited property and was able to retire from practice. He lived until 1836. For some reason which is still unknown, the majority of designs did not bear their exact titles. We have town mansions, villas, garden buildings, &c., which cannot be identified. It would be interesting to know where is the structure described as "The Principal Front of a Design for a Town Hall," by JOHN YENN, for works of that class were not often erected in the eighteenth century.

The exhibition of 1775 contained a design for the Castle of Swartsco, the seat of the Queen Dowager of SWEDEN, near Stockholm, by Sir WILLIAM CHAMBERS, which suggests that he had retained interest in his native country. WILLIAM BLACKBURN, who was an Academy student, sent a "Garden-Seat designed for a Gentleman in Surrey," and a stable building. Afterwards he was successful in works of a different character. He was the first to aid HOWARD, the philanthropist, by preparing designs for prisons which would not be death-traps. In 1782 he obtained a premium of 100 guineas offered for a penitentiary. He was architect for the county gaol of Oxford, and was generally consulted by prison authorities. He was also architect for St. Thomas's Hospital and Guy's Hospital. He sustained an attack of paralysis at Preston on his way to Glasgow and died in his fortieth year. A want of the time was indicated by JOHN DOTCHEN'S "Design for a Church, intended for a central situation at the West End of the Town." An example of a class of work sometimes referred to in the literature of the eighteenth century is found in the plan and elevation of a temple dedicated to Taste by WILLIAM MOSS. He was a student of the Academy, and afterwards won the gold medal. There was also a Temple to Victory by SAMUEL ROBINSON.

The exhibition of 1776 was not important for its architectural designs. Among the drawings were an elevation of the principal front of the Town Hall, Bath, by E. BELK; a section of the concert-room, Hanover Square, by R. EDWIN; the principal front of Boyles, Essex, by THOMAS LEVERTON; the "Section of a City House of the ancient Romans, designed for the second volume of the Translation of Vitruvius," and an "Elevation of the Villa Urbano," by WILLIAM NEWTON, the clerk of the works at Greenwich Hospital, and lastly SOANE'S principal façade and plan of a design for a Royal Academy.

The reputation of JOHN ALEFOUNDER is based on his portraits and miniatures; but the first work he exhibited

was a design for a "Lunatic Hospital," which was seen in 1777. CHAMBERS sent a bridge at Woburn Abbey. By THOMAS HARRISON, who suggested to Lord ELGIN the necessity of obtaining casts of the Parthenon marbles, and who is remembered mainly by his arch of 200 feet span across the Dee, were some Roman drawings, viz.:—"Half the Plan of a Design for the Piazza del Popolo, the Principal Entrance into Rome, Elevations of one Flank and Gate end of the Square, Sections of the Church, Chapel, &c., Sections of the Square and Convent." There were English peers in the seventeenth and eighteenth centuries who considered it was incumbent on them to take an interest in ancient Rome, and to obtain promising draughtsmen to study the buildings and produce representations of them. In that way HARRISON was sent by Lord DUNDAS to Rome, where he distinguished himself. He was elected a member of the Academy of St. Luke. On his return to England he was largely employed in architectural and engineering works, and he lived until 1829. The exhibition of 1777 contained some work by JOSEPH CERACCHI. He was employed by CARLINI, the sculptor, who was one of the original Academicians. He obtained commissions from ROBERT ADAM, and produced some of the sculpture for Somerset House. The description of one of the works of 1777 reveals the leisurely character of the time, for who would now have the patience to go through the following paragraph in Burlington House, "CASTOR is agreeably surprised in the chase by POLLUX, his brother, who offers to share with him alternately that immortality which he himself had before enjoyed; and, laying aside his arms, tenderly invites him to make the circuit of the Zodiac"? Nor is it easy to realise how such an affair was represented. CERACCHI would have succeeded in England, but after various adventures in Europe and America he drifted to Paris. There he was implicated in a plot of TOPINO LE BRUN to assassinate NAPOLEON, and was condemned. He was drawn to the guillotine in the high Roman fashion in a triumphal car designed by himself, and he wore the robes of a stage emperor.

The name of JOHN DONOWELL is met with for the first time in the exhibition catalogue of 1778, attached to a perspective view of the Steyne at Brighthelmstone from the south end. By GANDON was the design offered for the hospital for lunatics. A design for a Gothic church by W. PORDEN recalls an architect who had a varied career. Through an introduction by WILLIAM MASON, the poet, a man who was in esteem at that time, he was received in the office of JAMES WYATT. Afterwards he became the pupil of SAMUEL COCKERELL, the architect to the East India Company, and the father of the professor. Lord SHEFFIELD made PORDEN his secretary and appointed him paymaster of a regiment of Dragoons. When the regiment was reduced he went back to architecture, and had the courage to exhibit the Gothic design at a time when the style was but little valued. He was official surveyor to the parish of St. George's, Hanover Square. In 1784 it was resolved to have a commemoration of HANDEL in Westminster Abbey, where the composer was buried in Poets' Corner in 1759. It was to be under the patronage of the king. The arrangements for seating the audience were entrusted to PORDEN. Lord GROSVENOR selected him to be surveyor to his London property. He was also engaged at Eaton Hall, and on being superseded, he died shortly afterwards of grief. By WILLIAM TYLER was a model of a monument. He was known both as an architect and a sculptor, and designed the Freemasons' Tavern, but although one of the foundation members of the Royal Academy, he never succeeded in obtaining a prominent position in any of the arts. RICHARD JUPP, jun., is credited with a drawing of the principal front of the villa in the gardens of Payne's Hill. He belonged to a family that was associated with the City companies, and should therefore be considered as one of the earliest City architects. The façade of India House in Leadenhall Street was designed by him.

The last exhibition in Pall Mall was held in 1779. THOMAS HARRISON showed a design for "A National Monument to Commemorate great Public Characters, occasioned by an Idea which occurred in Parliament on the death of Lord CHATHAM," which never got beyond the paper stage. By SOANE was a design for a British Senate House. It is remarkable that he lived long enough to have

competed for the Houses of Parliament if he wished. Owing to failure of sight he declined all new work in 1833. JOHN PLAW, jun., contributed a design for a bridge over the river Suir, from the city of Waterford, county of Kilkenny in Ireland, with centre arch 100 feet wide. The indifference of Irishmen to works of utility is manifest when we find that a few months after the commission was inquiring into the possibility of the erection of a similar structure, and unless there is a change of mind in 1779 the necessity for a substantial bridge will continue to be unsatisfied. CHAMBERS appears to have been too busy to have exhibited in 1779.

In all the exhibitions in Pall Mall the architectural drawings appear to have occupied the small space which there were no paintings of suitable size. But in 1780 there was a change, architecture, sculpture, and drawings were collected in a separate room. This was the beginning of a new condition of affairs which was attended with some disadvantages. But the change was one of the indications that the days of the Academy were numbered. REYNOLDS had represented as an infant were at the time. As the President said at the time, "We have the hope of seeing the arts in a state to which they never before arrived in this nation. This building [Somerset House] which we are now assembled will remain to manifest an illustrious specimen of the architect's abilities. It is our duty to endeavour that those who gaze with admiration at the structure may not be disappointed when they enter the apartments." It was soon realised that both architects and sculptors had reason to complain about the deficiency of Somerset House for their purpose as exhibited. The accommodation may not have been less than in former exhibitions, but so much was anticipated for a royal gift, the exhibitors were not easily satisfied.

THE ARCHITECTURAL ASSOCIATION

A MEETING of the Association was held on the evening last, Mr. H. T. Hare, president, in the hall. On the motion of the President a unanimous vote of thanks was passed to the Royal Institute of British Architects for the promise of 500*l.* towards the new premises fund. The President was greatly appreciated, said the President, not only for the actual value of the contribution, but more particularly for it was a manifestation of that sympathy which the Association had always shown towards the work of the Association.

The following were elected as members:—Messrs. Horden, C. H. Simpson, E. S. Charlton, H. C. Benson, Munnings, L. W. Edmonds, Leslie W. Green, J. A. E. C. Burrows, B. Oliver, A. E. Hunt, L. S. Sullivan, Kipps, H. R. Smale, E. F. Duncanson, J. S. Turner, H. B. Newbold, R. I. Jones, C. S. Kimpton, F. H. D. Man, C. R. Davy, L. Kesteven, T. A. D'Arcy Braddell, White, J. M. Kellett, H. M. Gundry, C. E. Hanscom, Woodin, F. J. Park, T. Braddock, C. R. Shield, J. B. E. S. Whitney, F. T. Bush, G. R. Griffith, S. H. Colson, Scriven, J. T. Sugden, L. T. W. Simkins, C. A. Covey, H. Milne, W. H. Ludlow, D. W. Clark, Percy M. Chandler, R. W. Pickering, G. D. Burgess, F. E. M. Harvey, L. H. Read and L. A. D. Shiner.

Mr. A. T. BOLTON read a paper on the

Day School Teaching in Relation to Architectural Pupilage.

It is my pleasant duty this evening to appear before you to render an account of my stewardship as organiser of the Architectural Association day school during the past two years. It is particularly gratifying to me that my friend and colleague Mr. Hugh P. G. Maule, has allowed his name to be associated with our subject to-night. You will not, I am sure, expect him upon his entrance on his new task the more difficult that he will be better able to give you later on when he comes to attend this audit; nor will you naturally assume in every respect he endorses such conclusions and suggestions that I may feel bound to bring before you as the outcome of my own experiences.

The idea of establishing a day school had for many years been contemplated by the Architectural Association. The chief hindrance was, I think, the idea that such a school would destroy the long-established and well-tryed architectural pupilage. Fortunately it has been proved that this particular danger had been exaggerated, and it was found possible, thanks to the loyal concurrence of the profession, to work the school as a preparation rather than a substitute for pupilage.

architectural profession has been fortunate in retaining a traditional system of pupilage during a period of change and reforms until the reaction has set in, so that it is possible for us to develop rather than to destroy a method of training which, rightly understood and carried out, is still adapted to a profession like our own. It is generally held that a boy from school entering an office direct is handicapped, and runs a great risk of losing the years of his articles owing to his inability to pick up work of so uncharacteristic a character to his previous training.

Every day school is not only the pupils' charter, but is also a source of relief to the mind of the conscientious architect. The number of pupils sent to us at the Architectural Association school by the profession is conclusive on this point. What shall we say about the raw material as we receive it from the public school? Everyone knows the truth on this point: the correspondence in the Press is on a par with that of the head-masters would seem to approximate to that of the railway magnates. I do not propose on the strength of my own experiences to join in the chorus, but if I had a conference of five minutes with one of them I should ask what is the vicious circle in which you are revolving. Your case is to be that the public schools are waiting for the cities, while the latter allege that they cannot move on for particular account.

Is not this all very much beside the mark? What are the responsibilities of public school boys who go to the university, and are the responsibilities of the schools to those whom they send into life ill prepared for their future work? For years public schools have been drawing on their great asset, the instinct that determines the parent to send his son to one of the great schools, for the sake of the development of that kind of character which will mean so much hereafter in his life. Those present saw, doubtless, Lord Cromer's striking reference to the public on this point. But giving such conditions due value, are the schools right in supposing that they can for ever defy the competition of the best continental schools and of new institutions growing up on similar lines? Give the usual reply, "Look at my modern side," but ask a school boy why he did effect a transfer. It is as if you asked to know why he did not forthwith become a pariah. Colenso days we might have had a reference to "my class." Now I am afraid we are coming to "my primary Royal Institute of British Architects' examination." This last is a frightful outcome of our pet mania; we are missing ourselves with China as the two examining nations. It has occurred to some to wonder when it will be common knowledge that our primary schools work no longer under the supervision but through inspection, to the immense relief of the teacher and the great benefit of the scholar. It is almost a crime like that of *Oliver Twist* in asking for more. I suggest that a certain architectural school might recruit its pupils by a similar method.

The cause of public school deficiencies lies fairly deep. The remedy is known, but it is the will to apply it that is lacking. We have had our lesson, but Africa is a long way off. The real strain has perhaps not yet come sufficiently home to our shores. To justify such views it will be necessary to consider in brief outline the ideal of education which we have in our minds, and to try and arrive at certain deductions from experience and observation which may guide us in a method of such complexity as education.

In the first place, let us start with the principle that education is not the acquisition of certain definite information, but the training of the mind to meet contingencies that can never be accurately foreseen. In the clear meaning of the term it is the leading out or development of the powers of the mind, rather than to some extent with a correcting and supplementing of its qualities. I am afraid this last limitation may not be to some enthusiastic teacher engaged in the most thankless educational enterprises, that of instilling refinement in a child of an incurably base type. May the teacher gain by the

method, now, is the ultimate object of education? I should say that man, of himself, in relation to his surroundings is deprived of power, in other words ignorant, if you will, and in all the great eventual facts of his existence. This condition of fate is made more tolerable to us by its recurrence in universality, and the important part played by education in mentally considered, is that of giving us the support of great minds that, thinking on these things, have endowed us with the accumulated wisdom of the race. I take this to be the essential justification of classical, using the word in the sense of sense, training, and an adequate defence of the study of the great literature of the past. Unfortunately, this view of the essentially practical character of such studies is constantly obscured by the pedantry of that scholarship which concerns itself not with the wider bearing of the subject studied, but with the minute facts of the workmanship of the casket in which the jewel lies hid.

No one for certain pursuing a study that rises to the level of an art would for a moment depreciate points of form or understand the power of verbal felicity of expression, but it is idle to deny that under an over-zealous pursuit of scholastic and grammatical points the wider bearings of the subject are too commonly wholly lost, and never reaches the mind of the student so as to influence his thoughts. The study of the classics under such unfortunate auspices is made not only repulsive, but also so unpractical that even people of some education will be found to condemn it as wholly useless. From this arises the curious distinction drawn by so many people between theoretical and practical learning, whereas in reality no such distinction can exist in true education.

The ideal of education is simply the development of mental power. The true educated man is not necessarily a product of university training, nor even as a matter of course a student of wide reading in books. This is a perpetual stumbling-block to many worthy people who confound the means with the end, and fail to realise by how many paths the goal of a well-developed and rightly-ordered mind may be reached. "Small Latin hadst thou, and less Greek," is the astonished exclamation of the scholar poet to the master he hailed as one grounded in nature's own school. There is a striking passage in a great French writer, in which he points to discussions in the tents of the Bedouin as originating Oriental philosophy, and as the equivalents of our universities. You are doubtless aware that the Greek philosophers educated by means of conversational discussion. An acquaintance with their methods is an aid in grasping the characteristics of Greek art. The bearing of these remarks lies in this, that the accumulation of facts is of itself of no value whatever unless it is accompanied by a simultaneous development of the reasoning powers, nor is the study of grammatical niceties essential to a comprehension of a great literature or art.

We must not, in fact, reverse the natural order of the acquisition of knowledge. Observe the process of a child's mental development. It is in essence a perfect specimen of the Socratic dialogue. The child's interest is first aroused, then comes the question, and, following swiftly on the reply, his more or less logical deduction, ending possibly in a perfect dilemma for the unfortunate parent, who is often driven to resort to the common form of nursery closure in order to end the discussion. It is a mystery to me that so many teachers ignore this natural method. Students are drawn up blank against some concentrated essence, mainly grammatical, of a subject, and expected to develop an interest in the dry and often useless facts of which they utterly fail to grasp the bearing. The customary excuse is that of the importance of accuracy, which, however, is to be taught of itself, and probably can be far better inculcated through the verifications of experimental science than by literary and grammatical means.

Let us now apply these principles to architectural education. In the first place it will follow that neither Gothic nor Classic art of themselves are wholly necessary to salvation, and that the mere examination facts, as I will call them, are not of themselves of any value whatever. What we shall need will be to give our beginner a good general survey of the historical development of architecture treated in relation to the character and conditions of the people and countries where it originated, utilising for this purpose the method of the contrast of opposites and its contrary of imitative resemblance.

This survey should lead to the apprehension of certain central facts, the unity of all architectural expression in spite of its diversity, the possession of common qualities and the permanence of artistic expression. When a student reaches the point that he can, as it were, make a summary division into two styles, the plain and the ornamental, has learnt that there is no monopoly in beauty, and realises that proportion, grace, character and fitness are all parts of one whole, then he has begun to justify his education, and has entered upon a path presenting possibilities of progressive growth. A stumbling-block for the young student is that presented in the right relation of art to nature, more especially in architecture. When told "to study nature" in the common phrase, the impression most probably produced on his mind is either one of mere bewilderment, or else a confusion of the imitation of concrete form with the outcome of deductions from an observation of natural facts, directed towards the apprehension of abstract qualities capable of illustration in architecture.

Take the commonest fancy of the amateur, that the nave of a Gothic cathedral is a copy of a grove of trees, and compare with this Darwin's suggestion that the awe which we feel on entering a grand building finds its origin in the effect produced on early man by the caverns and forests in nature. The fallacy of the grove of trees strikes you at once as too gross for discussion, but the underlying idea is always cropping up in changing forms. Its plausibility depends on the fact of a certain coincidence of result in the works of man, reached through a long series of logical developments, with the seemingly irresponsible work of nature. An instance given in Garbett's "Principles of Design" is the relation between the

elephant's foot, the human hand when raised to uphold a weight and the highly-developed Doric column. Similarly in Gothic architecture, in certain phases of its fullest expression an analogy may be felt between the intricate clustering of relief and open work and the tree tracery of the woods in winter. In Renaissance work quite recently an attempt was made to base a theory on forms coincident with nature's spirals as seen in shells.

The student once having found admittance to nature's school is provided with a field of unending study. This observation and reflection on nature is in many cases purely instinctive, and, I believe, not seldom possessed without any capacity of expression, as it will be found welling up among dwellers in the country in unexpected forms. Every Shakespeare lover knows the poet's marvellous instinct and extraordinary wealth of illustration obtained from this source. I should go so far as to fancy that the instant impression of supreme artistic creation on all classes derives a large part of its effect from the revelation agreeing with past subconscious observations on the part of the spectator.

Much is said of the refinement of Turner's landscape, but to the artist himself, full of the sense of nature obtained from life in the open, his work was doubtless but a coarse transcript of infinite subtleties. No student must rest content with a mere feeling after nature's charm. Emotion must be translated into work, however imperfect, and the effort maintained through cloud as well as sunshine. Nature's process is infinitely slow, and artistic stature cannot be increased by taking thought any more than physical. The student's greatest enemy is his own self-conceit. There is always a place for the patient worker; but the flashy student incapable of independent and sustained effort will always remain a burden to his teacher. Every student is a problem in himself and needs individual care, and the wisest teacher will be the least dogmatic in his judgment of capabilities and the least ready to shut the door.

In this hasty and imperfect sketch, fellow students, I have tried to indicate to you the underlying spirit in which your education may be pursued. You came here perhaps expecting to hear about the details of the method employed in the day school. We can all differ in that respect, and a student's own experiences will colour his personal prepossessions. I do not propose to justify the particular means employed—I might find myself launched into biographical particulars—but the foundation requires to be sure, and the basis must be a close touch with the actualities of our own day and a solid continuity of effort on the part of the student not afraid of hard work. We are not entitled to set our students on a path which will make it harder than it need be for them to earn money within a reasonable period. The day school has been run on semi-office lines, with an effort after a thorough grounding in the drawing methods in common use. We may agree that skill in draughtsmanship is by no means the essential quality of an architect, but it is certainly a necessary qualification for an assistant requiring a place in an office, and we must look forward to the anxious period when, at the expiration of his articles, our day school student has to give workaday proof of his powers. While giving prominence to draughtsmanship, I never could myself agree to its pursuit to the detriment of the study of design, nor could I see the reason for postponing that important subject to quite a late stage in the student's career.

In the second year course of the day school we have started the student in that important branch of his future work on very conservative lines, utilising the interest of the student in creating something, to deepen his studies of the first year, and guiding him in his first essays by the sure aid of the past examples of his art.

If you will look at the drawings in the second year, I think they will show you how interesting and practical the study of historical architecture may be made, and you will realise that for the preparation of these designs something more than a surface knowledge of the particular phrases illustrated must have been acquired.

I have a particular wish to secure your support for my successor in his important task of developing the equipment of the day school. The liberal assistance from the committee and the general body should be forthcoming in this matter. I am sure all the staff of the Architectural Association will hail with especial thankfulness the solution of the premises problem, which has lain across the path of the natural development of the Association for so many years. Hurry up and pay off this debt, so that the committee may devote themselves to the reorganising and equipment of the schools, which should do so much for the coming generation of architects.

The day school has doubtless been a useful piece of underpinning, but there has always seemed to me to be a top storey wanting in our educational structure. A pretty good believer myself in Architectural Association methods, and fairly diligent in the classes, there came all the same a time when something more consecutive and thorough seemed to me to be essential. In my view, it need not have been necessary to go outside the Architectural Association for such further study. Are our

young students quite satisfied to-day after, say, a year in the school of design? And if they are now, will they pass up from the day school continue to find this so admirable as it is within its limits, sufficient for the course of their training? It is probably much better that the Architectural Association should finish its own students, and then, on the slightest indication of the demand, the advanced education that can be given.

Whatever the future development may be, let us hope the Architectural Association will know how to preserve its characteristic of mutual instruction, free from the effect of systems of education that separate the teacher from the taught into separate castes. In the day school I have seen a smile on the faces of the class when I have touched this point, but for myself I sincerely state that I have learned much from my two years' experiences, and I earnestly commend some of our brilliant students to seriously consider whether they ought not to take their turn in our educational work. You all know of the zeal of the late Arthur C. Cook, whose loss the Architectural Association has so much to regret. In the last conversation I had with him it was one of the points he insisted upon, urging the value of effort to teach others to the teacher himself.

The Architectural Association ought to maintain a large and able staff, as the numbers of students passing through the schools offers a very considerable field of selection. It is an honour to serve, understaffing need never exist, and the strain of teaching can be immensely lightened by intelligent policy in this respect. Intercommunication and co-operation on the part of the teaching staff will naturally result with reorganisation in our new home, to the great benefit of the students and the avoidance of overlapping.

In labouring on behalf of our young students, architects find a practical solution of many divergencies. Pardon me for parting word of advice, "Retain your own opinions, but make them an excuse for holding back from the work."

Mr. H. P. G. MAULE contributed a second paper on the same subject. He said:—It is with very great diffidence I find myself in the position of having to say anything to-night on the subject of day school training, for the limited experience I have had does not entitle me to offer any views or opinions which I may have formed on the subject. I must ask you therefore to believe that it is only at the wish of our friend, Mr. A. T. Bolton, that I venture to present what he has said by emphasising a few of the points which appear to me salient features in architectural day school training. With the general outline of what he has said I cordially agree, and I feel I do not even do him justice when I tell you that I know the difficulty of my task in carrying out the work is light compared to his, in starting it, and handing it over to me every detail, every paper, was laid out in method and order.

With the Architectural Association scheme it is not easy to bear two facts in mind. First, that the first year of training consists in reality of only nine months' actual work in the school, as three months are allowed for independent work and door study, which forms an important part of the training. Secondly, that almost the most important part of the training is the second year, when the student is, in the school, during which time his study takes the form of directed exercises in design. This obviates the charge of academic teaching, as the student is brought into contact with the actual professional work of the day.

Now, the primary object of the day school is to enable the student to acquire during the first year such a knowledge of architectural drawing, of history and of construction that, when he goes into an office as pupil, he can begin at once to the advantage of what he will there see and learn, and thus to dispense with that awkward period, which most of us have experienced, of being plunged into an office with none but the vaguest idea of what to learn or how to learn it.

There is another important feature, and that is in the organisation and method of the school training should be such as to enable the student to carry on his own education subsequently to the school, of course, by lectures and classes) with more interest and method and application than is possible from an initial period in an office. Now, the amount of "in-school" time available for the first year's course—namely, actually only nine months—seems to me to make it imperative that the training during this period should be on the broadest and simplest lines possible, so that the training should, in fact, be mainly directed to the student a method of learning. To begin to learn to observe; to begin to learn to think; to begin to learn to create; above all, to endeavour to naturally fire and regulate the student's enthusiasm, and lead him to love his work for its own sake. Without this latter as a resultant of the training, the student's labour lost so far as architectural training is concerned, and no doubt much useful knowledge would be gained which would always be an advantage in any work afterwards taken up.

The training, or rather the evolving, of an architect

product of the public school is a long and complicated one, and when the shortness of the initial period and the lack of technical and constructive knowledge that is ultimately required is taken into consideration, it seems to me that this early period should be made broad and liberal, and, above all, not too technical. It must not be remembered that, no matter what brains a student may have, nor how highly trained he may be so far as general education goes, the special subjects of an architect's calling, whether history, construction or elementary design, he is in almost all cases very ignorant. His mind, therefore, no matter how receptive, cannot assimilate more than a certain amount of matter, and it is assimilation and thought, and not an unselected assortment of facts, that really constitutes a good education.

Drawing.

The construction subject as inaugurated by Mr. Bolton is to me the best of all methods for insuring a simple and thorough grounding in elementary construction and materials, and as the complete and direct relationship between materials, construction and design is clearly kept before the student. It also attaches great importance to the early, careful and systematic drawing of simple full-size details in connection with the construction subject, for an abbreviation, such as a set of eighth scale drawings, cannot be properly understood—or unless the component parts, such as door and window openings which they abbreviate are clearly understood in advance. In all the work done in the school great care should be taken to insure accuracy and clearness, and special attention should be directed to printing and the value of clear and legible working drawings and tracings.

Observation and Thought.

In an assembly of architects it is quite unnecessary to emphasise the importance of observation or the necessity for it. The eye sees what it is trained to see, and the eye is the greatest of all educators; the mind also develops its reasoning faculty by knowing what to think about. Unfortunately the cultivation of observation does not apparently form part of an English school curriculum, and though most little children are observant, the habit is generally crushed out of them long before they have arrived at an age when observation, and the deduction from that observation, complement one another. To reawaken the lost habit, if, unfortunately, lost it should be one of the great aims of the training, and this training of observation, directed as it is, will surely bring about the development of thought. Organised, logical thought, the thought that will eventually enable a man to deal with beauty and build with truth, because he sees clearly without confusion, can only come with years, but the germ surely be planted and tended during the first year in the school.

At last, but not least,

Enthusiasm.

A famous writer once said that nothing was so catching as enthusiasm, and certainly no lifework should be so capable of creating enthusiasm as the study and practice of architecture, but if the early years of training are overburdened with technicalities, or with work too far in advance of fairly easy comprehension, there is grave fear of the failure to awaken the divine spark, without which the whole structure of architectural education falls to the ground.

In conclusion, I can only say I hope I have not dogmatised at the sight of the fact that my very limited experience hardly entitles me to put before you what I personally conceive to be some of the essential features of that primary architectural education which I believe all members of our Association should so earnestly at heart.

Mr. MAURICE B. ADAMS, who proposed a vote of thanks to the authors of the two papers, said he was delighted with the system and method of training in the initial stage of the school when he realised it was an experiment they had all put in their hands to. He looked back on the days of his own pupilage, and considered what the training of the young architect was then, and the advantages of the day school preparation were apparent. He did not think the architect whose office entered as pupil ever spent more than one-quarter of an hour in instruction during the time of his pupilage, and this experience he (the speaker) supposed was the experience of thousands of others. Nowadays architects seemed to realise their duties towards the pupil, but in earlier days the pupil received knowledge as best he could. The new departure of the Association was certainly an improvement which would fit the profession. Before being articulated in an office the young man could attend the school and ascertain thereby whether architecture was the kind of work he was cut out for, and whether he had the necessary qualifications to carry on a profession with credit to himself and satisfaction to his clients. The plan adopted by the Association was admirable,

and he agreed with the two speakers as to the benefits of mutual assistance and the advantages of young men teaching young men. The day school promised extraordinary developments in the future, the results of which could not be foreseen.

Mr. A. M. WATSON seconded the motion.

Mr. G. H. JENKINS and Mr. MAX CLARKE also spoke.

STRAND IMPROVEMENT.

A REPORT was submitted on Tuesday by the improvements committee of the London County Council respecting various proposals for setting back the northern line of frontage in the Strand between Wellington Street and the Law Courts. The committee say:—"If the modification originally suggested by Mr. Thornycroft were carried out it would necessitate the addition to the public way of the Strand and Aldwych of land which would otherwise be let for building purposes, and is valued by the Council's valuer at 350,000*l.*, to which must be added the cost of altering the existing vaults, paving, &c., estimated at 10,000*l.*, making a total of 360,000*l.*; the loss of recoupment if the Council were to adopt the plan submitted by the Further Strand improvement committee would be 239,400*l.* for land and 10,000*l.* for works, making a total of 249,400*l.*; the loss of recoupment if the Council were to adopt the amendment suggested by the Royal Institute of British Architects, and now accepted by Mr. Thornycroft, is estimated at 70,000*l.* for land surrendered and 4,000*l.* for alteration of vaults, paving, &c., making a total of 74,000*l.*; while the loss to the Council if the suggestion made by the Council's superintending architect were adopted is estimated at 59,000*l.* for land and 4,000*l.* for vaults, paving, &c., making a total of 63,000*l.* After the most full and careful consideration of all the facts, and having carefully viewed on the site of the improvement the effect of the various proposals made, we have arrived at the conclusion that the width already provided by the Council for the widened Strand, namely, a minimum of 100 feet, is in every respect ample for the present and prospective traffic. It must not be forgotten that when Aldwych and Kingsway are completed much of the traffic passing to and from the new street and the southern, eastern and western parts of London will not use the portion of the Strand between Wellington Street and the Law Courts; that part of the thoroughfare will accordingly be used almost entirely by the traffic passing from Fleet Street westwards, and from the western portion of the Strand eastwards to Fleet Street. Fleet Street is being widened by the City Corporation to 60 feet, and the Council is contributing part of the cost. The portion of the Strand opposite the Hotel Cecil has been widened at the cost of the Council to 80 feet, and the same width has been adopted for the improvement at the portion of the Strand east of the Hotel Cecil and opposite Beaufort Buildings, now being undertaken by the Westminster City Council, with a contribution from the Council. It will be apparent, therefore, that while the portion of the Strand between Wellington Street and the Law Courts will presently be relieved of a large amount of traffic which at present passes along it, the Council is providing a width of street far in excess of that which has been adopted for other portions of the same line of thoroughfare. Moreover, the width of 100 feet is considerably in excess of that generally adopted for street improvements in the past. During the 33 years of the Metropolitan Board of Works the average width adopted for main thoroughfares was 60 feet, which in our opinion was in some cases not sufficient. Charing Cross Road and Shaftesbury Avenue should, we think, have been made more than 60 feet wide; but there is a very considerable difference between the 60 feet provided for those thoroughfares and the 100 feet to which the Council has widened the Strand at that part which shortly will be relieved of some of the traffic. Very few streets constructed by the Board were as wide as 80 feet, and the only thoroughfares which exceeded that width (80 feet) were Northumberland Avenue (90 feet) and the Victoria Embankment (100 feet). The Council, when effecting county improvements, has, whenever possible, adopted a width of 70 feet and 80 feet. With these facts before us, it appears that any proposal for increasing the width of 100 feet for the portion of the Strand between Wellington Street and the Law Courts cannot be made merely on the ground of meeting the needs of the traffic, but must partake almost entirely of the nature of an æsthetic proposal, the chief argument in support of the proposal being to secure better architectural effect by bringing into greater prominence the church of St. Mary-le-Strand and the Law Courts. We have not yet been convinced that by throwing open to view various portions of the Law Courts buildings the architectural effect in the Strand would be considerably enhanced, but whether this would be so or not, we feel that the Council would not be justified in incurring so large an expenditure as would be involved in securing a doubtful enhancement of the architectural view in the Strand."

NOTES AND COMMENTS.

SPAIN appears to be giving more attention to architecture of late years than during the greater part of the nineteenth century. It has been decided to hold an international congress of architects in Madrid from April 6 to April 14, 1904. The subjects arranged for consideration are the following:—(1) Modern art in works of architecture; (2) the preservation and restoration of monuments of architecture; (3) the characteristic effects of scientific studies in the general education of the architect; (4) influence of modern processes of construction upon artistic forms; (5) artistic ownership of architectural designs; (6) instruction of building mechanics; (7) the influence of city building regulations upon contemporary private architecture; (8) the appropriation of works of architectural art; (9) may the architect act as arbitrator between contractors and workmen? The subjects, it will be observed, are of a general character, but that is we suppose deemed essential in an international congress. Visitors would have liked to hear some topics connected with Spanish architecture adequately treated, for the accounts given by the majority of modern travellers and foreign investigators are insufficient.

ARLES is known to archaeologists as one of the most interesting cities in Europe. As studies of Greek and Roman art increase, it is possible it may become much more important. When Greece was conquered it is believed that many artists fled not only to Rome but to Arles, which, like Massilia or Marseilles, could be considered as partly a Greek city. Enough remains have been found to suggest Greek influence. The amphitheatre is no doubt a Roman work. It had also triumphal arches, of which the most beautiful one, dedicated to CONSTANTINE, was destroyed in 1743 in order that a street might be enlarged. Under Roman administration it was a city remarkable for its grandeur. But the remains of the theatre suggest that Greek influence was much stronger in Arles than is generally supposed. The well-known *Venus of Arles* is also evidence of the presence of Greek sculptors. We can understand the desire of the municipal authorities of Arles to impress the world with the belief of the classicism of the city. But the history of Arles did not end with the fall of Rome. To archaeologists the sarcophagi which have been found in the cemetery are often most interesting, because on them Scriptural scenes are represented by Roman sculptors. The first bishop of Arles was, according to tradition, one of St. PAUL's disciples. There is no reason why any objects relating to the history of the place in Mediæval times should not be respected. The Municipal Council have, however, declared that one important example, known as the Gate of Calvary, is without any archaeological or artistic value, and arrangements have been made for its destruction. It is believed, however, that remonstrances from lovers of art will prevent the Council from carrying out the resolution. People condemn the zeal by which in early Christian times so much ancient art was destroyed. But it is evident that a similar iconoclastic spirit prevails in Arles, the only difference being that pseudo-Classicists are taking their revenge on Christian art. In many parts of France it now seems to be necessary, after clearing out the religious orders, to destroy the art which they had created several centuries back.

THE date of the birth of MASACCIO is uncertain; 1401, 1402 and 1403 are mentioned. But the people of San Giovanni, a small town between Florence and Arezzo, maintain that Sunday next will be the five hundredth anniversary of the painter's birth. They have accordingly decided to hold a fête on that day and unveil a monument of the artist. The town does not present many examples of his style. His most remarkable works are his frescoes in the Brancacci Chapel in the Carmine, Florence, where he continued the series commenced by his master MASOLINO. His nickname MASACCIO warrants the description of him by VASARI, who says:—"He was remarkably absent and careless of externals, as one who, having fixed his whole mind and thought on art, cared little for himself or his personal interests, and meddled still less with the affairs of others; he

could by no means be induced to bestow his attention on the cares of the world and the general interests of his country, insomuch that he would give no thought to his clothing, nor was he ever wont to require payment from his disciples until he was first reduced to the extremity of want. DA VINCI looked on him as the second creator of Italian painting, for when the art had declined he "showed how perfect works how those who take for their standard are not but nature—the mistress of all masters—wearied them in vain." All the great masters of the Renaissance studied MASACCIO's paintings, which formed a school of art as was before them, if we can believe CELLINI, and TORREGIANO broke MICHEL ANGIOLO's nose because he laughed at efforts to draw from them which were less successful than his own. MASACCIO, who accomplished much, died in 1428. He was very poor. He was essentially a frescoist, and consequently can only be studied in Florence. A portrait of a young man in a record in our National Gallery used to be attributed to him, but the work is now recognised as having come from an inferior hand.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: NAVE VAULTING.

HOUSE, BAY PARK ROAD, MAIDENHEAD.—GARDEN FRONT. HALL. THE ELEVATION TO DRIVE. THE TERRACE. GARDEN FRONT.

THIS building was recently erected as a summer residence for Mr. G. C. BULLER. Owing to the site being low-lying ground, the building was raised 4 feet above the road level to prevent flooding, thus giving an opportunity to introduce a terrace, which has been taken full advantage of. The ground plan comprises a drawing room, dining-room (with oak dado), a large study and usual offices, and outer hall which gives access to the kitchen apartments from the front entrance without passing through the large hall, and from which the ground-floor lavatory is entered. The large hall is the chief feature of the plan, having a high oak dado and oak staircase, a gallery around same on first floor, from which the first-floor bedrooms are approached. The corridor, entered from the dining-room, is intended to communicate with the future palm house, and is used as a smoking lounge. On the first floor, five bedrooms, a study and three servants' bedrooms are provided, with a large balcony approached from the staircase gallery which overlooks the greater portion of the garden. The flat over the corridor forms a spacious open balcony, and is approached from the dressing-room. A circular staircase leads to the turret.

The external walls are of Messrs. J. K. COOPER & SONS' facing bricks, with half-timber work filled in with rough-cast above. The roofs are covered with local red-faced tiles. Plain, clear glass leadlights are used in the transoms and first floor windows. The large window in the hall is filled with stained glass to special design. The places were supplied by Messrs. GEO. WRIGHT & CO. Messrs. PULHAM & SONS executed the terrace balustrade in their Pulhamite stone. The gardens were laid by Messrs. CHEAL & SONS under the direction of Mr. BULLER. Messrs. J. K. COOPER & SONS, of Maidenhead, efficiently carried out the work in the exceptionally short time of six months, including executing the oakwork, entrance porch and making-up the drives. The architects were Messrs. MACINTOSH & NEWMAN, Birkbeck Bank Chambers, W.C.

HOUSE, TREVOR HILL, CHURCH STRETTON.

THIS house has been built on the slope of the hill to the west of the town. It is beautifully situated as to the golf house and links, and commands exquisite views of the town and the range of hills to the east side thereof, including Caradoc and the beautiful valleys to the north and south. The cost has been about 800£, and the builder, Mr. SPRAKE, of Church Stretton, has executed the work very well.

DESIGN FOR A SMALL HOUSE IN SOMERSETSHIRE.

SELSDON PARK.*

"?" said the Needy Knife Grinder, "I've none to
e," and George Canning's words may be echoed to-
story of Selsdon has yet to be written. The guide
rrey scarcely mention it, and the county historians
few facts to impart. Yet there is a thin thread,
angled, knotted and seemingly snapped, but with
dling it may be picked up, and the strands from it
it us as we pass along.

king of Wessex, in 828 united the Heptarchy, and
our Saxon rulers was Ethelred the First, who
he throne in 866. One of his nobles was Duke
died in 871, and bequeathed to his wife Werberg,
ards to his daughter Aldhryth and her issue, or
n to the next-of-kin on the paternal side, "his
anderstead and Selesdune in Sanderstead." From
mention of Selesdune, which was a part of Sander-
right reasonably infer that the ducal castle stood
he natural position of it would be the dune or hill,
Selsdon House.

work, and are therefore associated with Alfred in the founda-
tion. It stood so close to the cathedral of St. Swithun that
annoyance was occasioned by singing, playing and the ringing
of bells during simultaneous services, so by Henry I. and
Bishop Giffard it was translated to Hyde.

The new building was dedicated in honour of St. Peter, St.
Grimbald, St. Columban and St. Barnabas.

In the early days of the Church its higher dignitaries were
essentially militant. Bishops and others had their armed
retainers, and many village churches were constructed to resist
a siege. It is probable, therefore, that when the abbot of St.
Peter's took possession of Sanderstead he would welcome the
position of the old castle, and would convert it into his grange,
and, if so, the thread is again joined.

But though the clergy were combative, much good work in
the land was done by them; they built the bridges, they sunk
the wells, they wrote the books, while they fed the hungry,
clothed the naked and tended the sick. A well they sunk
some 350 feet deep can still be seen in Sanderstead Park, and
a tradition exists that it stood within the precincts of a priory,



SELSDON HOUSE. GARDEN FRONT.

scendants of Aldhryth may have died out, or possibly
ed the royal favour. No record of them remains,
e means the property passed into royal hands, and
n of Edgar the Peaceable, who began his rule in
st wife, Queen Athelfleda, gave "Sandelstede with
to the Abbey of St. Peter at Winchester." Athel-
y be mentioned, was mother of the next monarch,
the King and Martyr.

ow for several centuries the story of Selsdon is
apparently the connecting thread is broken, but
may again be united.

ord of the Norman survey merely tells us that "the
St. Peter of Winchester holds Sandestede;" the ordi-
nars, of course, follow.

obey, which was dedicated to the Holy Trinity, the
ry and St. Peter, was virtually founded by King
Edward the Elder and King Edgar carried on the

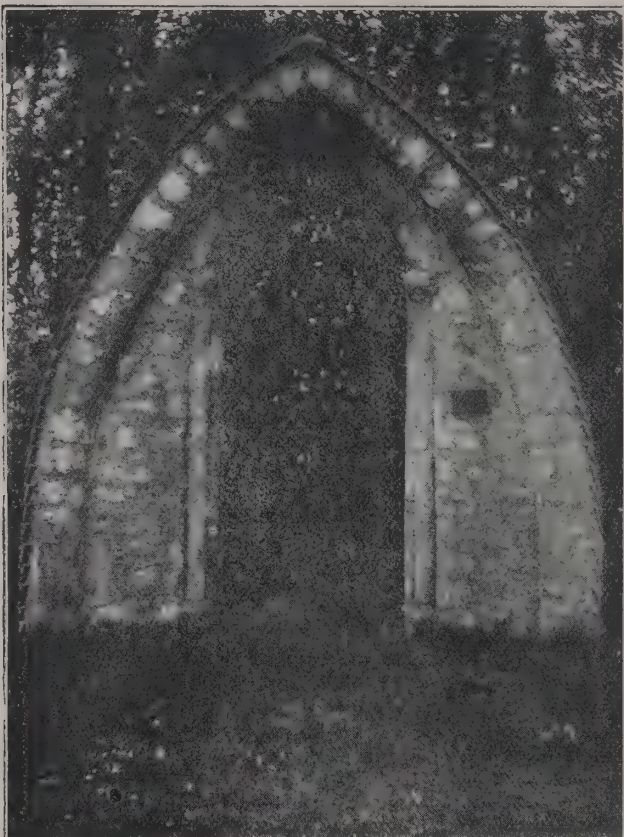
er by Mr. J. Stanley and Mr. W. Harradence, read before
s of the Upper Norwood Athenæum.

whose foundations can still be traced in a dry summer. No
priory, however, is believed to have ever been there, but in
connection with holy wells chapels were often built, and this
probably was one of them, and it might have had a guest-
house attached for the use of pilgrims. The building stood
until after the Reformation, and it has been suggested that the
materials were used for the construction of Sanderstead Place,
which was pulled down about 200 years ago, and the site added
to Sanderstead Park.

In Selsdon House some panelled ceilings attract the
attention: two of them symbolise the Church and State. The
one in the dining-room has the words "Fides, Spes, Caritas,"
running along three sides of the chief panels. Now Faith,
Hope and Charity are the three theological virtues of the
Roman Church, so may it not be possible that it was con-
structed by one of the abbots? In the smaller divisions some
later ornamentation has been introduced. Of the date of the
billiard-room ceiling there can be no question. In every panel
there are four badges. The Fleur-de-lis, first used by Henry V.;
the Tudor Rose formed of the Red and White Roses of

Lancaster and York, united by Henry VII.; the Poort-colyce, or Portcullis, first used by the same king, and the Pomegranate, the badge of Catharine of Aragon. Henry VIII.'s marriage with her took place in 1509, and she was divorced in 1533, so between these dates we may reasonably place the ceiling; and possibly it may be more nearly dated, for in 1521 Pope Leo X. conferred upon Henry the title of Defender of the Faith; so to honour the king the abbot at that time may have embellished his room.

The names of forty of the abbots are known. They were mitred, and some were summoned to Parliament; of a few only it is necessary to speak. The first was Grimbald, who was placed there by King Alfred, and was honoured at the dedication of the later abbey. In 1271 the Prior of Bermondsey had a suit against William de Wigorn or Worcester, the then abbot, for attaching some of his land to Sanderstede; and five years later the same abbot retaliated, and impleaded the Prior for erecting a gallows in his manor of Sanderstede, but the Prior pleaded it was in his own manor of Warlingham. This was in the reign of Edward I.; and then, in 1287, there is a brief record in contracted Latin. The translation kindly made by the Rev. Sir W. Earle, Bart., runs:—"Between Ralph de Ditton and Joan his wife plaintiffs, and Robert de Waleton and Isabella his wife, concerning the transfer of four messuages, one hundred and thirty acres of woods, and rents eleven shillings and elevenpence realities with their appurten-



ARCH FROM BLACKFRIARS MONASTERY. (IN SELSDON PARK.)

ances in Sanderstede and Sellesdone." This passage is interesting as showing that although Selsdon was in Sanderstead, it was of sufficient importance to be separately mentioned.

In 1327 a license was granted in the reign of Edward II. to Abbot Walter de Fyflyde for him to lease Sanderstead to Walter, Bishop of Exeter, for ten years; so Selsdon may then have become one of his palaces. The last abbot, John Sulcot, was seemingly in the royal favour, for Henry VIII. gave him license to alienate the manor to Sir John Gresham, afterwards Lord Mayor of London. Willis tells us that Sulcot had been educated in the University of Cambridge, and was instrumental in engaging his University to comply with the king's divorce from Catharine of Aragon. The sale, however, was not effected, and at the Reformation Henry himself sold the manor of Sanderstead, with Selsdon House, to Sir John. Sulcot, however, was wise in his generation; to the visitation he made no objection, and instead of going to the gallows, like many good men did, he accepted the bishopric of Bangor, being permitted to retain his title of Abbot of Hyde, and in 1539 he was translated to the see of Salisbury.

The manor of Sanderstead successively passed to Sir John's widow, to his son Edmund, and his grandson Richard, who in 1591 sold it to John Ownsted of Addington, who for some years may have resided at Selsdon House.

This Ownsted was a man whom all lovers of old might have envied, for on his monument in the church of Saints, Sanderstead, where his kneeling effigy in alabaster, we read:—"Here lieth buried the bodie of John Ownsted, Esquier, Servaunt to the most excellent Prince our dread Sovereigne Queen Elizabeth, and Serjeant Maties. carriage by ye space of 40 yeres. He was 66 yere of his age on the 9th of August, 1600." He had to see to her safe transit during the many royal progresses.

In the records of baptisms in Sanderstead Church following entries appear in Latin:—Elizabeth Ownsted, daughter of Henry Ownsted, of Selsdon, October 29, 1596; Anna Ownsted, daughter of George Ownsted, of Selsdon, September 3, 1598; Atwoode Ownstede, son of John Ownstede, of Seels Downe, November 2, 1606; and burials is Anna Ownsted, daughter of George Ownsted, September 12, 1598.

Ownsted died childless, and the estate passed to an attorney in Clifford's Inn, named Harman Atwoode, a curious specimen of orthography. The family name went various changes. In the time of Edward VI. Atwoode, in Edward III.'s reign it was Atte Wood, and a plate in Sanderstead Church bears the inscription: "Lyeth Nycholas Wood, the thirde sonne of John Atwoode, Sanderstede Corte, who served Queene Elizabeth the second yere of her rayne, and deceased the xiiij. of November, 1586." Of Sanderstead Court the earliest mention is in 1676. Christopher Bowyer then became the owner of Selsdon House, and John Aubrey describes him as a hospitable person, and possibly to him is due the addition of the drawing-room, though it may be a later addition.

The last of the Attwoods died in 1759, and the estate passed to a cousin, Thomas Wigsell, an attorney of Norwich, whose relatives, the Arkwrights, now own the manor.

From the Wigsells William Coles seems to have bought Selsdon House, and in 1805 he sold it to George Smith, brother of Robert, Lord Carrington. Dying in 1831, he was succeeded by his eldest son, George Robert Smith, who was M.P. for Midhurst and afterwards for High Wycombe. The house had been reduced and enlarged by its various owners, and by the Smiths some of the walls were rebuilt and were encased with red brick; a conservatory in the Italian style was also constructed from designs by Messrs. P. and C. Brandon, and one writer suggests that the present drawing-room was added by the Smiths, but it is more probable that it was merely altered and fresh windows introduced. In the drawing-room a beautifully carved wood fireplace was erected in the 18th century, which came from Purley House, in Sanderstead parish. Rev. John Horne, who assumed the name of Thomas, wrote "The Diversions of Purley," and in it he mentions the house was the seat of Bradshaw, the regicide, and repeats the statement. John Bradshaw was born in Wilbersley Hall, Stockport. For a time he lived at Selsdon, and then in Basinghall Street. He was called to the bar at Gray's Inn on April 23, 1627. At the trial of Charles I. his name headed the death-warrant, and for his services on that occasion he was paid a thousand pounds in money. He was awarded the estates of the Earl of St. Albans and of Cottingham, which were valued at two thousand a year. As Deanery at Westminster he made his town residence, and died in 1659 in his house at Enfield, which still stands. He will left estates in Berkshire, Southampton, Wiltshire, and Middlesex, which were confiscated at the Restoration.

In 1879 Selsdon House was rented by the See of Exeter for Anthony Wilson Thorold, its bishop, and what was then his billiard-room was then his chapel. Candidates for the See invariably spent the week-ends there, and the clergy of the diocese there took their holidays, gaining strength in the sylvan solitudes of Selsdon. At Selsdon services were regularly held in the chapel twice a week, and on Sundays, it was not all prayer and praise, for bishops occasionally unbend, and there were moments in the hall, for in an article in *The World* it is mentioned that a favourite game there was "the errand," which the bishop had brought from America, and was to be the only one in England. It is described as a game with a marble top, divided into various compartments, and nine pins of different values were placed. The spinners, polished steel, and the object was to overturn the pins. The Archbishop of Canterbury, bishops of London and other dignitaries of the Church took part in the game. Wilson Thorold and his little daughters, and the scores, carefully registered, show that the poorest players were the highest officials of the Church.

William Stevens was the next tenant of Selsdon House, the present occupant and owner is Mr. Wickham Noakes. A beautiful home is ever a scene of life and happiness, and it is not surprising that so many pleasant shooting parties make Selsdon House a place of resort.

Wood. The house stands some 576 feet above the sea and from the tower a wooded scene is presented that is equalled in Surrey.

Noakes an arch from the monastery at Blackfriars, which was revealed in 1900, was re-erected at Selsdon, and a suitable spot could scarcely have been chosen. The Blackfriars had their first settlement in Holborn, and to the place bearing their name they removed in 1276. The Black Parliaments were held there, and it was there that the marriage of Aragon was tried, the sentence of divorce pronounced by Cardinal Wolsey. We have seen her name at Selsdon, and have heard how the Abbot of Hyde was wrecking her life. In Sanderstead Church, too, there is a tomb to Mrs. Mary Atwood, late wife of Mr. George Atwood, a Blackfriars, London, who died April 4, 1761; and in the church we read that Mary Atwood, of St. Ann, Blackfriars, was buried May 9, 1748; that Elizabeth Atwood, of St. Ann, Blackfriars, London, was buried March 14, 1750; that Mary, wife of George Atwood, of the parish of St. Ann, London, was buried in Linnen, April 14, 1761. In connection with the arch, it may be mentioned that some 150 years ago the premises of the printing office were being enlarged and part of the old London wall was being removed. Behind it some remains of the monastery were found. The *Times* described them as a plinth standing on a mass of brick and chalk 6 feet high, and projecting from the face of the wall 4 feet 2 inches, and near the buttress on the south side forming the jamb of a door. Until 1856 they were left in situ, but a further enlargement of the printing office made them be taken down. Some of us may regard the religious houses as having been living, breathing, and the reappearance of remnants of them ages after their destruction recalls to mind the line of Thomas Hood, "All the corpse lay bare."

Up, Sanderstead Place was erected after the Refoundation of Sanderstead Court no record seems to exist before the reign of Elizabeth, whereas Selsdon is distinctly mentioned in the times, and part of the house is obviously of Tudor date. Selsdon is the home of an English gentleman, a man of note have lived within its walls; it has served as a residence for a bishop of Rochester, and may we not assume the palace of a bishop of Exeter, the grange of the monks of Winchester and Hyde, and the castle of a Saxon duke?



SELSDON HOUSE, MAIN ENTRANCE.

After the Norman Conquest the manor of Croydon was conferred upon Archbishop Lanfranc, who is believed to have had it there, though by some writers its erection is ascribed to Henry Langton. A mandate signed in 1273 by King Edward I. was then in existence. It was built of wood on low ground, and was surrounded by a moat formed by little waterways of mud, and was buried by trees. It was damp, dark and unhealthy. Henry VIII. said he could never be at Croydon House without sickness, and Archbishop Grindall wrote in 1567 that Croydon House is no wholesome house. It did not affect Elizabeth, for in 1567 she visited Archbishop Grindall there, and in July 1573 was his guest for seven days. She also honoured in August 1600 Archbishop Abbot in some of the timber to gain light and air, but Archbishop Potter and Archbishop Herring are the latest prelates who resided there for any length of time. During the Commonwealth it had been let to the Earl of Nottingham, and after to Sir William Brereton. By Archbishop Secker, in 1758, it was abandoned, and in 1780 it was sold by the trustees to Alderman Pitches for 2,520*l.*, the proceeds being applied towards the construction of Westminster Bridge. It was

afterwards converted into a washing and bleaching establishment, and in 1887 it was rescued by the Duke of Newcastle, who presented it to the Church Extension Association, and under their control the Sisters of the Church are doing much good work in the district.

Among the present remains of the palace are the guard chamber, the hall and the chapel. The guard chamber was built by Archbishop Arundel between 1396 and 1413. The perpendicular hall was erected by Archbishop Stafford, who was elected in 1443. On the corbels are the shields and arms of Stafford and other occupants of the see. The chapel was commenced by Archbishop Laud about 1634, and was finished by Juxon, his successor. At the west end on the south side there is a small gallery with a carved front of the time of King James. It is popularly known as Queen Elizabeth's pew, although her seat was a canopied throne. Three underground cells also remain, and in 1898 two subterranean passages were discovered, the one leading to South Street, the other towards Beddington Park.

In a paper like the present, where so much is hypothetical, it would scarcely be correct to mention authorities, but for various details and dates many writers have been consulted, and among them mention may be made of Dr. Nutall, John Mitchell Kemble, J. A. Davis, William Dugdale, Mackenzie Walcott, Granville Leveson Gower, Frederick George Lee, Sir Bernard Burke, the Rev. Owen Manning, William Bray, E. W. Brayley, Edward Walford, E. R. Kelly, S. L. Lee, John Timbs, Walter Stanhope, William Hone, Edward A. Martin and Captain L. Broke Willoughby, whose account of Selsdon Park recently appeared in the *Sketch*.

The illustrations are from photographs kindly lent by Mr. Wickham Noakes and Mr. A. J. Quartermain.

THE SOCIETY OF ARCHITECTS.

THE annual report of the Council for the session ending October 31, 1903, states:—The Council has pleasure in reporting a satisfactory increase in the membership, more than fifty applications having been approved and thirty-three candidates were elected, the remainder pending election. Fifteen members and two associates have resigned, one member has been transferred to hon. membership, four members have been removed from the roll and three have died. Over twenty applications have been approved for the students' register, of whom thirteen have been elected this year, and there have been four resignations. Two competitions have been held during the past session, the subjects selected being "A Design for a Cottage Hospital," and "Measured Drawings of a Chancel or Side Chapel Screen," a prize of the value of three guineas being offered in each case.

The designs submitted in the first competition were carefully prepared and were very close in order of merit. The following were the successful competitors:—B. C. Ernest Bayley, first, J. Nixon Scaife, hon. mention. There were no entries for the second competition.

During the session the following papers were read before the Society:—Presidential Address, S. Trevel, J.P., F.R.I.B.A.; "Some recent Conflagrations and their Lessons to Architects," by Ellis Marsland, hon. sec.; "The Legal Rights and Liabilities of Architects and Surveyors," by H. H. Richardson, solicitor; "Acetylene Gas-Lighting for Country Houses," by J. W. Woodall, M.A., and W. Windham, M.Inst.C.E.; "Ventilation and Warming," by B. R. Tucker; "Modern Terra Cotta, Faience and Ceramic Mural Decoration," by J. Miller Carr; "Impressions of Architectural Rambles on the Continent," by S. Trevel, J.P., F.R.I.B.A., president.

The all-important question of registration has received fresh impetus during the past year, and good progress has been made in preparing the way for further action. Early in the session the Architects' Registration Bill committee was amalgamated with the Council of the Society of Architects, as a joint registration committee, under the chairmanship of the President of the Society for the time being. Steps were then taken by means of a circular letter and reply postcard to ascertain the views of recognised members of the profession on the principle of registration. It has been ascertained that some two-thirds of the profession has declared itself in sympathy with the movement for obtaining the statutory examination and registration of all persons entering the profession of architecture, and from the fact that less than 170 voted against the principle, and as every possible facility was given for voting one way or the other, it may reasonably be inferred that an overwhelming majority of the profession is in favour of legislation on the lines indicated. The Society's circular received consideration by the Council of the Royal Institute of British Architects, which issued a counter-statement, followed by a request to the allied societies to express their opinions on the matter. Several of the latter have since passed resolutions in favour of the movement, thus

confirming the individual voting of their members, which shows that almost without exception the allied societies agree with the principle of registration. The persistent action of the Society has naturally revived the antagonism of the few who from the first have strongly opposed any measure of the kind contemplated, and the usual paper controversy has resulted; but, on the other hand, many architects who hitherto have remained neutral and some who formerly opposed have thrown in their lot with the "Registrationists," and the support which the Society has received will enable it undoubtedly to attain its aim in due course. The Architects' Registration Bill, which is under the charge of Mr. L. A. Atherley-Jones, K.C., M.P., has been carefully revised by the joint committee and again introduced into Parliament, and no effort will be wanting on the part of its supporters to secure its passage. The Council feels that many of the difficulties inseparable from the movement are being successfully overcome and that steady progress is being made towards attaining the object in view.

The Council has had before it the proposed London Building Act Amendment Bill brought in by the London County Council with the view of minimising the danger of fires; the Bill, however, was subsequently withdrawn, and the London County Council has since invited the Society to make suggestions as to any revisions to the Building Act generally. The matter is being dealt with by a sub-committee.

The St. James's Hall property having been sold, it has become necessary to find other quarters, and the Council is in negotiation for premises in Holborn, which are well suited for the purpose. It is hoped shortly to make a more definite announcement.

Having been invited by the City Churches Preservation Society to give an opinion on the proposed demolition of All Hallows, Lombard Street, the Council, after full consideration of the circumstances of the case, expressed the view that it being understood that by the sale of the site a large sum of money would be available for the provision of churches and clergy in the poorer parts of the Metropolis, and that there would be no difficulty in removing and re-erecting the building elsewhere and preserving it for more extended use and service, the sale of the site was, under these circumstances, justifiable. The suggestion attracted a good deal of attention, and resulted in the Council receiving an offer of a freehold site near London and a considerable sum of money towards the expenses of the removal and re-erection of the church, together with an annual income towards its upkeep. The Bishop of London was communicated with, and expressed his approval of the principle of the suggestion and asked for details of the scheme, which were supplied to him by the owner of the site. From communications since received it is understood that the position of the proposed site is such as may render it impossible for the offer to be accepted, but that if anything is done by the present owner it will be in conjunction with the Society.

At the invitation of the International Fire Prevention Committee, the Sanitary Institute and the Royal Institute of Public Health, the Society was officially represented at the International Fire Prevention Congress, London; Sanitary Institute Congress, Bradford; and Royal Institute of Public Health, Liverpool.

The Council has under consideration the drafting of a scale of charges and a form of contract for the exclusive use of the members, it having been represented that such would be of service. Many difficulties present themselves in formulating a scheme which will meet with general acceptance, and members can greatly assist the Council by suggestions.

A large number of inquiries continue to be received for the half-yearly examinations, and the number of candidates is increasing. Examinations have been held during the session at London and Leeds, when candidates qualified. The arrangements at Leeds were kindly undertaken by Messrs. Kendall & Bakes, in conjunction with Mr. W. S. Braithwaite. Arrangements were also practically completed for a centre in Ireland, but these had to be postponed. The syllabus has been further revised and the regulations as to the admission of candidates made more stringent.

A number of vacancies have been filled through the medium of the employment register, but more use might, with advantage, be made of it. A number of assistants are at present on the books. There is no charge to members and students.

In view of the recent introduction into Parliament of a Bill to amend the law relating to ancient lights, drafted by the R.I.B.A. and the Surveyors' Institution, the question of further action by the Society in the way of legislation is in abeyance pending the report of a committee upon the proposed Bill.

The outgoings during the year have necessarily increased with the development of the Society's work, and there have not been such exceptional opportunities as occurred last year for augmenting the finances, more particularly in connection with subletting the hall, but it is expected that the auditor's report will show an increase in the ordinary income and a satisfactory surplus.

During the session the Council has met eleven times, the practice committee, ten; finance, nine; examination, eight; registration, eight; and literary, one. Seven ordinary meetings have been held. The practice committee is able to help several members with advice on points connected with their work, and its services are at the disposal of members requiring assistance of this kind. The committee does not undertake questions.

Good progress continues to be made in every direction. The membership in particular has shown a more than satisfactory increase, there being a total membership of 1,200, while there are indications of a further steady increase in membership and influence. The step which the Council has taken with regard to registration has met with general approval and support, and the Society has a weight of opinion in addition to its membership, which will greatly assist its further prosecution of the movement. The Council has also its wish expressed in previous reports, to make the Society an increased source of benefit and assistance to its members, the profession generally, and to this end seeks the cooperation of the members. The Council takes this opportunity of thanking those members and others who have contributed to the pleasure or profit of the members and the Society generally, by preparing and reading papers, assisting in the execution of the social functions, and in other ways using their influence in advancing the objects and interests of the Society.

IRISH ANTIQUITIES.

THE annual report of the Commissioners of Public Works in Ireland records that the important ruins of the 12th century in Louth, have been acquired as a national monument in the custody of this group of ruins was vested in the Board of Works of July 12, 1902, by the owner, Mr. Blayney R. T. B. B. The group comprises (1) the site and ruins of the 12th century Castle, sometimes called "Moore's Castle," "The Castle," "the Abbey," or "The Mill"; (2) the ruined church of the 12th century on the hill, called "The Chapel of St. Bernard"; (3) the ruins of the Cistercian abbey of Mellifont, consisting of the choir, nave, aisles and transepts, with the chapter house, lavabo, cloister garth and other remains of the 12th century buildings.

The ruins comprised in item 3 had been vested in the Church Temporalities Commissioners by vesting order of October 30, 1880, made in pursuance of the Irish Church Act, 1869, sec. 25. The ruins comprised in clauses 1 and 2 were not so vested.

The owner of the property offered no objection to the vesting by the Church Temporalities Commissioners, and it was ascertained that a tenant claimed rights over the site as part of a holding for which a judicial rent had been fixed. When the application of the tenant came before the Land Commission for a revision of the rent of the holding, steps were taken by the owner to resume possession of the portion of the farm on which the ruins were situated. The tenant received compensation and the landlord was at liberty to vest the custody of the whole of the premises in the Board, which he accordingly did.

After the original vesting in 1880 some excavations were made which partially revealed the extent of the ruins of the church. During the past year, through the facilities afforded by Mr. Balfour, these excavations have been extended, and the result that the foundations of the whole of the abbey, showing its original extent, have been uncovered. A complete ground plan of the structure has now for the first time been ascertained. The dimensions of the church as revealed show a total internal length of 191 feet, the width of the transept being 116 feet. The following are the dimensions:—

Nave, 116 feet in length by 54 feet wide, including the aisles.

Two aisles, each 105 feet long.

North transept, 54 feet 6 inches by 42 feet 2 inches.

South transept, 40 feet by 40 feet.

Choir, 42 feet 8 inches by 26 feet 2 inches.

Space under tower, 34 feet by 32 feet.

Cloister garth, 132 feet 9 inches by 101 feet.

It is now evident that the structure commonly known as the baptistery, which was undoubtedly the lavabo, was part of the original design, and is consequently the oldest portion of the ruin now above ground.

The foundation of the abbey is ascribed to O'Carroll of Uriel, in the year 1142. The parent house was that of the Cistercian abbey of Clairvaux, of which St. Bernard was the first abbot. Mellifont was the first Cistercian abbey in Ireland, and it was probably the finest. The 20th century Mellifont were peers of Parliament, and took precedence of all similar establishments in Ireland. In 1254 an abbot was fined and superseded on the complaint of Edward II. to the Pope for disregarding the statute prohibiting

from being admitted monk who could not swear he English descent. The abbey was suppressed in 1539, and the site was leased to Sir Edward Moore, who converted it into a residence which his descendants occupied until 1727, when the fifth Earl of Drogheda removed to Moore Abbey, co. Kildare. The Mellifont estate was subsequently taken on lease for ever by the ancestor of the present Lord R. T. Balfour, of Townley Hall, the present Lord who has done much to facilitate the conservation of the

Excavations at Tara.

The excavations, now happily suspended, or as is hoped at an end, have been the source of much anxiety to the public, and may be inferred from the number of questions on the subject put in the House of Commons for some time past. The ruins at Tara, constituting the only remains of the prehistoric period once occupying the hill, are among the most important scheduled under the Ancient Monuments Protection Act. The legal effect of scheduling is to give the Board of Works certain very limited powers for preservation. When a monument is scheduled the Commissioners have power to prevent, for injury or disfigurement of the ruin, all persons from doing any work on the owner or any one acting on his behalf and with his authority. As against the owner and any person acting by his authority, "scheduling" gives the Board no remedy, and there is no means for protection of the monument against the owner. The Act enables the owner to vest the custody of the monument in the Board, and where this step is taken the Commissioners are clothed with powers against the owner and any person acting on his behalf similar to those which the mere "scheduling" gives against other persons. The question of vesting the custody of the monument has been the subject of correspondence, but the Board have not seen their way to vest, and powers are now only confined to those which result from the "scheduling" of the monument.

The 1899 excavations were commenced on a portion of the hill within the scheduled area. The excavations were carried out by some parties with the consent and authorisation of the owner of the portion referred to, for the purpose of ascertaining the position of the Ark of the Covenant. No opposition to the excavations was made by the then occupying tenant. On ascertaining all the circumstances, the Commissioners recognised that they were powerless to interfere by legal process, and consequently confined their action to an endeavour, which was unsuccessful, to secure by persuasion the cessation of the excavations. The excavations continued during the summer and were only suspended in the spring of the following year to a limited extent. In December of that year a fire took place in the farm on which the excavations had been carried out, and, in consequence of representations made to the Board by the inspector of national and ancient monuments and others, he interposed to prevent further defacement. A small excavation was commenced in the spring of 1902, at the instance of the tenant. The holding has since been changed hands, and the present tenant is reported to be opposed to any interference with the mounds. There is no reason under all the circumstances to hope that excavations will not be resumed. It should be stated that Earl of Drogheda, who owns a portion of the hill, has evinced deep interest in the conservation of the mounds on his land, and they are now in a good state of preservation.

Ogham Stone on Inishvickillane Island.

During the course of the year an ogham stone of considerable importance was removed from the ancient church on the island of Inishvickillane—one of the Blasquet islands on the coast of Donegal—by the Rev. J. Mahaffy, Senior Fellow, Trinity College, Dublin, with the consent of the Earl of Cork, the owner of the island, in order to be placed in the museum of Trinity College. The stone is one of many ruins vested in this Board as a national monument by the Commissioners of Church Temples in 1880, under the provisions of section 25 of the Church Act, 1869. The stone did not form part of the church structure. It was taken, many years ago, by a gentleman interested in its preservation from a spot in which it was exposed to be trodden on, and was placed, evidently with a view to its safety, over the doorway of the church.

With regard to the connection of the Board with the stone, and to the interest felt in the stone, the Commissioners thought it right to record its removal, and to indicate the fact in which it is contemplated that it will be preserved for the future.

AMERICAN CO-OPERATIVE STUDIOS

IN the *Architectural Record* of New York is an interesting description, with illustrations, of "A Co-operative Studio Building" in that city, the experiment being worthy of imitation elsewhere. Mr. A. C. David says:—

It has always been difficult to find in New York studios that were well planned and sufficiently large, and it has been still more difficult to find attached to those studios pleasant and well-arranged living accommodations. It has never paid speculative builders to give much attention to the matter, and in the two largest studio buildings hitherto erected in the city—those at Fifty-seventh Street and Seventh Avenue, and at Fortieth Street and Sixth Avenue—there are few housekeeping accommodations connected with the apartments, and the prices are very high. It is no wonder, consequently, that the idea has occurred to interested people of erecting a studio and apartment building, especially although by no means exclusively for the use of artists, and it is natural also that a very particular effort should be made to secure for the appearance and the arrangements of the rooms in this building advantages in the way of space, light and planning which are denied to the rooms of the average apartment-house of the same grade. One of the interested people to whom the idea occurred was Mr. Henry W. Ranger, the well-known landscape-painter, and he cherished it for many years before he had the chance to realise it. About two years ago, however, he succeeded in interesting in the scheme several other well-known artists, and a co-operative society was organised in order to finance the project. Mr. Ranger became president of the Society, Mr. V. V. Sewell, vice-president, Mr. Jules Turcas, treasurer, and Mr. Louis Paul Dessar, secretary. Other stockholders are Allan Talcott, Childe Hassam, Sidney Smith, Edward Naegle and Frank V. Dumond.

To find an entirely satisfactory location for a building of this kind was not an easy matter, for the requirements were many and various. The absolutely essential requirement was, of course, that unimpeded access should be obtained to the north light, and that this access should be placed beyond the reach of subsequent interference. It was necessary consequently either to place the building on the south side of a broad street, or in case it was situated on the north side of the street to have some assurance that the buildings which backed up against the studio building were and were to remain low buildings. The best way to obtain this assurance was to buy immediately south of a street the buildings of which were restricted to private dwellings. Such a street was found on the north side of Sixty-seventh Street, between Central Park West and Columbus Avenue, and a site on this street had many additional advantages.

But even more important than the location of a studio building is its plan, and it is the plan of the studio building on Sixty-seventh Street which gives it its unique character. The general idea of this plan, which had long had a lodging in Mr. Ranger's head, consisted in recognising the advantage of uniting what is known as a duplex or two-storeyed apartment with a studio apartment. One of the necessities of a well-lighted studio is height; its ceiling should be perhaps twice as high as that of an ordinary room. But to make the whole floor of a flat, the bedrooms, dining and service rooms as high as the studio would mean a tremendous waste of space, which could be paid for only by the exaction of very high rents. The most economical way of combining a good high studio with an economical disposition of space would be to make the studio apartment two-storeyed in the service and living portions, and only one-storeyed in the space devoted to the studio. Of course, this idea is not original with the designers of the buildings we are now describing; it has been used before in the planning of studios both in New York and Paris, but if it has ever before been carried out so consistently and with such advantages in the way of area and opportunity, the instance of it has not yet come under our notice.

It had been originally intended to erect the building on a 50-foot plot, with two duplex apartments on each studio floor—the studio, of course, to be situated in the rear; but it was found that with a lot of this dimension the plan did not work out very well, for a depth greater than 50 feet was disadvantageous to an apartment so planned, and if the house was limited to that depth some 20 per cent. of the lot which under the law could be occupied by the building would be wasted. It was found consequently that a very much more economical plan could be drawn by increasing the size of the plot to 75 by 100, and by combining with the major duplex apartments a series of smaller apartments without kitchens and with studios of lower height. The plan as finally adopted figures out something as follows. The building contains in the front two duplex apartments on each of seven floors. Counting the height of the studios, which is 18 feet, as one floor, it is seven storeys high, but counting each studio apartment as containing two floors, it is fourteen storeys high. Each of these apartments measures, roughly speaking, 37½ by 50, running through from front to rear, and occupying the whole of the front, but

Meeting of clergy and laity, held at Newcastle-on-Tyne, decided to raise a fund of 100,000 for the formation of new parishes, the building of new churches, the improvement of poor livings, and for church extension work necessitated by the growth of the diocese, the population of which increased during the past twenty years by 200,000.

not the whole of the rear. The portion of the rear which is occupied and which gets the light contains the studio, a room of (for New York) truly magnificent dimensions. The front is occupied by the dining-room, study and kitchen. But in addition to the two duplex apartments on each floor of the front part of the building, there are also two smaller one-storey apartments in the rear. These apartments occupy what might be called an extension at the centre of the building at the back and run out some 30 feet beyond the rear line of the large studios. They contain two rooms and a bath on one side and three rooms and a bath on the other. The largest room in these smaller apartments is also supplied with studio lights, but its height is neither so great as that of the studio in the larger apartment nor so small as that of the dining-room in the larger apartment. It measures somewhere in between, so that the fourteen floors in the front are equivalent to some ten floors in the rear. There are consequently three different levels in the floors of the building—the level of large studio, the level of the mezzanine floors belonging to the large studios, and the level of the rear apartments. Altogether it is an extremely economical and ingenious utilisation of the available space.

On the advantages of these larger apartments for artists one scarcely needs to dwell. The studios are spacious, airy and excellently lighted; the service and living rooms are all of good size, and obtain outside air and light; and these advantages will not be taken from them, even should buildings equally as tall be erected on either side. The interior arrangements are compact and convenient. The second or mezzanine floors have separate entrances from the elevator halls, these entrances leading to a balcony opening on the studio, and in case any large entertainment is being given such separate entrances are very useful, for guests can enter on the second floor, disrobe, and come downstairs to the large room without any entanglement or interference with the guests that have already arrived. Consequently, while the apartments are designed particularly for artists, they would make very pleasant and convenient habitations for anybody who could appreciate the advantage of having such a fine spacious room as the big studio to inhabit and decorate. The limitation of the apartments is, of course, that they can be used by small families only. There are only four bedrooms to each suite, including the servant's bedroom at the top of the house. An apartment of the same superficial area, erected by a speculative builder would, of course, distribute the space differently, but a building erected for a special purpose, as has been the one under consideration, can afford to ignore the average requirements.

The finish of the rooms and halls of this studio building is as different from those of the ordinary apartment-house as is its plan; no money has been wasted on useless and tawdry decoration. The entrance is plain and is attractive by reason of its simplicity and excellent proportions. The hallway on the ground floor is narrower and much less ornate than those ordinarily provided, but its bareness, relieved only by a decorative frieze painted by Mr. V. V. Sewell, is just what a man of taste would want; and so it is with the elevator hallways above. They are of much the same economical simplicity as the hallways, say, of a college dormitory, and if marble and Lincrusta-Walton are conspicuous by their absence in the common passage ways, so is machine-made trim from the woodwork of the interiors. The wood used for this trim is stained-oak, and the mouldings are of the simplicity which the visitor finally comes to expect. The design of the mantelpieces is not as well proportioned and appropriate as is the design of the other interior members, but these mantelpieces are at least architecturally correct and inoffensive. The ceilings also are very different from those generally in use, because they consist simply of the arches of the fireproof floor immediately above, plastered and painted so as to harmonise with the prevailing tone of the room. As to the opportunity which the ample dimensions and abundant wall spaces of the large studios offer for the placing of furniture and the hanging of pictures and fabrics, that may be appreciated by an examination of the appearance of some of these studios. Of course the tenants of the apartments have had the advantage of colouring, arranging and hanging their rooms to suit themselves, and very different dispositions of space have been adopted in different cases.

The financial aspect of the building is as interesting as its design and plan. As already mentioned the building has been financed upon a co-operative method. The stockholders pay their yearly rental dues to the original fund, and each draws his dividend from the stock. The amount of their dividends will depend upon the success which the company has in renting its other apartments, and it looks as if by this plan their rents would be diminished and a fund accumulated to pay off the purchase debt. The price which these stockholders will have to pay for a large studio apartment amounts to some 2,000 dols. a year. This is a large sum for the average artist to pay, but the price per square foot for the space the tenant occupies being 70 cents, is extraordinarily small, and the rents charged for the smaller apartments, 600 dols. for two rooms and a bath,

and 750 dols. for three rooms and a bath, is less than for similar accommodation in apartments built in the commercial way. To date the land and building has cost 350,000 dols., and the gross rentals, making no allowance for vacancies, which the company expects to obtain is 400,000 dols. It is stated that were the price per square foot charged for building which is charged for living accommodation in the same grade elsewhere, the gross rental would be 53,000 dols. even with the total income placed at 43,000 dols. according to the number of vacancies, it will be seen that the company has a good chance of making an extremely good thing out of its enterprise.

TESSERÆ.

Robert Adam.

IN spite of the tawdriness and flimsiness that pervade some of his designs, there are numerous redeeming qualities in Adam's style; and, although almost invariably new to the world, his own infelicity, many real excellences. Invention is certainly possessed, and his designs abound with ideas capable of furnishing far more beautiful compositions than any of his own. His external architecture was generally good, though he seems to have depended by far too much on meretricious embellishment, covering even his architraves with scrolls, while the windows are altogether naked. His forte was in the arrangement and decoration of interiors; nor is it too much to affirm that it is to him we are indebted for much of the modern interior combined with elegance which is so peculiarly characteristic of an English house. Adam's immediate predecessors seem to have had either no notions of interior decoration, or paid but very little attention to, convenience in interior design. The mansions designed by them might properly be described by the sarcastic compliment bestowed on an Italian critic on the palaces of his native country, "tutti belli come maschere," were it not that the adjective *belle* might be omitted, or rather a very offensive one substituted in its place. Many of Adam's ground plans are admirable, and, independently of their able distribution, they display a knowledge of the forms and proportions of the separate apartments, and a keen attention to contrast and scenic effect that deserve to be more fully studied. An inspection of his designs for the interior of the Sion House, all of which were unfortunately not carried out, will suffice to convince us of his talent in this respect. It cannot indeed be denied that his detail was frequently florid even for interiors; and we also admit that there were always that due keeping between the different parts of his compositions, or, in fact, that attention to character and to unity and chastity of effect in the *tout ensemble*: even so, it was one of his chief errors, a fault easy to be corrected, of paring away his redundancies and omitting his superfluous ornaments. We may obtain many very tasteful pieces of ornamentation, but it was also too much of mere fashion in his style—of that which is altogether arbitrary; hence, having only the fictitious temporary value conferred by novelty, it has already passed its *passé*, like many other things that are doomed to become antiquated, but which will never be antiquated. Here it may be observed that, allied as they seem in the early part of the eighteenth century, originality and caprice are the antipodes of each other. The want of attending to which simple but highly important distinction, not only have those who have mistaken the one for the other indulged in the most offensive monstrosities, but the very injurious prejudice has been created against all originality, let it be ever so tasteful or ever so consistent with the most mature principles. Originality ever conforms to such principles for it is in fact based upon them; if it departs, as freedom will, from the written letter of the law, never does it violate the spirit. It is the vital germ of all art; destroy it, and there is nothing to supply its place but dull extravagance and mechanical routine. Caprice, on the contrary, acts in opposition to the principles, and deviating from them, substitutes dissipation and variety, for invention, whim, while it rejects study as altogether superfluous.

Richard Wilson, R.A.

Although usually represented at best but as a "diamond," Wilson was a man of high spirit and generous feeling. His classic taste was not confined to his art. He was an accomplished scholar, and when not under a morose repression of spirits, courteous in address and brilliant in conversation. One of the most distinguished members of the Literary Club, after accosting him and Allan Ramsay at the foot of the stairs which led to the meeting-room on the first floor, observed to Topham Beauclerk:—"Sir, Wilson is a man who can talk with the best of us as well-read as any of the learned dons above." This literary knowledge, however, was somewhat obscured by the too general practice of the artists, in common with most other professions, of the age of George I. and George II., manifested for a

humourist. The pipe, the punch-bowl and late hours, a disposition for mirth; and the morning tale, borne by an amateur from one painter's studio to another's was daily interlarded with the wit and frolic of the overnight. The grave family-men, in these social times, mostly passed their evenings at the tavern, and sometimes prolonged their sittings to the hour indicated on the dial of Hogarth's inimitable "Modern Midnight Conversation." For those who had no imagination nor wit would sit comfortably entrenched in their pipes, and smoke, and nod, and smile at the lively tales of their more enlightened friends and neighbours. Wilson resided for several years at the house No. 36 Charlotte Street, corner of North Street, of which he took a lease for a specific reason, "Because," said he, "there is no building interposed between us and the open country." The house was subsequently tenanted by Woollett, the renowned engraver of Wilson's works; and within the detached building at the end of the garden many of the best efforts of his burin were executed. At this period, and for several subsequent years, from his windows Wilson had a view of Hampstead and the gate. He was accustomed on a fine evening to throw open the sashes of his first floor, and invite whoever might care to be with him to behold the glowing effect which the setting sun dispensed to the wooded heights of those hills, which were the charm of Middlesex. There were many rural objects immediately north of the New Road at that period, which interested Wilson with constant theme for contemplation, and occasionally as prototypes for the exercise of his pencil. He made sketches in chalk of the aged elms that stood in front of Marylebone Gardens, the northern Vauxhall of the middle of the eighteenth century; and an old friend of Wilson's, Captain William Baillie, related that, walking with him in the fields on a fine autumnal evening, the enthusiastic painter suddenly exclaimed:—"Baillie, did you ever behold so fine a study for colour as those old walls afford?" adding, "I will give a guinea for my painting tools." The effect became more resplendent, and then decayed. "Ah," said he, "our joys, they happen not often, and then, alas! how transient." Captain Baillie was almost as enthusiastic an admirer of the incidents of light and shade as this great landscape-painter, and used to boast, on returning from these delightful evening rambles:—"Wilson and I, sir, have been long nature."

Rectors and Chancels.

Erroneous notions prevail about the extent of the rector's rights and interests in the chancels of churches. A few years ago a lay rector claimed in court the right to the exclusive use of a door leading from the chancel into the churchyard. The court decided against the claim. In the judgment it was said that as churches in their origin were dedicated by those who erected them and gave the sites on which they were built for the purposes of religion, it would obviously be inconsistent with the object for which they were established to hold that in the case of a lay impropriator the right of possession followed freehold, which in contemplation of law is in the rector. The naked abstract right to the freehold carries with it no right of possession, the latter being in the incumbent, who is responsible to the Ordinary for the celebration of public worship. It was laid down, further, that the rector has no special interest or property in the chancel beyond the right to his chief seat there, but that this general right does not carry with it any further consequence as relates to any peculiar right of interest in that part of the church. The jurisdiction of the Ordinary for the benefit of the parishioners extends to the distribution of the seats there in like manner as of those in the body of the church. By custom the rector is bound to repair the chancel, as the parish are bound to keep the nave in repair. The reason of this is suggested to be that whereas originally the cost of the repair of the whole church was paid out of the tithes (which, or the largest share in which, went to the rector), yet that the use of the nave being appropriated to the parishioners, while that of the chancel was appropriated to the performance of the holy offices and seats of the ministers, in process of time the clergy succeeded in imposing the laity to take upon them the burden of repairing the fabric of the church allotted to them. This obligation, however, of the parishioners to repair the nave does not give them the right to dispose of the seats therein, nor in any way oust the jurisdiction of the Ordinary. Similarly the obligation on the rector to repair the chancel does not give him any such right.

Lübeck Cathedral.

Lübeck is perhaps the noblest Gothic city of the extreme north. Its churches are numerous and large, its Rathhaus, hospitals and gateways among the finest in Europe, and all of them are built almost entirely of brick. The *coup d'œil* of the whole city is surpassingly picturesque and striking, and this notwithstanding that the great churches rising boldly up against the sky are unbroken masses of deep red brick,

relieved very little indeed by stonework, but much by the beautifully contrasted green-tint of the copper-covered spires, with which almost all of them are adorned. The cathedral was consecrated in 1170 in honour of SS. John Baptist and Nicolas, and of this church the lower part of the west front and the main arcades still remain. They are of the very simplest character. The piers are entirely of brick, with no more attempt at enrichment than can be obtained by the juxtaposition of rectangular faces, and there are few, if any, moulded bricks. The arches are of one, two and three orders, all perfectly plain and square in section, some pointed and some round. The groining is quadripartite, but generally without ribs. The whole is of brick, which is even used for some of the altars to support their stone mensae. This brickwork was obviously intended to be seen, though it has usually suffered as much as have our own old buildings from that rage for whitewash which so much distinguished the age during which Renaissance art and its disciples ruled throughout Europe. The north porch is a thirteenth-century addition to the cathedral; it is of two bays in depth, with groining piers of clustered shafts with sculptured capitals, and a many-shafted doorway of the best character. Its interior is probably mainly of stone, but the exterior is all of brick. The archway is boldly moulded, and above it is a horizontal arcaded corbel table, stepped up in the centre to admit the arch. The gable is boldly arcaded upon shafts, and has a stepped corbel table, with a double line of moulded bricks above it, next to the tiles. A couple of simple open arches are pierced in each side wall, and there are flat pilasters at the angles. In the gable, enclosed within the arcading, are some circular openings, one of which is cusped with small foliations formed of brick. The moulded bricks in the main arch are of two kinds only, one a large boutell, the other a large hollow, and these arranged alternately with plain square-edged bricks produce as much variety as is needful. The jamb of the doorway is of plain bricks built with square recesses, in which detached stone shafts are placed. The capitals throughout are of stone and carved with simple foliage. On the exterior of the porch the whole is of brick, simple in all its details, yet sufficiently enriched by their skilful arrangement to be thoroughly effective; whilst in the interior, where more adornment was naturally required, brick is frankly abandoned and the richly moulded and sculptured ribs and archivols are all of stone, though the vaulting and walls are, as on the outside, of brick. The gable of the transept above this porch is another good example of early brickwork. It has two windows, each of three lights, entirely of brick, and of a design which throughout this part of Germany was almost of necessity reproduced wherever brick only was used for window traceries. The outer arch is well moulded, and the lights have simply arched heads running up to and touching the enclosing arch. The truth is that if monials and traceries are to be of brick, there is hardly any alternative between the tame insipidity of this design and the rich intricacy of the terra-cotta reticulations, and both are alike valuable as showing that both the cheapest and the most economical plan, as it is by far the most effective, is to use stone rather than brick for traceries within the enclosing brick arch. The only tracery which can be properly executed in brick is in fact the simplest plate tracery (and even this requires great skill and care in its execution), or that simple fringe of cusping round an opening which occurs in the porch, and which may be executed with ease with a single pattern of moulded brick often repeated. To return to the transept. Over the windows is a horizontal band of enrichment, consisting of an arcade of intersecting round arches, then two courses of brick, then a course of brick set diagonally on the bed, a plain course, and again another diagonal course. The eaves of the gable have bold moulded bricks under them, and then a broad band of enrichment of the same character as that just described, though varied in its arrangement.

Genoa.

Genoa is called "the superb," and not without some reason, though the justice of that unbounded encomium bestowed upon the town by Italians, and generally acceded to by travellers, is questionable. The city itself does not merit the title of superb. Its internal aspect is rich without being effective. That which is truly good must be sought within doors; the rest is, in general, gaudy and theatrical. A long street divided into three parts, each known by a different name, is said to be composed of palaces. Three streets of palaces. Superb indeed. But every house at all above the common run is in Italy called a palazzo. In the fronts of the Genoese palazzi we frequently see the chisel entirely cheated of its labour by the painter's brush; and the eye of the architect (however that of the "happy ignorant" may be deceived) is apt to alight with some degree of severity upon this miserable apology for the thing imitated. The weather, too, as it seems, is equally inimical to such architectural hypocrisy, for there is hardly a single instance where the artist might not go over his work again, and patch upon the lie to make it good. Let it be con-

fessed, however, that the profusion of marble columns, vases, statues, staircases, &c., is in extent almost beyond computation, and that the Ducal Palace is no less prominent for the excellence of its design than for the costliness of its material and masterly execution. Its saloon and external façade are deservedly celebrated for architectural beauty. The saloon in the Palazzo Serra is allowed to be one of the most magnificent rooms in Europe, and people go to see the furniture in the Durazzo Palace. For internal splendour the churches of Genoa yield to none in Italy, except St. Peter's at Rome; the Annunziata is perhaps the most costly. But it is the situation of Genoa that should confer upon it the title of "superb." The first view on passing the Lanthorn is striking and picturesque. With a beautiful bay in front, the city rises in amphitheatrical form from the waters of the Mediterranean up the slope of the Apennines, presenting a rich assemblage of villas, vineyards, terraces and marble staircases. Nor is the prospect from the heights behind the town unworthy the excessive toil of ascending; from thence the bay appears to the greatest advantage, and Corsica is seen dimly in the distance. Altogether Genoa is a charming place. There is much maritime bustle upon its quays, and the street of palaces is the only portion of the town where any person can walk with pleasure whose ears take offence at the "noise of hammers closing rivets up."

RALEGH'S HOUSE, YOUGHAL.*

THE building known as Sir Walter Raleigh's house at Youghal looks to-day from the outside much the same as it must have looked more than 300 years ago, when the famous soldier, sea-captain, coloniser, poet, historian, statesman and courtier (to give him a few of his titles to fame) of Queen Elizabeth's reign is believed to have some time sojourned there. Slates, indeed, replace the original thatch on the roof, and modern glass the ancient leaded panes in the windows; but the pleasantly broken front, with its three gables, projecting porch and bay window; the south end with its sunny oriel; the back with its towering chimneys; the massive wall, 5 feet thick; the high-pitched gables—all remain, perhaps almost unchanged. Entering the house, we pass through the hall and visit the low dining-room on the ground floor, from which a subterranean passage is said to have connected the house with St. Mary's Church. Upstairs there are handsome rooms wainscotted with dark oak. One of these retains in its fireplace the old blue Dutch tiles with Scriptural subjects enclosed in a circular border. In a recess in this room behind the wainscoting was discovered about the middle of the last century "a part of the old monkish library hidden at the period of the Reformation." One volume contained a black-letter compendium of Scriptural events from the Creation to the days of the Apostles, printed at Mantua in 1479, together with Peter Comestor's "Historia Scolastica," printed at Strasburg in 1483. It is a pity we have not a complete list of the library, as it might help to throw light on the date of the house. The principal room, that with the sunny oriel window, still preserves its beautiful mantelpiece of elaborately carved oak rising up to the panelled ceiling. Three figures, representing Faith, Hope and Charity, support the cornice, above which is an openwork parapet by an apparently later and inferior hand. The panels between the figures are ornamented with fantastic shields, while an exquisite design runs over the lintel of the fireplace, itself supported by grotesque figures. Unfortunately the original tiles of the fireplace have in this instance been removed.

In the garden four old yew trees, said to have been planted by Raleigh himself, are still flourishing, and look very young for their age. The myrtle trees, however, which were also supposed to date from his time, and which at one period gave their name to the house, were destroyed in a storm some years ago. Here Raleigh is believed to have planted the first potatoes ever grown in Ireland, and to have smoked, if not even planted, the first tobacco, and, no doubt, "found many rare and wonderful experiments of the virtues thereof." At any rate, we know that in these and in many other directions, such as mining enterprises, fruit culture, making pipestaves, exporting wool, &c., he was busily engaged at the Irish industrial revival just three centuries before the time.

The house is believed to have been originally intended for the residence of the warden of the college of Youghal, and to have been built soon after the year 1464, when the college was founded by Thomas, the eighth Earl of Desmond. (See the article contributed by the Rev. Samuel Hayman to the Society's Journal for the year 1856, pp. 16-28.) The house can be plainly identified in the map of "Youghal as in Elizabeth's reign when sacked by the Earl of Desmond," reproduced from a MS. in Trinity College, Dublin, in the Society's Journal, 1868-69, p. 469, more doubtfully in the map of Youghal in "Pacata Hibernia." For Sir Walter Raleigh's connection with it we have to rely on

tradition, in this case probably well founded. He probably obtained possession of it about the year 1587, in connection with a Crown grant of 42,000 acres on the rivers Blackwater and Bride. His visits to Ireland, however, at this time were fitful and only for short periods, confined probably to the years 1587 to 1589. He managed his huge estates by contract, and they went from bad to worse; and in December 1602 sold them all, including the college of Youghal, to Sir Robert Boyle, afterwards first Earl of Cork. Since then the house has changed hands many times. Not many years ago it was occupied by Sir John Pope Hennessy, who in 1883 wrote a bitter monograph on Sir Walter Raleigh in Ireland. The house has been known in legal documents as Sir Lawrence Parsons's house, and in recent times as Ivy Grove, &c.; but, in a truer historical perspective, it is indissolubly linked with the memory of one of the most remarkable personalities of his own or indeed of any age—Sir Walter Raleigh.

GENERAL.

Mr. Wingfield Digby, M.P., has decided that the remains of a Roman villa found on his property at Fifehead Neville, Dorset, shall be covered in to secure their preservation and prevent injury. It has, however, been resolved that a permanent record shall be taken of the discovery, in the shape of plans and drawings, and this work has been undertaken by the Imperial Field Club, the president of which is Lord Eustace Cecil. When completed they will be placed in the Dorset County Museum at Dorchester.

Plans and Specifications have been prepared for a new and more commodious gaol, to be erected near the site of the existing Pretoria prison. The female quarters will be built first, and it is intended that the whole structure shall be finished in eighteen months.

The Memorials of the late Emperor and Empress Frederick, which have been erected near the Brandenburger Gate in Berlin, were unveiled on Sunday last. We have already described the statues which were executed by Prof. Adolf Brütt and Herr Fritz Gerth.

The Tender of Mr. C. Wall, London, for the erection of a superstructure of Vauxhall Bridge, at a cost of 142,942*l.* 9*s.* 6*d.* was accepted on Tuesday by the London County Council. The committee had recommended the tender of Messrs. Henry & Froude, Ltd., at 154,584*l.*

Sir Michael Hicks Beach, M.P., has promised to restore the Hickes tomb and the Hickes chapel in St. Mary's Church, Leyton, and has also contributed towards the fund for the renovation of the church.

An Exhibition of works in metal and stone from all countries will be held in St. Petersburg from November 1st to February. It will be under the patronage of the Prince of Elizabeth Mawrikiwna.

The London County Council improvements committee have settled at 183,150*l.* the claim, amounting to 320,931*l.* of the Metropolitan Electric Supply Company in respect of the cost of erecting and fitting up a new generating station, plant, &c., and of the expenses connected with the taking up, replacing, &c., of the company's mains. The Council is required by statute to provide a site, partly freehold and partly leasehold, for the reinstatement of the Company's premises.

An International Competition has been arranged by the Mexican Government for a statue of General Morelos. Pardon. The cost of the memorial is to be 80,000 Mexican silver piastres.

The Bishop of London consecrated on Saturday a new chancel, side chapel, organ chamber and vestries which have been added to the church of St. Paul, at Harringay, at a cost of 5,502*l.* The altar and altar rails are of oak and the walls are of alabaster, the sanctuary being paved with white and green Italian marble. Vestry and other accommodation is provided in the basement. The design is of thirteenth-century character, and has been prepared by Mr. Silley.

It is well known among Connoisseurs that the first collection of proofs by the great master of etching has belonged for many years to Mr. Mortimer Menpes. This collection covers nearly the whole field of Mr. Whistler's art, and includes superb impressions of his finest and rarest plates. Mr. Menpes has been the possessor of a large number of unique and hitherto unknown etchings. It will be good news for those interested in art matters that Messrs. Ernest Brown & Phillips, of Leicester Galleries, Leicester Square, have arranged to follow up very shortly the exhibition of the late Mr. Phil May's work, which they are at present holding, with an exhibition of Mr. Menpes's famous collection.

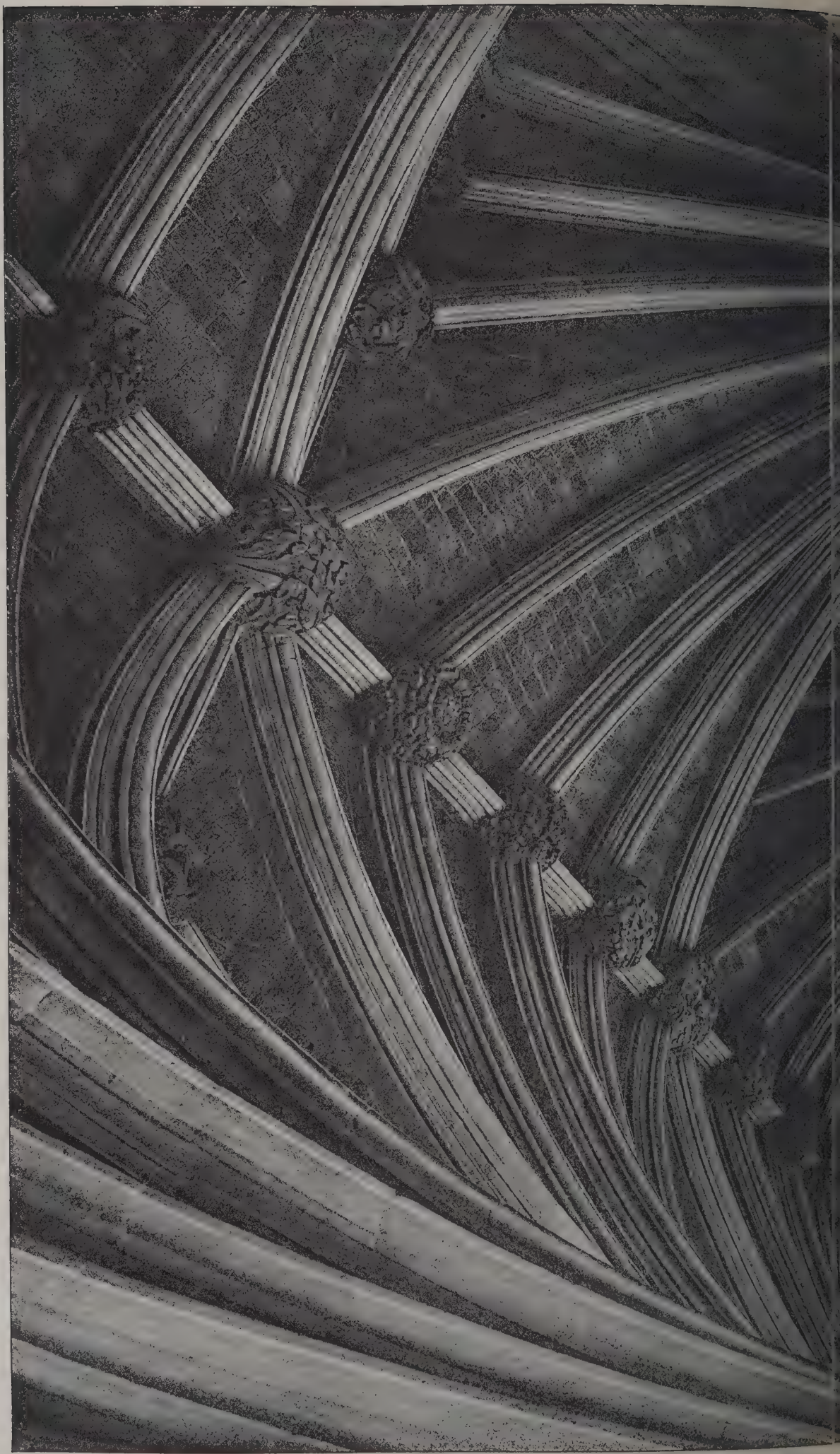
The Directors of the London and Lancashire Fire Insurance Company have declared an interim dividend of 5*s.* per share (being at the same rate as the last interim dividend), payable on November 4.

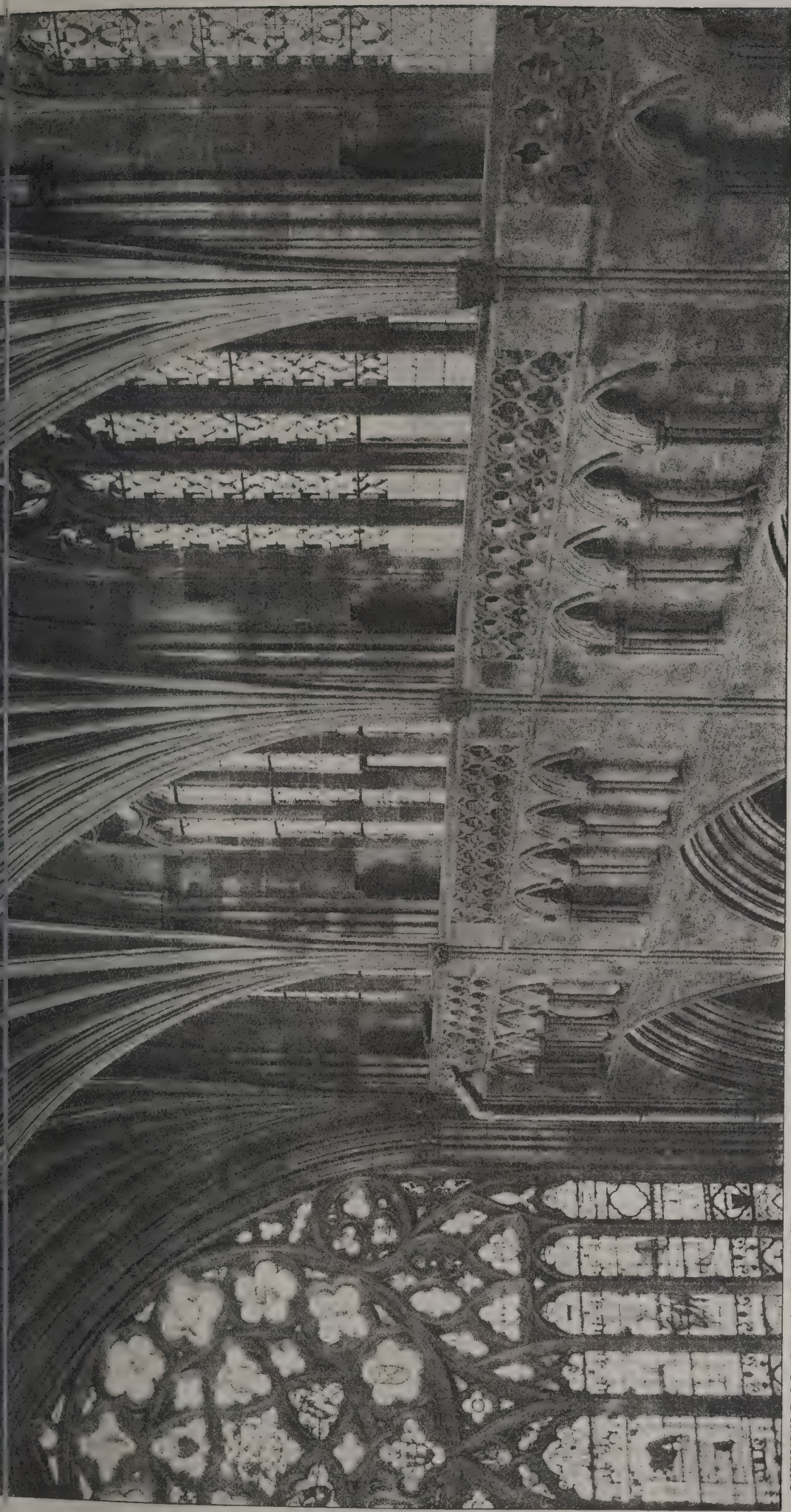
* A paper by Goddard H. Orpen, B.A., published in the Journal of the Royal Society of Antiquaries of Ireland.

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The Architect, Oct 23rd 1903.





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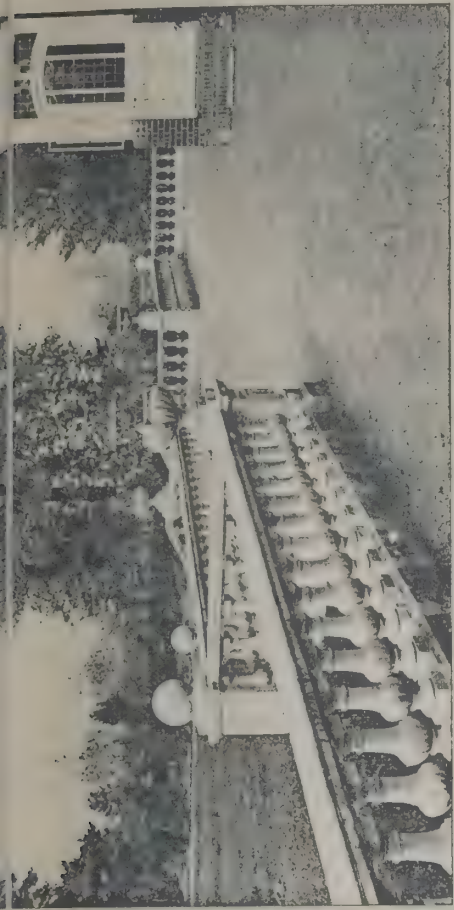
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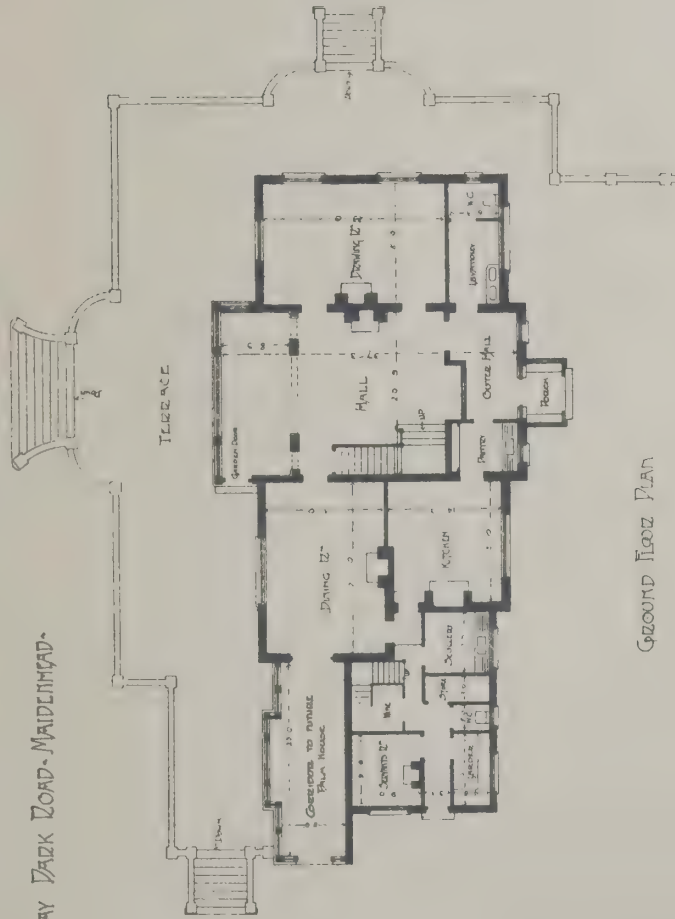


THE ELEVATION TO DRIVE.

HOUSE ZAY PARK ROAD, MAIDENHEAD.



THE TERRACE TO GARDEN FRONT.



GROUND FLOOR PLAN



FIRST FLOOR PLAN

Architects & Surveyors
Messrs. Macintosh & Newman
25, Abchurch Lane, London, E.C. 4

Scale 1/4 inch = 1 foot

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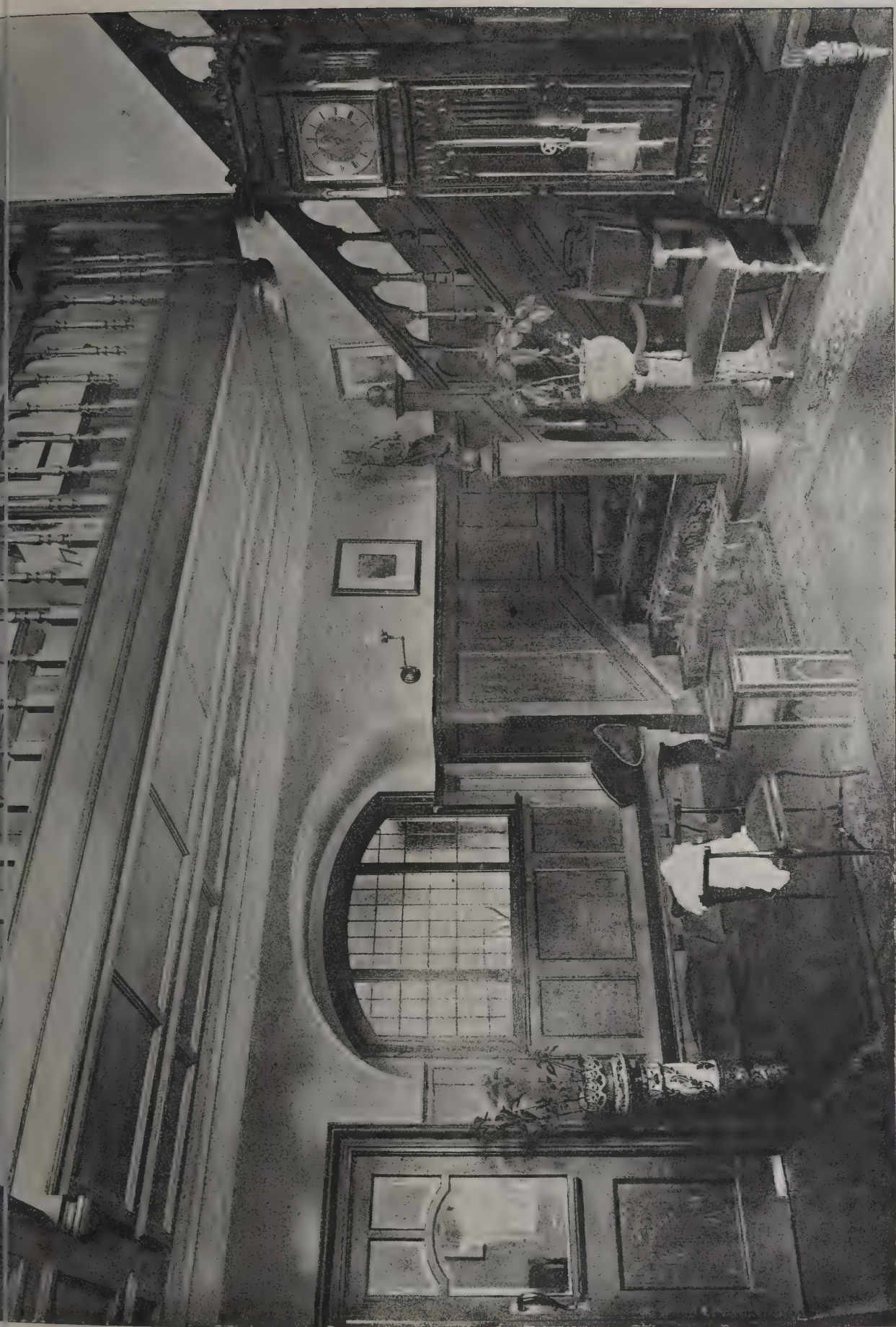
HOUSE, ZAY PARK ROAD, MAIDENHEAD.

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THE HALL.

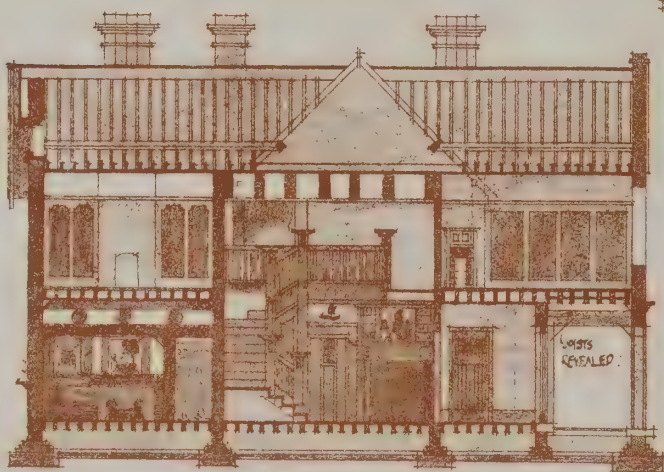
HOUSE, RAY PARK ROAD, MAIDENHEAD.

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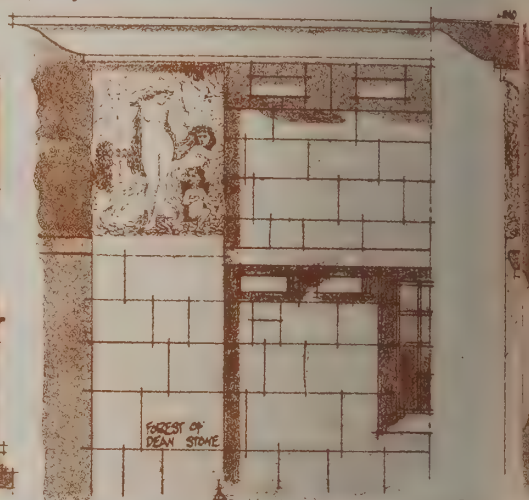
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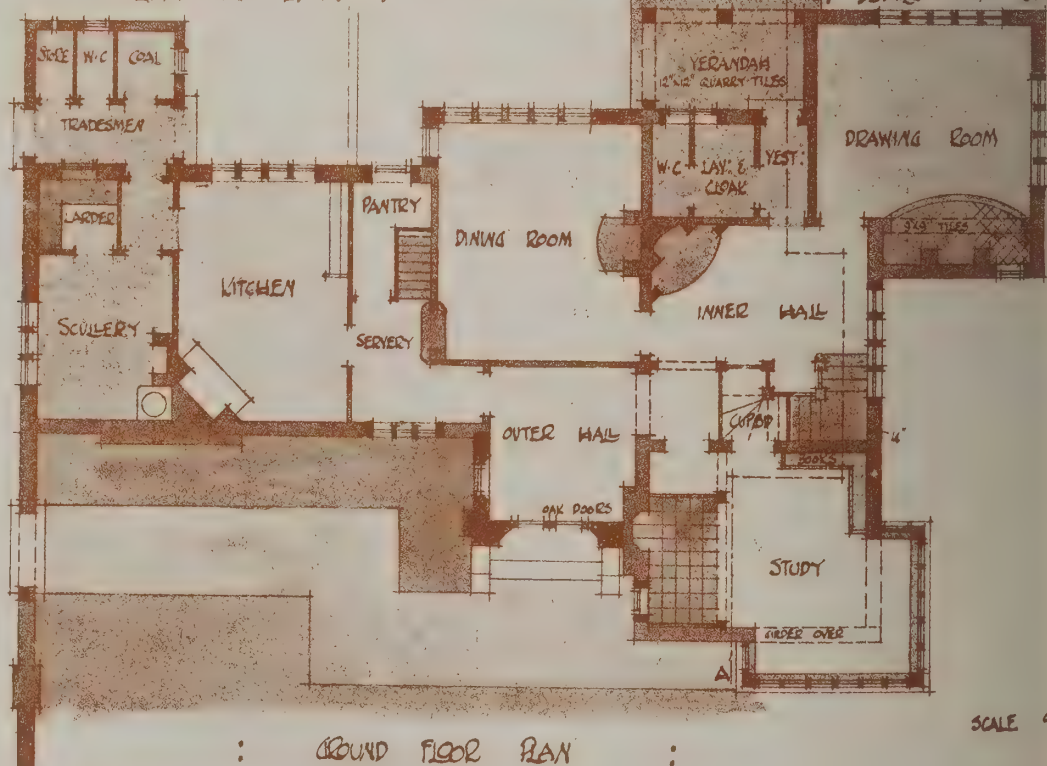
: FRONT ELEVATION :



: SECTION AT 'A-A' :

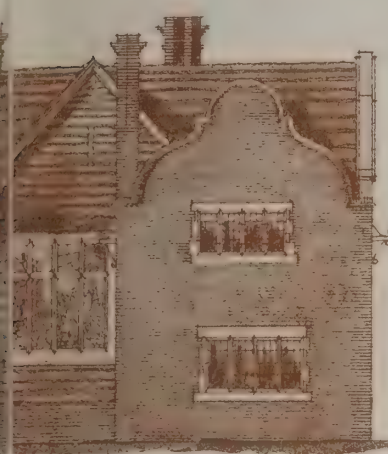


: DETAILS OF STONEMEN :



: GROUND FLOOR PLAN :

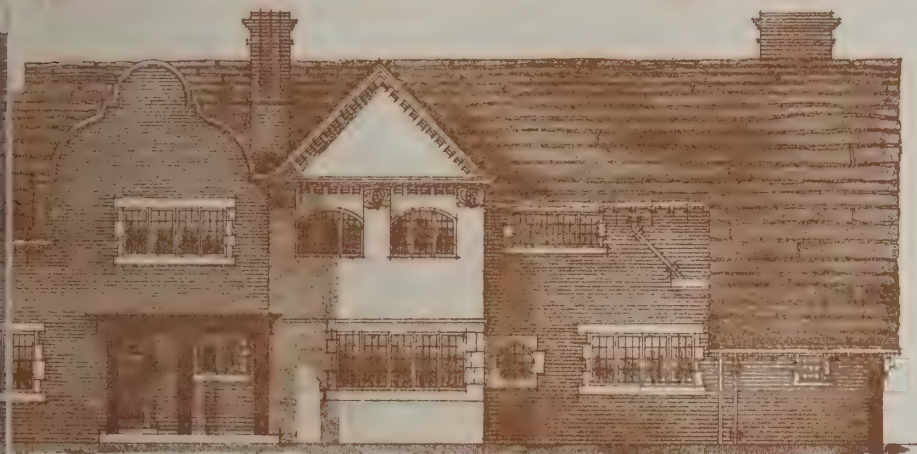
SCALE OF 1/2"



ELEVATION :



: ELEVATION TO ROAD :



PLAN SHOWING THE APPEAL OF THE CARPENTER

: GARDEN :
: ELEVATION :



FLOOR PLAN :

DESIGN FOR A
SMALL HOUSE:
1/1 : : :
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THE Architect and Contract Reporter.

EDITORIAL NOTICES.

of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff a VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Readers are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

Great disappointment is frequently expressed at the non-issuance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

—Nov. 30.—The committee of Bray Pavilion and Gardens invite plans for proposed pavilion and winter hut at Bray. First prize, 30*l*; second prize, 15*l*; third prize, 5*l*; with three prizes of 5*l* 5*s* each. Messrs. Frank Edw. Lee and P. Macdonnell, hon. secretaries, Town Hall, Bray.

—Nov. 9.—Designs are invited for a new public library. Premiums of 50*l*, 30*l*, and 20*l* will be paid to the first, second and third premiated designs respectively. Particulars to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Brighton and Hove Hospital for Women, 76 West Brighton.

—Oct. 26.—Competitive designs are invited for a new iron and glass pump-room and colonnade in the gardens. Mr. F. Bagshaw, borough engineer, Municipal Offices, Brighton.

—Dec. 16.—The Lambeth Borough Council are erecting a public library, with residence for librarian, in the Herne Hill ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for a public library, with residence for librarian, in

the Herne Hill ward of the borough to Mr. H. J. Smith, town clerk, Lambeth Town Hall, Kennington Green, by 12 noon on December 16. General information as to the extent and nature of the accommodation required in the proposed library and residence can be obtained on application to the town clerk.

SCOTLAND.—Nov. 9.—Competitive plans for the erection of a tenement of shops and workmen's dwelling-houses on ground belonging to the Kilmarnock Corporation in Fore Street are invited. Premiums of £15 15*s*, £10 10*s*, and £5 5*s* will be given for the sets of plans and certificate which may be adjudged first, second and third respectively. Mr. W. Middlemas, town clerk, Kilmarnock.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums of 100*l*, 50*l*, and 25*l* will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20*l*, 10*l*, and 5*l* will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WALES.—Nov. 9.—Competitive designs are invited for a public library to be erected in Evelyn Road, the total expenditure, including fixtures, not to exceed £2,000. A premium of £10 10*s* will be paid for the approved design. Mr. Samuel Jones, clerk, Old Road, Skewen, Neath.

CONTRACTS OPEN.

BARROW-IN-FURNESS.—For erection of conveniences in Abbey Road. Particulars on application at the office of the Borough Engineer, Town Hall, Barrow-in-Furness.

BARROW-IN-FURNESS.—For the extension of urinal on the promenade, Walney. Plans and specifications may be seen on application at the office of the Borough Engineer, Town Hall, Barrow-in-Furness.

BRADFORD.—Oct. 26.—For the erection of a hospital pavilion at the union workhouse, Horton Lane. Mr. Fred Holland, architect, 11 Parkinson's Chambers, Hustlergate, Bradford.

BRIDLINGTON.—Oct. 30.—For erection of five cottages, &c., and for alterations to two existing cottages, North Back Lane and Long Lane, Bridlington. Mr. A. T. Martindale, architect, 66 Wellington Road, Bridlington.

BRISTOL.—Oct. 31.—For the erection of a new central library at Deanery Road, Bristol. Mr. H. Percy Adams, architect, 28 Woburn Place, W.C.

BURY (LANCS).—Oct. 27.—For the taking-down and re-erection of shop and premises, 10 Water Street, Bury. Mr. John Haslam, town clerk, Municipal Offices, Bank Street, Bury.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CHRISTCHURCH.—Oct. 31.—For alterations to the roof of the board-room at the workhouse, and for the construction of a platform. Mr. A. Druitt, clerk to Guardians, Christchurch.



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CUDWORTH.—Oct. 28.—For the erection of meter and governor house and stores at Cudworth, Yorks. Mr. W. W. Hutchinson, 10 Pontefract Road, Barnsley.

DARFIELD.—Oct. 26.—For the erection of nine houses at Darfield, Yorks. Mr. A. B. Linford, architect, Carlton Villa, Wombwell.

EWELL.—Nov. 6.—For the erection of laundry and mortuary buildings at the epileptic colony, Ewell, Surrey. Forms of tender and contract, with specification, can be obtained on application to the Clerk of the Asylums Committee, London County Council, at the offices, 6 Waterloo Place, S.W.

GILLINGHAM.—Nov. 5.—For the erection of twenty-six cottages in Burnt Oak Terrace, Gillingham, Kent. Mr. Ernest J. Hammond, 21 Balmoral Road, Gillingham.

HALIFAX.—Oct. 28.—For joiner's work (labour only), iron-work and slating of timber-sheds in the borough. Mr. C. H. Petty, architect, Waterhouse Street, Halifax.

HALIFAX.—Oct. 29.—For the pulling-down and rebuilding of warehouse and the refronting of shops 16 and 18 Bull Green. Messrs. Richard Horsfall & Son, architects, 221 Commercial Street, Halifax.

HOUNSLOW.—Oct. 28.—For the erection of the first block of six shops, and flats over, in High Street. Mr. W. A. Davies, Town Hall Chambers, Hounslow.

HULL.—Oct. 30.—For the erection of the Beverley Road baths. Mr. A. E. White, city engineer, Town Hall, Hull.

ILFORD.—Oct. 26.—For the erection of dépôt buildings, stables, &c., in Ley Street. Mr. H. Shaw, surveyor, Town Hall, Ilford.

IPSWICH.—Oct. 29.—For the erection of a public convenience at Alexandra Park. Mr. E. Buckham, borough surveyor, Town Hall, Ipswich.

IRELAND.—Oct. 31.—For the erection of a Methodist church and manse at Clonmel. The Rev. H. Kevin, Clonmel.

IRELAND.—Nov. 6.—For the erection of cells for prisoners at Enniskillen court-house, Fermanagh. Mr. H. Hugh Archdall, secretary, Court House, Enniskillen.

IRELAND.—Nov. 10.—For the erection of kitchen, laundry, disinfecting chamber, chimney-shaft, trenches for pipes, &c. at Limerick workhouse. Mr. Joseph O'Malley, architect, Limerick.

KETLEY.—Nov. 5.—For the erection of a school teachers' dwelling-house at Ketley, Salop. Mr. C. R. D. architect, Shrewsbury.

LEAVESDEN.—Nov. 4.—For taking-out old iron sashes supplying and fixing double-hung sashes to certain windows at Leavesden Asylum, near Watford, Herts. Mr. W. T. H. engineer and surveyor to the Asylums Board, E. B. ment, E. C.

LEEDS.—Oct. 29.—For alterations and additions to wood bakery, Roundhay. Messrs. James Charles 98 Albion Street, Leeds.

LEEDS.—Nov. 9.—For the extensions and alterations to hospital block A and for erection of new receiving ward at the Leeds Union workhouse, Beckett Street. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LISCARD.—Nov. 14.—For the erection of a new school at Manor Road, Liscard, to accommodate 1,000 scholars, Wallasey education committee. Mr. Edmund Kirby, Street, Liverpool.

LONDON.—For the erection of a branch library at Sydenham. Mr. J. R. Vining, 89 Chancery Lane, W.C.

LONDON.—Oct. 27.—For the erection of a block of storey working-class dwellings at Jerusalem Square, Street, Hackney. Particulars at the Architect's Department, Housing Section, London County Council, 19 Charing Road, W.C.

LONDON.—Oct. 27.—For the erection of a block of storey working-class dwellings and one block of seven near the junction of Nine Elms Lane and Wandsworth. Particulars may be obtained at the Architect's Department, L.C.C., Housing Section, 19 Charing Cross Road, W.C.

LONDON.—Oct. 30.—For the erection of the superstructure of the new postal stores at Islington. All information obtained at H.M. Office of Works, &c., Storey's Gate, W.C.

LONDON.—Nov. 4.—For demolishing the temporary Nos. 18 and 19, at the Northern Convalescent Hospital, Winchmore Hill, N. Specification prepared by Mr. Hatch, engineer and surveyor to the Metropolitan Asylums Board.

LONDON.—Nov. 4.—For completing the boundary of the Grove hospital, Tooting Grove, S.W. Mr. W. H. engineer and surveyor to the Metropolitan Asylums Board.

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MANCHESTER.—Oct. 28.—For the erection of a small stair at the schools at Swinton. Mr. A. J. Murgatroyd, Oct. 23 Strutt Street, Manchester.

MENEDEN BRIDGE.—Oct. 26.—For the reconstruction of an bridge. Mr. Urban A. Smith, county surveyor, Herts.

MINSTON.—For the erection of two pairs of semi-detached at Menston, Yorks. Mr. William H. Sharp, architect, Mole Lane, Bradford.

MORPETH.—For the construction of a concrete retaining—50 feet by 15 feet by 3 feet) and drainage. Mr. J. McGregor, highway surveyor, Market Place, Morpeth.

PORTLAND.—Oct. 27.—For additions to the police station land, Dorset, including the erection of six cells and &c. Mr. E. Archdall Fooks, clerk to standing joint-tee, Sherborne, Dorset.

PORTLAND.—Oct. 29.—For the erection of a stone wall, in railings, bandstand foundation, &c., in Easton Square Stevenson Henshaw, surveyor, Council Offices, New Portland.

S. COLUMB MINOR.—Nov. 3.—For the erection of an church at St. Columb Minor, Cornwall. Mr. Samp- l, architect, Green Lane, Redruth.

SOWERBY BRIDGE.—Oct. 28.—For the erection of a fire- station in Hollings Mill Lane, Sowerby Bridge. W. Evans, clerk, U.D.C., Commercial Bank Chambers,

STAFFORD-ON-AVON.—Oct. 26.—For the erection of a m and lavatory at Seven Stars inn, Rother Street, and ouse, Mason's Court, Rother Street. Mr. Roden borough surveyor, Municipal Offices, Sheep Street.

TUNTON SCOTNEY.—Oct. 30.—For the erection of a d cottage at Sutton Scotney. Mr. Chas. W. Breadmore, h Street, Winchester.

TOTTENHAM.—Nov. 3.—For the construction of three ound conveniences—(a) junction of Seven Sisters Road gh Road, (b) junction of Park Lane and High Road, n Lanes, on common, Duckett's Green. Mr. W. H. , engineer to the Urban District Council, Coombe ouse, 712 High Road, Tottenham.

WALSLEY.—Oct. 26.—For the conversion of ten houses at Tai Blowd, Merthyr, into five houses. Mrs. C. Thomas, nt-Villa, Town Hill Road, Sketty.

WALES.—Oct. 28.—For alterations and additions to the Pontygwaith and Wattstown Working-men's Institute. Spec- ifications, &c., can be seen at the Institute, Pontygwaith.

WALES.—Oct. 29.—For the erection of boundary walls, railings, &c., and formation of new playgrounds at Penydarren schools, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect Aberdare.

WALES.—Oct. 30.—For the rebuilding of the Castle inn, Pantywyll. Mr. C. M. Davies, 12 High Street, Merthyr.

WALES.—Oct. 30.—For altering and refitting the interior of Trefgarne Owen chapel, Brawdy, Pembroke-shire, and some external alterations. Mr. D. Edward Thomas, architect, Haverfordwest.

WALES.—Oct. 30.—For the conversion of two dwelling- houses in Hanbury Road, Bargoed, into a bank and business premises respectively. Mr. P. Vivian Jones, architect, Hengoed, Wales.

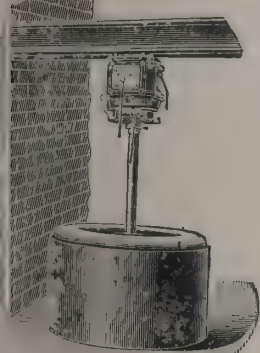
WALES.—Oct. 30.—For the erection of a chimney-shaft in connection with the proposed destructor and electricity works, Holyhead. Mr. Price F. White, Electricity Works, Bangor, North Wales.

WESTMINSTER.—Oct. 28.—For the reconstruction of slipper baths at the Marshall Street establishment, including the pro- vision and fixing of new baths, valves and supply pipes, also new floor and sanitary work. Particulars may be obtained at the Works Department, Westminster City Hall, Charing Cross Road, W.C.

WILLESDEN.—Nov. 4.—For the erection of a ward block at the workhouse infirmary, Acton Lane. Mr. Alfred Saxon Snell, architect, 22 Southampton Buildings, Chancery Lane, W.C.

THE question of the erection of a new orphanage, which has been before the Primitive Methodist Connexion for some years, is approaching a practical settlement. The special com- mittee entrusted by the Conference with the matter has had under consideration forty-one sites recommended by the respective district authorities, and has decided in favour of one at Harrogate containing nearly 11 acres and in every respect meeting the requirements of the Conference. The general committee at its last meeting approved of the site recommended, and authorised its purchase for 5,500/.

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T. W. White, plumber	23	12	3
T. H. Darling, plasterer	20	18	0
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For the complete overhead equipment of about five miles of tramways.

G. Law (<i>amended</i>)	£6,333	16	0
G. Trentham (<i>amended</i>)	5,819	4	6
F. W. Smith & Co., Ltd.	5,321	5	7
R. W. Blackwell & Co., Ltd.	5,225	0	0
Dick, Kerr & Co., Ltd.	5,155	14	6
BRUSH ELECTRICAL ENGINEERING CO., LTD. (<i>accepted</i>)	4,742	10	7

BECKENHAM.

For street works in Oakhill Road and Kelsey Park Road.
Mr. JOHN A. ANGELL, surveyor.

Fry Bros.	£1,479	5	0
Woodhams & Sons	1,301	0	0
C. Pearce	1,293	19	0
MOWLEM & Co., Westminster (<i>accepted</i>)	1,242	17	0

BERWICK-ON-TWEED.

For street works on Berwick bridge.

G. BROUGH, Berwick-upon-Tweed (<i>accepted</i>)	£142	5	0
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BRIDGWATER.

For sewerage works, with manholes and outfall works. Mr. W. A. COLLINS, engineer, 120 West Street, Bridgwater

Lloyd & Son	£385	0	0
E. C. Carden	328	11	9
T. Stockham	318	10	0
G. LAW, Kidderminster (<i>accepted</i>)	290	0	0

BRIDGWATER—continued.

For sewerage works, with septic tank, manholes, &c.

W. A. COLLINS, engineer, 120 West Street, Bridgwater	
G. Law	£188
Lloyd & Son	164
C. E. Conder	160
H. Tottle	115
F. Davies	103
C. Squire	106
E. A. Baker	97
J. TUCKER, Middlezoy (<i>accepted</i>)	89

BOOTLE.

For extension of present boiler-house at the electrical station, Pine Grove. Mr. B. J. WOLFENDEN, b
engineer.

Contract No. 1.

P. McKinley	£1,306
S. Webster	1,301
J. Townson & Co.	1,279
G. Woods & Son	1,211
W. Musker	1,171
Wellman Bros.	1,161
P. Tyson	1,147
Hughes & Stirling	1,140
J. & G. Chappell	1,081
J. RIDDOCK (<i>accepted</i>)	1,031

Contract No. 2.

Holme & Green	1,401
J. Paterson & Son	1,360
S. Fowler	1,350
G. Woods & Son	1,359
J. & G. Chappell	1,231
J. RIDDOCK (<i>accepted</i>)	1,231
S. Webster	1,301
W. Musker	1,221
Hughes & Stirling	1,221

DERBY.

For electric wiring the Reginald Street baths.

NEWTON BROS. (<i>accepted</i>)	£391
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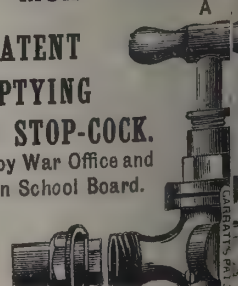
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12-inch, 10-inch and 9-inch sewers, with manholes, Crown Hill and Honicknowle, in the parish of St. ux Mr. F. A. CLARK, surveyor, 83 Old Town Plymouth.			
ury	£6,469	0	0
ts	5,546	0	0
Ball & Co.	5,350	0	0
ock	5,339	0	0
inns	5,297	0	0
Neal	5,240	0	0
brose	5,200	0	0
ros.	5,075	0	0
ock	5,073	0	0
es	4,977	0	0
n	4,849	12	4
ith & Son	4,848	0	0
eman	4,829	15	0
ne	4,721	18	7
addock	4,649	19	9
venson	4,647	8	0
	4,620	0	0
	4,412	0	0
PEARCE, Plymouth (accepted)	4,092	18	3

DODWORTH.

works in New Street, Dodworth, near Barnsley, Mr. P. A. HINCHLIFFE, surveyor, 14 Regent Barnsley.			
ton	£195	0	0
es	193	0	0
lor	192	0	0
ire	190	0	0
mpson	184	0	0
rn	182	0	0
a & Sons	180	0	0
ows	179	0	0
FIELD, 122 Summer Lane, Barnsley	170	0	0
	169	14	2
	166	8	4
	156	0	0

DURHAM.

For sewerage works, with small catch-bits, filter-beds, &c., at High Pittington, Durham. Mr. GEO. GREGSON, surveyor.			
J. T. Short	£194	0	0
J. Thompson	168	14	3
J. Carrick	144	16	11
J. G. Bradley	139	0	0
T. H. Skelton	107	16	7
R. OLIVER, Durham (accepted)	102	17	5

GRAVESEND.

For supply of a generating set.			
BRITISH WESTINGHOUSE Co. (accepted)	£994	0	0

GRIMSBY.

For the electric lighting of the new buildings forming the extension of the police department.			
A. C. DICKINS, Grimsby (accepted)	£41	4	0

HARROGATE.

For main drainage works in the borough of Harrogate and in the parishes of Starbeck, Pannal, Plompton and Spofforth, with manholes, lampeyes, penstocks, flushing chambers, storm overflows, river crossings, &c.:—Main outfall sewer (Section No. 1)—about 2,833 yards of 33-inch brick barrel sewer, about 874 yards of 24-inch cast-iron siphon pipes, and about 667 yards of 21-inch cast-iron siphon pipes; south outfall sewer (Section No. 2)—about 2,764 yards of 15-inch, 18-inch, 21-inch and 24-inch stoneware pipe sewers, and about 186 yards of 18-inch, 24-inch and 30-inch cast-iron pipe sewers; south intercepting sewer (Section No. 3)—about 1,528 yards of 12-inch, 15-inch, 18-inch and 21-inch stoneware pipe sewers, about 1,220 yards of 30-inch brick and concrete sewer and about 85 yards of 15-inch and 30-inch cast-iron pipe sewers; east outfall sewer (Section No. 4)—about 1,943 yards of 18-inch and 21-inch stoneware pipe sewers and about 54 yards of 24-inch cast-iron pipe sewer. Mr. EDW. WILSON DIXON, engineer, 5 Prospect Crescent, Harrogate.

Accepted tenders.

R. Annakin, Harrogate, Section 1, £14,870; Section 2, £3,621; Section 3, £7,608; Section 4, £3,113.

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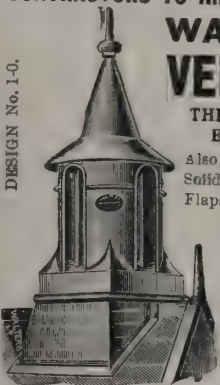
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For street works in Seward Road. Mr. SIDNEY W. BARNES, surveyor.	
R. W. Swaker	£1,335 0 0
R. Ballard, Ltd.	1,256 12 0
T. Watson, jun.	1,241 2 7
B. Nowell & Co.	1,195 12 0
J. Mowlem & Co., Ltd.	1,155 15 8
H. Morecroft	1,150 0 0
W. Neave & Son	1,081 0 0
J. MACKLIN, 147 Boston Road, Hanwell (accepted)	1,059 3 8

HASTINGS.

For joinerywork at the engine-house, Brede, near Hastings. Mr. P. H. PALMER, borough engineer, Town Hall, Hastings.	
TAPNER, SIMMONDS & CO, Waterworks Road (accepted)	£161 0 0
For sewerage works in London Road, St. Helens, Hastings, and work in connection therewith. Mr. P. H. PALMER, borough engineer, Town Hall, Hastings.	
J. HARVEY, St. Leonards (accepted)	£535 0 0

HESWALL.

For street works in Rocky Lane, Heswall, Cheshire. R. HUGHES, Brimstage, near Birkenhead (accepted)	£475 0 0
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HOUNSLOW.

For the supply of a motor draught steam fire-engine, capable of pumping 300 gallons of water per minute, with accessories. MERRYWEATHER & SONS, LTD., Greenwich, S.E. (accepted)	£795 0 0
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HORSHAM.

For the supply of condensing plant, &c.

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Wheeler Condensing Co., for the erection of a condensing plant and cooling tower at the electricity works, £1,095.
Johnson & Phillips, for cables for the extensions to the electric mains and laying feeders and certain distributors (approximately), £2,800.

IRELAND.

For supplying and fitting-up cooking apparatus and appliances in the Larne workhouse.	
T. Bradford & Co	£48
W. Summerscales & Sons	48
J. Kilpatrick & Sons	48
Riddels, Ltd.	48
Maguire & Gatchell	48
R. Patterson & Co.	48
J. Armstrong & Co	48
Ravenhill Ironworks	48
D. & J. Tullis	48
Killick & Cochran	48
C. Rankin	48
Barford & Perkins	48
CHERRY TREE MACHINE CO., Cherry Tree, near Blackburn (accepted)	48

LEVENSHULME.

For the erection of the proposed Carnegie free library, Cromwell Grove and Barlow Road. Mr. JAMIE J. surveyor, Guardian Chambers, Tiviot Dale, St. Peter's.	
W. Pownall	£233
A. Boon	250
J. Briggs	250
M. Lane	250
T. & W. Meadows	250
D. Eadie	250
S. Warburton	250
BURGESS & GALT, Ardwick, Manchester (accepted)	180

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For the wiring of the new hall of the Royal Horticultural Society in Vincent Square, S.W.	
Marryat & Place	£13
Pearson & Co.	17
D. Watson & Co.	10
Buchanan & Curwen	18
Strode & Co.	16
Drake & Gorham	15
R. Dawson & Co.	31
G. E. Taylor & Co.	31
NATIONAL ELECTRIC CONSTRUCTION COMPANY (accepted)	17

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W. J. Coleman	82	10	0
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E. Miles	67	0	0
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I. Brown	62	10	0
Leonard & Mason	62	8	6
H. Kent	59	10	0
H. C. Payne	59	4	6
W. Young	59	0	0
H. Bragg & Sons	59	0	0
I. Shelley	53	5	0
W. A. King	47	14	0
R. Davis	47	10	6
W. Hooper	41	10	0
Horsley & Cameron	36	0	0
A. J. HUTSON, 54 Holland Road, Brixton (accepted)	34	0	0
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N. Lidstone	£2,692	0	0
W. Martin	2,429	0	0
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J. Willmott & Sons	2,287	0	0
Patman & Fotheringham, Ltd.	2,233	0	0
Pollard & Brand	2,227	0	0
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J. Ferguson & Co.	2,139	0	0
VOLLER & GOODFELLOW (accepted)	1,960	0	0

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For the erection of shed buildings at Union Mills, Pudsey, Yorks. Mr. C. S. NELSON, architect, Sun Buildings, 15 Park Row, Leeds.
APPLEYARD BROS, Bramley (accepted) . . . £1,890 0 0

ROTHERHAM.

For sewerage works, with manholes, &c, at Whiston Road, Canklow, near Rotherham. Mr. B. HEY, surveyor, 29B High Street, Rotherham.
C. GREEN & Co., Wellgate, Rotherham (accepted) . . . 186 0 0

SCOTLAND.

For the erection of a block of shops and houses in Portsoy. Mr. R. B. PRATT, architect, Town and County Bank Buildings, Elgin.

Accepted tenders.

Gray, mason.
Geddes & Son, Port Essie, carpenter.
Watson, Banff, plumber.
Strathdee, slater.
J. Rae, plasterer.
Fairweather, painter.
Total, £930.

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Cunningham & Craddock . . . 564 4 6
E. J. Lomas . . . 341 7 0
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H. Watkinson	3,048	10	0
H. White	3,037	0	0
Roper & Sons	2,900	0	0
J. S. Teanby	2,850	0	0
M. A. Earl	2,600	0	0
R. Charlsworth	2,363	0	0
W. Ainsley	2,353	0	0
G. Vaughan	2,350	0	0
M. HANCOCK, 71 Roebuck Road (accepted)	2,335	0	0

SOUTHAMPTON.

For additions to Chilworth Manor. Messrs. COLSON, FARROW & NISBETT, architects, Winchester.

Luscomb	£25,326	0	0
Grace	23,996	14	0
Thompson	21,890	0	0
Roberts	20,981	0	0
Dyer, Alton	20,968	0	0
Rashley	20,474	0	0
Goddard	20,250	0	0
Dyer, Southampton	19,270	0	0
Jenkins	18,987	0	0
Franklin*	18,290	0	0

* Accepted subject to certain omissions.

TAUNTON.

For laying about 3,400 yards of 3-inch and 640 yards of 2-inch cast-iron water-mains, with other works. Mr. THOMAS GOLDSWORTHY-CRUMP, surveyor.

A. Harvey	£1,078	10	0
H. Shardlow	900	0	0
T. Culverwell	809	10	0
F. Small	775	0	0
C. E. Carden	758	0	0
T. Y. COLES, Taunton (accepted)	751	9	8

WATFORD.

For alterations and additions to the receiving wards at the workhouse. Mr. C. P. AYRES, architect, Burvale, Watford.

J. Mead	£689	0	0
R. L. Tonge	687	0	0
Tyler & White	629	0	0
G & J. Waterman	607	0	0
C. Brightman	597	0	0
H. Brown	590	0	0
H. B. Watkins	579	0	0
Clark Bros.	579	0	0
Clifford & Gough	569	0	0
W. KING, Watford (accepted)	550	0	0

For the erection of additional ward and isolation blocks, &c., at the isolation hospital. Mr. C. P. AYRES, architect, Watford.

W. Parmenter	£9,150	0	0
Kellett & Sons, Ltd.	8,865	0	0
W. J. Bloxham	8,627	0	0
Appleby & Sons	8,565	0	0
R. L. Tonge	8,327	0	0
J. Ferguson	8,162	0	0
Clifford & Gough	7,999	0	0
H. B. Watkins	7,968	0	0
Johnson & Son	7,899	0	0
H. Martin	7,887	0	0
G. & J. Waterman	7,849	0	0
G. Wigg	7,800	0	0
H. Brown	7,793	0	0
Kerridge & Shaw	7,777	0	0
J. Darvill	7,695	0	0
Webster & Cannon	7,689	0	0
C. Brightman	7,440	0	0
CLARKE BROS., Watford (accepted)	7,310	0	0

WALES.

For the erection of a mission church at Pwll, parish of Pembrey, Llanelly.

Accepted tenders.

T. Evans & Sons, Pwll, Llanelly, masonry, &c.	£338	0	0
Brown, Thomas & John, Llanelly, woodwork and joinery	198	0	0

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WAREHOUSES, &c.

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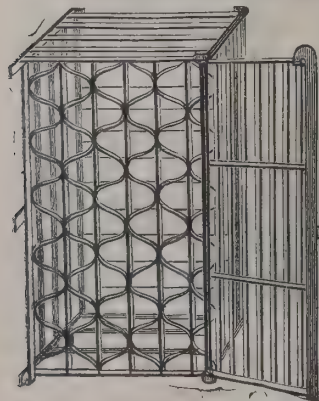
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Telegrams, "Haywood, Moira."

National Telephone, No. 17 Swadincote.

WALES—continued.

improvement works in Wilson Street, Newport, Mon.			
Mr R. H. HAYNES, borough engineer.			
MACNAB, Newport, Mon (accepted)	£64	3	4
additions to Nantyglo schools, Aberystroth.	Mr. R. L.		
ROBERTS, architect, Abercarn.			
Newcombe	£1,095	0	0
ith Bros.	1,060	0	0
Jenkins	1,031	0	0
Jenkins	990	0	0
F. MORGAN & SON, Nantyglo (accepted)	863	12	0

Received too late for Classification.

IRELAND.

he erection of a 100,000-gallon reservoir in concrete, with corrugated iron roof, and laying pipes in connection therewith at the district lunatic asylum, Maryborough.			
CARROLL, Maryborough (accepted)	£350	0	0

NORTH DEVON.

erection of municipal buildings and free library for the Corporation, Bideford. Mr. ALFRED J. DUNN, architect, 6 Colmore Row, Birmingham, and 31 St. Michael's Square, Gloucester.			
se & Sons	£9,195	0	0
olaway & Sons	9,150	0	0
ong & Sons	7,999	0	0
yward & Wooster	7,857	0	0
ith & Pitt	7,560	0	0
lins & Godfrey	7,196	0	0
stcott, Austin & Co.	6,700	0	0
s & Son	6,320	0	0
GLOVER, Bideford *	6,215	10	0

* Provisionally accepted.

NEW church which has been erected in Glasgow Street, ssan, for the E. U. congregation was opened on the inst. The building is capable of seating 500, and it is used to erect at a later date, if found necessary, a gallery seating accommodation for 170. The total cost of the ng exceeds 3,00 £.

TRADE NOTES.

THE Welsh Congregational church and school, Clifton Road, Birkenhead, has recently been fitted with the latest improved "small tube" hot-water heating apparatus, by Messrs. John King, Ltd., engineers, Liverpool, employing their well-known economical coil heater.

MESSRS. WM. POTTS & SONS, clock manufacturers, Leeds and Newcastle-on-Tyne, have received instructions to make and fix a clock with four dials and bell, with all Lord Grimthorpe's improvements inserted, at the new Kirkgate Market, Leeds, and have fixed one at the parish church, Kirkby-in-Furness, N. Lancs

MESSRS. DINNING & COOKE, the well-known Northern firm of heating and sanitary engineers, have been consulted in reference to a drainage scheme for a mansion at Bordighera for his Grace the Duke of Leeds, and the work is now in progress under the supervision of Mr. R. P. Cooke.

MESSRS MUSGRAVE & CO., LTD, Belfast, have appointed Mr. F. S. Lister, their London engineer and manager for engineering work in connection with their well-known fan systems of heating and ventilation, drying and mechanical draught furnaces and incidental power plant. The offices are at 53 Victoria Street, S.W.

THE B & S Folding Gate Co., sole manufacturers of the B. & S. patent folding gates, 19, 20 and 21 Tower Street, Upper St Martin's Lane, announce that owing to the continued growth of their business, they have arranged for their interest in electric and hydraulic passenger and goods lifts to be taken over by Messrs. Wm. Aug's Gibson, Ltd, of Temple Bar House, 28 Fleet Street, E.C. They have also arranged for their interest in the Quimby screw pumps to be taken over by the Quimby Screw Pump Co., Ltd., of Temple Bar House, 28 Fleet Street, E.C. They will in future devote their attention to their regular well-known lines:—B. & S. patent folding gates, Kinnear patent steel rolling shutters, patent interlocking rubber tiling, grilles, lift enclosures, Cabot's insulating and deafening quilt, &c.

THE newly-erected church of St. Silas, at Nunhead, was consecrated on Saturday. It is constructed of stone in the Perpendicular style and has a pitch-pine roof. It has seating accommodation for 750 and has cost 8,000£.

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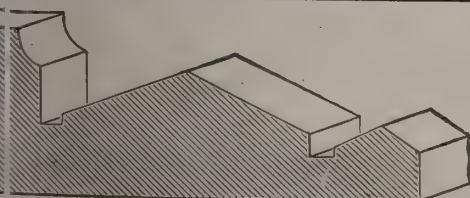
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HARRIS STREET.
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ELECTRIC NOTES.

THE works of the Great Northern and City Railway, which are now approaching completion, will include a moving staircase at the City terminus of the line. It is calculated that such a staircase will be able to do the work of several lifts, thus economising working expenses; while from the passengers' point of view, it must be more convenient to be able to step on to a staircase immediately on reaching the station, than to have to wait possibly several minutes for the starting of the lift.

As the adoption of the conduit system in the electrification of North London tramways will involve the reconstruction of numerous bridges the London County Council have asked the Islington Borough Council, amongst other road authorities concerned, to permit of the introduction of the overhead trolley method. The Islington Council had previously declared in favour of the former system, and now, before replying to the request of the County Council, it is recommended that a conference of representatives of the several metropolitan boroughs affected should be held to consider the question "with a view to united action being taken in the matter."

COLONEL A. J. HEPPER, a Local Government Board inspector, recently held an inquiry in the Council chamber at the town hall, West Bromwich, relative to an application made by the Town Council for sanction to borrow a sum of 12,217*l.*, to cover the cost of extensions in connection with the Corporation electricity undertaking. The town clerk (Mr. A. Caddick) explained that the application was made for the purpose of extending the electrical works, and the cost of the scheme would be 9,331*l.* 9*s.* 4*d.* The outstanding debt at the present time was 223,895*l.* There was no opposition.

At the monthly meeting of the Urmston District Council on the 14th inst. the clerk reported that he had communicated with the town clerk of Manchester as to the time when the Corporation would proceed with the construction of the South Manchester tramway scheme. A portion of the lines will run through Urmston and Davyhulme to Barton Bridge, where it is proposed to connect with the lines of the Eccles Corporation. The town clerk stated that the matter would be discussed shortly by the Manchester Corporation tramways committee, and that he would report to the Urmston Council as soon as possible.

A SPECIAL meeting of Stourbridge Council was held on the 14th inst., Mr. Nash presiding, to receive the com-

mittee's report regarding the electric works, together plans and estimates. The committee submitted alternative schemes by Mr. J. B. Clarke, electrical engineer, and they were unanimously of opinion that the larger scheme was preferable, and they accordingly recommended its acceptance by the Council. The proposed lighting area has been extended to include Church Street, Red Hill, Glasshouse Hill, Hagley Road. Mr. W. B. Collis, in presenting the report, said the Council had decided to work the electric-lighting order themselves, and although there might be for two or three years a small loss, yet there was reason to believe that the works would in a few years become a profit. Of course we understood the works would be in combination with the gas destructor, and they should use the heat it gave them, but as a supplementary boiler on which to fall back. If they were prepared to give effect to the scheme recommended by the committee, he should propose that they ask the Local Government Board to sanction a loan of 16,000*l.* for the works, and also he should ask them to appoint Mr. Clarke as engineer. He moved the reception of the report, which was seconded by Mr. Waugh and carried. The estimates submitted by Mr. Clarke showed a possible deficit on the first year's working of the smaller scheme of 379*l.*, and on the larger one of 633*l.*

BUILDING AND BUILDERS.

THE memorial-stone in connection with St. Luke's Sunday schools at Barrow was laid on Saturday. The school consist of numerous classrooms, with a large central hall to accommodate 1,000 children. The cost will be 2,500*l.*

THE foundation-stone of St. John's Church, Palmer's Green, Southgate, was laid on Saturday by Mr. V. E. Walker, who has given the site. At present only one portion of the church is being erected, at a cost of 8,500*l.*, to accommodate 400 people. The second portion will cost 5,000*l.*, and further accommodation will be provided for 350.

SIXTY-TWO competitive designs have been received for a new free library to be erected at Heywood, Lancs., at a cost of 5,000*l.* The prizes offered were 30*l.*, 20*l.*, and 10*l.*, and the following awards have been announced:—First, Messrs. P. & Robin, London; second, Mr. David Bird, Manchester; third, Mr. R. J. Macbeath, Sale. The first-named will have the carrying out of the work.

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ELEVATION TO DRIVE. THE TERRACE TO
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FOR A SMALL HOUSE IN SOMERSETSHIRE.

have been approved for the Twickenham Green
ch and schools. The block comprises church
(adults), two vestries, cloak-room, church parlour,
room, infants' room, seniors' classrooms, kitchen
conveniences. The buildings are designed in a
of Perpendicular Gothic freely treated. A bold
forms a prominent feature at one corner. The
st is about 5,500 c^{t} . The architects are Messrs.
aines, 5 Clement's Inn, Strand, W C.

olition of the houses at the junction of Church
lagley Street, Stourbridge, has just been carried
ry to the erection of the Carnegie Library and
hools on the site. One effect of this has been to
umber of cottage dwellings in the town, and there
ly be more heard of the housing scheme. The
e working classes committee will present a report
t at the next meeting of the District Council, and
the Council to authorise the purchase of a plot
o yards in extent between Wheeler Street and
en Road for erecting houses thereon.

oundation-stone has been laid of the new St John's
chools and school chapel, being erected for the
olics of the New Ferry district. The new premises
nstructed on land in Bebington Road, and are
accommodate on the ground floor about 250
on the upper storey, which is to be equipped as
ut 300 worshippers. The school chapel stands
m the road, the space in front being reserved for
ection of a church. The site cost 90 c^{t} , and the

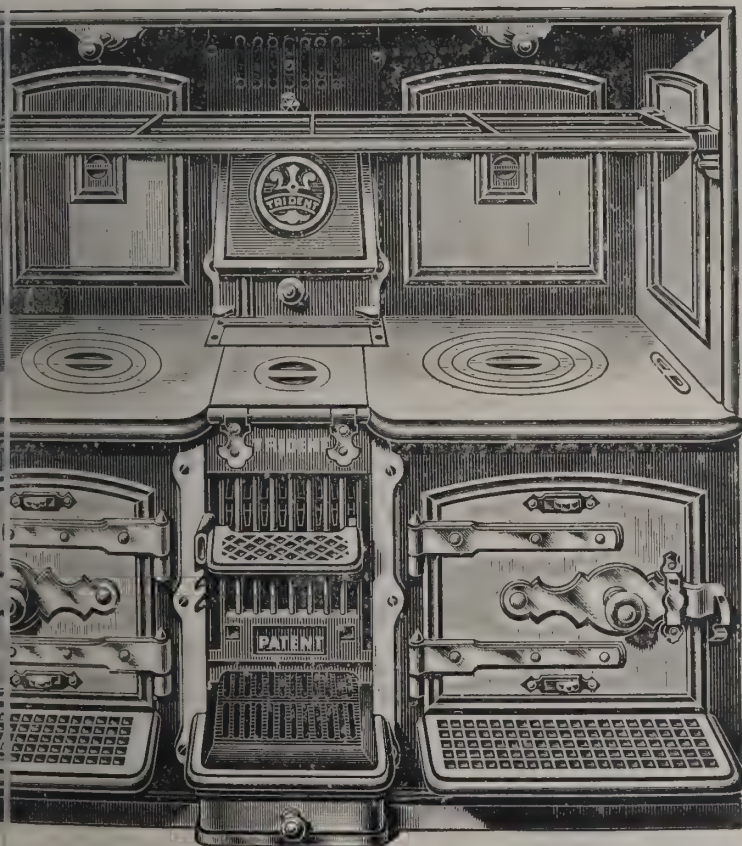
present buildings, which are of Ruabon brick, will cost 4,500 c^{t} .
The architect is Mr. John Barnes, of Bebington, and the
builder Mr. Peter Rothwell, Birkenhead.

THE foundation-stone of Liberton parish church, Craig-
millar, near Edinburgh, was laid on Saturday. Situated a
little distance south-west from Duddingston and Craigmillar
(suburban) railway station, the building, which will be used for
both church and social purposes, has been rendered necessary
by the growth of population in this part of the parish in recent
years. The double purpose which the building is to serve,
coupled with the difficulty of raising the requisite funds, has
necessitated a free and simple treatment of a slightly ecclesi-
astical character. It will accommodate about 300 people. It
is cruciform in plan, with large vestry or committee-room,
lavatory and heating chamber behind. The total cost will be
about 1,600 c^{t} . The work is being carried through under the
superintendence of and from plans prepared by Mr. James
Morrison, architect, 4 York Buildings.

THE Leigh (Lancs) Town Council have reported that the
general purposes committee had had before them the sketch
plans prepared by Mr. J. C. Prestwich for the erection of
municipal offices, in combination with shops, on the vacant
land in Market Street. The estimated cost was 10,000 c^{t} for
1,898 square yards of land, 19,000 c^{t} for municipal offices; 4,410 c^{t}
for shops, 2,000 c^{t} for furniture and 2,000 c^{t} for decoration and
contingencies; total, 37,410 c^{t} . Deducting 3,478 c^{t} for the value
of the present town hall, the net cost would be 33,932 c^{t} . In
regard to the estimated charge on the rates, the annual repay-
ment of combined instalments of principal and interest over a
period of sixty years in respect of 33,930 c^{t} at 3 $\frac{1}{2}$ per cent. would
be 1,360 c^{t} . The total annual charge on the rates would be
535 c^{t} , less than a penny in the pound. The committee's recom-
mendation that the sketch plan and estimate be adopted was
passed without any opposition whatever and without comment,
and the result was greeted with acclamation. It was unani-
mously resolved that the Town Clerk be instructed to make
application to the Local Government Board for their approval
to the proposal.

THE restoration of St. Cuthbert's Church tower at Kirkby
in-Furness has now been completed. The church is almost as
ancient as Furness Abbey, and the tower was crumbling to
decay. The restoration cost 400 c^{t} .

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VARIETIES.

A NEW church and schools, which have been built in Ashley Lane, Moston, in connection with the Manchester Victoria Circuit, have been opened. They take the place of older buildings in the neighbourhood which had become inadequate for the wants of the large population which has sprung up in the Moston Lane district. The whole scheme has been carried out at a cost of 7,600*l*., including the capitalised value of the site.

WE greatly regret to announce the death of Mr. James F. Cartland, head of the well-known Birmingham brassworkers' firm of Messrs. James Cartland & Son, of Birmingham, who was found dead in a field near his residence at Edgbaston on Sunday. He had been shot with a revolver. Mr. Cartland had been in indifferent health for some time and had been under treatment by a doctor for severe pains in the head. The deceased gentleman was a prominent figure in public and commercial life in Birmingham, and was a magistrate for the city.

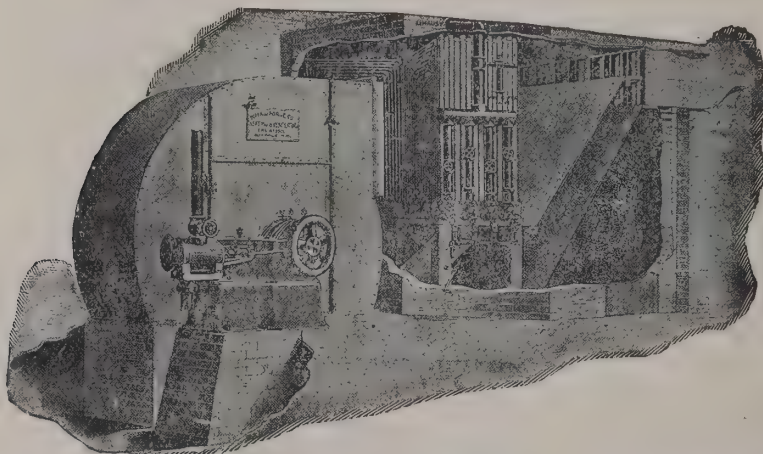
THE note of selfish luxury, which is the characteristic of Nevill Letchmere, the hero of Mr. Pinero's new play, "Letty," now running at the Duke of York's Theatre, is struck with a firm hand in the setting of the scene of his flat in Bond Street. Self-indulgence and a love of material pleasure seem to be suggested by the beautiful old French furniture, with its soft-coloured tapestries and its dainty Watteau panelled cabinets, and there is luxury in the rich red damask couches and draperies, and a love of art in the fine bronzes and bits of old china. The room is a clever example of stage furnishing, as understood by experts such as Messrs. Oetzmann & Co., of Hampstead Road, W., to whom the furnishing was entrusted.

THE Royal Waterloo Hospital for Children and Women, Waterloo Bridge Road, S.E., founded in the reign of George III., is now being rebuilt, reorganised and enlarged at a cost of over 50,000*l*.. To enable the out-patient department (more than 150 cases daily) to be carried on, the new buildings are now being erected in three sections, the walls of the first portion of which have now reached their highest point. Towering over the surrounding buildings, they can be easily seen from the north side of the river. It is hoped that early next year this portion may be thrown open. H.R.H. the Duchess of Albany is laying the memorial-stone at 3 P.M. on the 26th inst., and will be received by the Lord Mayor (president of the hospital) and Sheriffs in state.

THE General Hospital for Pontypool and has been erected on an elevated site on the Pontnewynydd, at a cost of 6,384*l*., was formally opened on Monday. The plans were prepared by Mr. Robert Bailey, architect, London, and the contract was entrusted to Bailey Bros., Pontnewynydd. It is estimated that furnishing the hospital will amount to 1,200*l*., with the provision of an ambulance, &c., will bring the total to 8,500*l*.. The hospital is built of dark red Abergavenny stone relieved with dressings of Monks Park stone of a light tint. The buildings consist of basement and ground floors. The usual administration rooms, kitchen, mortuary, fumigation chamber, &c. The accommodation is for nineteen beds, including two for hernia, one for eight for males and eight for females.

ST. SERP'S Established Church, Goldenacre Road, was opened on the 17th inst. The building is in the 13th century Gothic style principally and consists of a nave, side aisles, divided by red polished stone pillars, a transept, also a temporary chancel, which is a portion of the chancel arch, the remainder being of modern construction. The roof of the nave is circular timbered, resting on arches, the principal timbers being supported by corbelled trusses. The entrance hall, over which is a loft gallery facing the chancel, is divided by a glazed wooden screen from the church. The exterior of the church, which is in red and white stone, is heavily carved and pierced by many richly foliated triflight windows. Electric lighting is skilfully carried out on modern lines. Opal open cups spring from black suspended girandoles, which enhance the severe style of the building. The chair-sitting accommodation is for over 600. The complete building will seat about 1,000.

A NEW hall erected for the Wesleyan Missionary Society, 26,000*l*., was opened at Deptford on Friday last. The model of the well-known Bermondsey Hall, which accommodates 2,000 hearers. A wide and lofty vestibule leads to the vestibule, thence to the large hall, which on the right of the porch lead into the lecture hall, which holds 500 or 600 adults. Doors on the left of the porch lead to a suite of classrooms, the staircase to the gallery, which hall and to further classrooms. Inside the great hall of octagonal shape, the rostrum and pulpit form a conspicuous object. The preacher is placed almost directly in front with a bank of seats at the back for choir and orchestra.



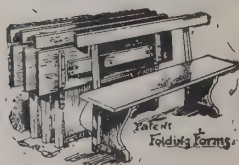
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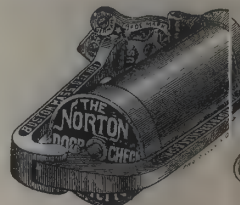
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the far end. The hall is seated with leather ranged that every hearer looks right at the preacher looks into every face except those orchestra. Anyone standing on the platform the chairs that they are almost within whisper- adjacent to the main hall are an infant class- gallery, seventeen smaller rooms which will and girls' clubs, social gatherings and meet- en and their wives.

NEW CATALOGUE.

ES & CO., LTD., of Sheffield and West- ing out a new illustrated price list of their roof glazing which has been in extensive use of every description, including railway sheds, winter gardens, public baths, electric- works and mills, conservatories, arcades, &c. ur readers that this was the system employed t time since the immense roof of the Crystal ram.

CONCRETE UNDER WATER.

ed concrete for the Nussdorf lock at Vienna the *Zeitschrift* of the Austrian Society of ly. The excavation was made to a depth of water level and a very large mass of concrete ver the surface through movable vertical k has a total width of 92 feet over all and side. The excavation was made full width ng, and the bottom was filled in with rammed so as to form a kind of invert, with its horizontal in the middle and sloping upwards a les. On this foundation was built a mass ng a total thickness of 13.12 feet in the he upper surface was 13.12 feet below he sides of the lock the concrete walls were height of 3.28 feet above water level, with a feet. Three longitudinal rows of piles were de of the axis of the lock and supported a out 7 feet above water level. On this track ages which spanned the full width of the lock ch carriage had three trolleys, one in each of

the main panels of the transverse bents of piles. Each trolley carried a vertical telescopic tube through which concrete was deposited on the bottom of the lock. The tops of these tubes were level with a transverse track which ran from end to end of the carriage. The ends of these tracks just cleared the outside rows of piles which, on one side of the lock, supported a distribution track parallel with the axis of the lock. The concrete was delivered by dump cars running on the distribution track, which delivered it to smaller dump cars on the carriage tracks. These cars in turn discharged their contents into either of the three chutes on each carriage. The carriages were traversed from end to end of the lock, and as each chute moved nearly one-third the length of the carriage, the whole area of the lock was commanded by the nine chutes. The concrete was deposited in three horizontal layers 3.28 feet thick, but these layers were not laid continuously, being built in comparatively narrow banks or ridges, so that the different strata would key together and form a corrugated mass that was thought to be more satisfactory than one with continuous horizontal joints. As the concrete was deposited the chutes were shortened, and the three layers were successively placed. After the main body of the bottom and the side walls had been built by this method, the water was pumped out and a 2.3-foot layer of concrete was rammed over the bottom and completed with a finishing surface 0.9 foot thick. The chutes were of different lengths in the three carriages, the first ones depositing the concrete up to a level of 23 feet below the surface, the next set depositing the concrete between that level and 19.7 feet, and the last completing the sub-aqueous work up to the final height of 16.4 feet below the surface.

AMERICAN BUILDERS AND WORKMEN.

THE situation in building matters in New York does not improve, as we glean from the *American Architect*. The stone-setters' union has now broken with the employers' association, and refuses to set the stonework in buildings; and as the bricklayers cannot set the brickwork unless the stone-work is set in connection with it, and delay in the brickwork delays all the other branches of construction, the stone-setters have the whole building interest at their mercy. It is hardly necessary to point out that one of the principal objects of labour organisation, as now carried on, and the specialisation of trades, is to accomplish this very result, of controlling a vast interest by means of a small branch of it. Years ago a few

ROUGH ENGINEERS, SURVEYORS, ARCHITECTS, &c.

Ball's Patent Water Closet.

THE MEDAL OF THE SANITARY INSTITUTE, 1902.

T IMPROVEMENT IN FLUSH-DOWN W.C.'s.

ADVANTAGES.

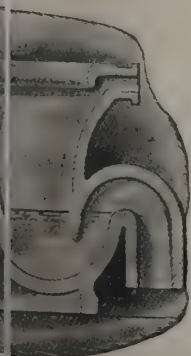
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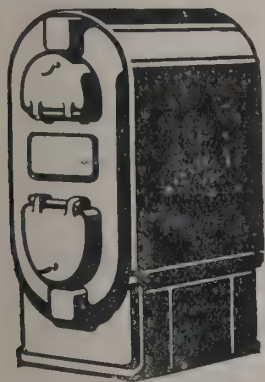
Excelsior and Rawdon Potteries,

ular columniated crush-room, with retiring-rooms and
e, from which staircases lead right and left up to the
at the rear of the grand circle. This again goes—one
d one left—for the full width of the tier, with three
es thereto and down both sides of it, with additional
es at the bottom, and midway between them on either
extra exit-on to the street, which obviates the necessity
ng through the crush-room in the event of a panic.
angement obtains practically in all parts of the house.
he crush-room is the stalls saloon, and above it are the
to the grand circle, balcony and gallery, all following the
the crush-room and circular or oval in plan. A special
has been made of private retiring-rooms or lounges to the
boxes of the stalls and grand circle tiers. Those to the
the "O.P." side are intended for the use of Royalty,
separate entrance from Aldwych, and with private and
accommodation. The Royal rooms are in the Adam
with modelled frieze, ceilings and panelled walls. The
re covered with carpets of superior texture, on which
ed inlaid satinwood furniture in keeping with the
s" decoration, while the drapings and furniture cover-
e of heliotrope silk, which Messrs. Shoolbred have had
y woven for the purpose. The range of boxes and the
g retiring-rooms can be respectively thrown into one
required. In designing the line of the tiers, care has
ken to insure a perfect view of the whole of the stage
very seat in the house.

The new theatre is what is known as a "three-tier house,"
of accommodating some 1,326 people, viz., 400 in the
e, 260 in the upper circle, 172 in the dress circle, 146 in
alls, 300 in the pit and 48 in the private boxes.
ditorium is 60 feet wide by 64 feet deep, and the
ium 35 feet wide by over 36 feet high. Behind the
ium is the commodious stage, 40 feet deep and of an
e width of 80 feet, with a mezzanine floor and cellar.
Right and left to the Strand and Aldwych are the
eading to the stage exit and entrance and the dressing-
some twenty-nine in number. The "gridiron," which
ore than usual working capacity, is 70 feet above the
Mr. D. Davies is responsible for an ingenious inven-
hich assures that if ever a fire should occur on the stage
delights in the lantern in the roof would open auto-
ally, and the flames be carried upwards to exhaust their
th so soon as they found nothing more to feed upon.
e whole interior of the theatre has been admirably

planned. With regard to the colour scheme, the mural
decorations consist of a material by Rottmans, having a
ground work, as seen by artificial light, of old rose, with a
raised *art nouveau* designed in gold, cerulean blue, Hooker's
green and permanent red being sparingly introduced. The
foyer is treated in hardwood, the panels being occupied by
full-length portraits of the Gaiety favourites—Miss Nelly
Farren, Miss Kate Vaughan, Miss Letty Lind, Miss Sylvia
Grey and Miss Ellaline Terriss. Special care has been
taken in the furnishing of the new building, which has
been carried out by Messrs. Shoolbred under the personal
supervision of the architects, Messrs. Rüntz & Ford.
The staircases and corridors are covered with a soft
velvety Axminster carpet in artistic shades of green. This
carpet also covers the floors of the stalls, dress and upper
circles and saloons, and forms an admirable foundation for the
general colour scheme of the auditorium. The seats are of
quite a novel kind, conveying the impression of cosy drawing-
room easy chairs, with polished mahogany frames inlaid with
satinwood, into which is worked the number of the respec-
tive seats. The covering is of English-made silk brocade,
having a white design on a ground of green in harmony
with the carpet. At the back of each chair are fitted
two shelves, the upper for fan or opera-glass, the lower
for a hat. The orchestra and boxes are hung with green
satin, on which is embroidered a handsome design in
various shades of silks and needlework, richly trimmed with
fringe and tassels, the whole forming a graceful draping. The
chairs in the boxes are likewise covered with the same material,
and are quite in keeping with those in the stalls, as is also the
furnishing of the private retiring-rooms. The act drop is an
excellent specimen of Mr Joseph Harker's art. As regards
fire-resisting and sanitary appliances, and the ventilation and
heating of the theatre, everything has been provided that
ingenuity can suggest for the safety and comfort of the patrons
of the new Gaiety.

The electrical installation, in connection with which every
precaution has been taken to minimise the risk of total extinc-
tion through the failure of supply, is of the most complete
character. There are over 1,500 incandescent lights on the
stage alone, as well as twenty-four arc lamps for limelight
purposes, and 1,800 lights in the house. The engineers, Roger
Dawson, Ltd., have laid no less than twenty-two miles of wire
and cables in the theatre, and over five miles of steel tubing.
The installation of the electric light alone has necessitated the



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employment of no fewer than thirty men during a period of eight months. A particular feature is to be seen in the Royal rooms, where the fittings designed represent the Rose, Thistle and Shamrock, carried out in oxidised silver. The contractor, who has done his share of the work admirably, was Mr. Henry Lovatt, of London and Wolverhampton.

A detailed description of the building appeared in *The Architect* on May 1.

NEW CHURCH AT SALFORD.

THE church of St. Ignatius, which will be consecrated by the Bishop of Manchester to-day (Friday) has been built by Earl Egerton of Tatton in a new district, comprising about 8,000 inhabitants, taken from the parish of St. Bartholomew's, Salford. The site is a part of the ground originally belonging to the Tatton estate, occupied for so many years by the infantry barracks, and sold by the War Office to the Salford Corporation, from whom it was purchased. It fronts Oxford Street, leading into Regent Road, and is bounded on the east and south by streets recently laid out. The new church will seat about 500 persons. The church of St. Ignatius has not been controlled—as was St. Cyprian's—by any architectural surroundings, and Earl Egerton decided to adopt the round-arched Romanesque or Byzantine style, which found such beautiful expression in North Italy and Germany. The material is brick, with terra-cotta dressings, and the nave columns are of mottled red Runcorn stone. The east end is apsidal, and the columns of the arcading are of variegated serpentine, the circular-headed panels being fitted with mosaics representing vases of lilies on a gold ground. The altar table and reredos are in oak, chestnut, walnut and yew grown on the Tatton estate, and the picture of the Last Supper has been painted by the Hon. Mrs. Mitford, with gold background and other enrichments. The altar cloth and frontal of silk, ornamented with white lilies and a gold cross, have been embroidered by the Duchess of Buckingham and Chandos. A handsome campanile stands at the west end, next Oxford Street. Opposite the west door is a recess containing a font of Caen stone with a granite shaft. Besides the church accommodation a large parish-room has been provided in the basement under the choir vestry and south transept, with separate entrance from the new street on the east side. The buildings are supplied with electric light from the Corporation cables, and the fittings are of appropriate design. The church

has been built from the designs and under the superintendence of the architects, Messrs Darbyshire & Smith. Its cost for the furniture, is about 9,500*l*.

MANCHESTER IMPROVEMENT.

THE question of the improvement of what is known as Market Street area is once more to the front. Several have been put forward, and each in its turn has been abandoned, but it would seem, says the *Manchester Guardian*, that the public will shortly be in possession of the details of an entirely new proposal which is not lacking in boldness, and which, in the judgment of those members of the Council who have given attention to it, is likely to solve the problem which has engaged so much attention in recent years. The special committee of the Corporation appointed to deal with this question, in mitigating the pressure on Manchester's great thoroughfare (Market Street) had another meeting at the Town Hall. They are not yet prepared with their report on the subject, but understand they will have it ready for presentation to the Council at the November meeting. They have got together a great deal of valuable information on the subject of value, measurements, and in a few days they hope to have the verification of all the calculations which have been made by the officials of the Corporation with regard to the project that will be affected by the plan now proposed.

The new scheme, as already hinted, is a bold departure from those which have hitherto been suggested. Instead of taking the block of property situated between Corporation Street, New Brown Street, Cannon Street and Market Street, and making a new street diagonally from the Market Street corner of New Brown Street to the Corporation Street corner of Cannon Street, as was at one time proposed, the committee have resolved on starting from Victoria Street and cutting a way through the property between that street and Market Place, thence to Corporation Street, New Brown Street, across High Street, and on to Oldham Street. This new street will, of course, relieve the pressure of traffic on Market Street, but an additional source of relief will be obtained by the widening—as the committee propose—of Cateaton Street and Cannon Street. These improvements will, in the committee's opinion, render unnecessary the very costly plan of widening Market Street. Moreover, since that Market Street possesses a double line of tramways and

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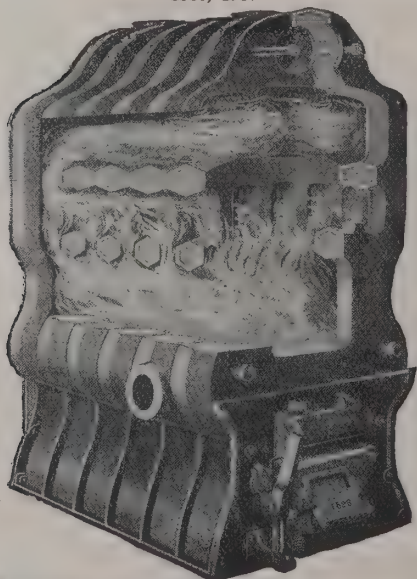
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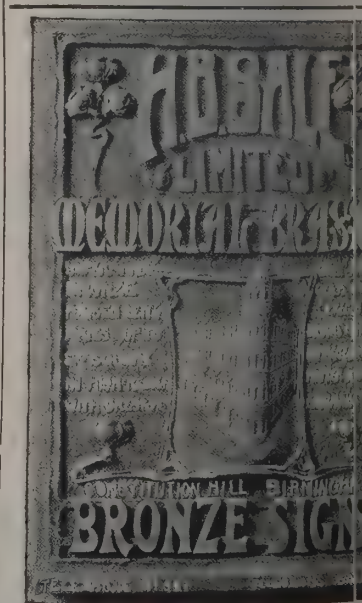
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20 yards in width, it is believed that the margin of safety would be lessened by widening the street. In this, the element of risk to people who have to cross the street is increased if the street were made wider than it is. It is also intended that Oldham Street should be widened from Piccadilly to the junction with the proposed new street. What will this new project cost? The question arises, What will this new project cost? It is, in round figures, over a million pounds. This is undoubtedly, but the committee contend that it will be a loss. There will be several compensating advantages. Much of the property which will be destroyed is of an old and antiquated character. A portion of this old property will be replaced by property of a higher value. There will be between 20,000 and 30,000 square yards of what will be regarded as very valuable land available for other purposes. This, in brief, is the scheme which the committee have in view. In a few days the full details will be published.

NEWCASTLE ARCHITECTURAL ASSOCIATION.

The church of St. Chad, Bensham, which was consecrated by the Bishop of Durham on the 29th ult., was on the 1st inst. inspected by the members of the Newcastle Architectural Association. A large number of the members of the Association were highly pleased with the extreme beauty of the church, and the excellent character of the work. The visitors were afterwards entertained to afternoon tea in the parish-room by the vicar. In proposing a vote of thanks for this hospitality, the President of the Association, Mr. Taylor, expressed in a few words their deep sense of the loss they had suffered by the untimely death of the architect of the church, Mr. Hicks, who had not only been one of their most respected members, but also a personal friend of many of them. He also said that they had heard much of the beauty of the church beforehand, but what they had just seen greatly exceeded their expectation. He also complimented Mr. Taylor of Dunston, the contractor, on the manner of the execution of the work. In replying to the vote of thanks, Mr. Taylor took the opportunity of speaking to the services rendered by their clerk of works, Mr. C. H. Hough, of Durham. The church has been built

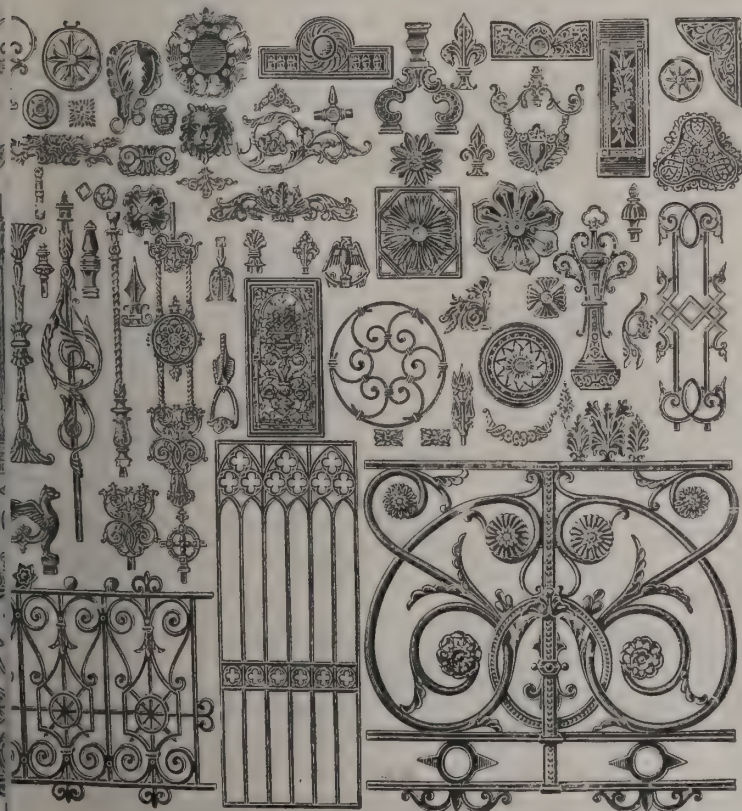
and furnished in the most complete manner, with every requisite of the very best quality, by the munificence of Miss E. Easton, and the architects were Messrs. Hicks & Charlewood, of Newcastle. The chief features externally are the lofty octagonal central tower and the north porch, which is richly moulded and carved, having three niches in the gable containing figures of St. Chad, St. Aidan and St. Theodore. These are the work of Mr. Milburn, of York; while the rest of the stone carving is by Mr. Beall, of Newcastle. The octagonal font is of Derbyshire alabaster, with beautifully carved statuettes in niches at the angles, and has a lofty oak canopy, surmounted by a dove. Behind the font is a tablet with inscription stating that it, together with the stained glass west window, is erected by Miss Easton as a memorial of the architect, Mr. W. S. Hicks, who died during the erection of the church. The twelve subjects in this window all relate to the building of either the material or the spiritual church. The east window of seven lights is also filled with stained glass. Below this window is a fine fresco painting of the Annunciation. Behind the chancel is a small morning chapel with access from a north-east porch. The rood-screen, pulpit, pelican lectern, Litany desk, bishop's chair and reredos, which are all very elaborately carved in oak, are by Mr. R. Hedley, who has also done all the other wood carving in the chancel side screens, &c. The roofs are of pitch-pine, with carved cornice and bosses, and all the seating, choir stalls and other fittings are of best wainscot oak. The chancel floor is in various coloured marble, and the floors under seats are of solid oak-blocks, with rubbed stone and small black marble squares in the aisles.

SLAG PORTLAND CEMENT.

The American Consul-General at Coburg, Germany, reports:—

Portland cement has been made from blast-furnace slag for several years in various cement works in Germany, Luxemburg and Belgium, and has yielded very satisfactory results, especially in regard to quality. Negotiations are being carried on with some blast-furnace works with a view to the introduction of the slag-cement industry into England, Austria and France. In some respects a blast works has a considerable advantage over other Portland cement factories because the motive power from the cement works can be supplied by a blast-furnace gas motor with electric transmission, the rubble or waste coke from the blast furnaces can be utilised in the

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cement kiln, and the principal raw materials—namely, the granulated slag and the limestone—are close at hand. Besides, there are other minor advantages.

Portland slag cement has also some advantages over natural Portland cement; for while the yield from the raw materials when the former is used is about 85 per cent, the yield when the ordinary raw materials are used is seldom more than 60 per cent. As the cost of production per ton of raw materials is nearly equal in both cases, a saving of about 20 per cent. in fuel, labour, &c., is effected in the case of slag cement. Besides this, Portland slag cement is more trustworthy and more regular, and its manufacture can be more easily controlled than that of the so-called natural Portland cement, because the principal raw material—namely, the blast-furnace slag—is as a rule a regular product whose chemical composition is easily controlled; consequently, any alterations which are liable to take place are known beforehand, and precautions can accordingly be taken in time. This is not the case when the natural raw materials are used.

Some recent tests with Portland cement from blast-furnace slag, made in the municipal laboratory at Vienna, showed that mortar composed of three parts of sand with one part of this cement gave the following results:—

1. *After seven days' hardening.*—Tensile strength, 383 pounds per square inch; strength of compression, 3,880 pounds per square inch

2. *After twenty-eight days' hardening.*—Tensile strength, 551 pounds per square inch; strength of compression, 5,411 pounds per square inch.

STRAIGHTENING A CHIMNEY.

A LEANING chimney in Cranston, Rhode Island, U.S., has been straightened by a simple method devised by Mr. Joseph H. Gerhard, of Providence. The stack is 8 feet in diameter inside and 192 feet high. A short time after completion it began to lean to the east until the movement reached 4 feet and was apparently still continuing. To straighten it a course of brick on the west side of the stack was removed for a depth of three-fourths of the thickness of the shell, and the space filled with oak wedges. On the east side a thick 10 by 20-foot bed of concrete was laid against the foundation. Two holes were then cut through the shell on the east side and heavy

steel beams passed through them. Jack screws were placed between the concrete and the beams, and with their stroke was slowly brought back to a vertical position, the beams being burnt out by a gas flame driven against them with a blast. When the straightening was finished the holes were filled with concrete, the steel being left in place.

A HIGH TOWER.

THE Eiffel Tower is to be eclipsed at the St. Louis Exposition next year, and, not content with that, its inventor offers a higher tower to London or any other city or private enterprise, happening to be in want of "a monument of Beauty as well as of Power into the Heavens as a Memorial of the Progress of the Twentieth Century." Only 390,000*l.* is wanted to erect the "National Tower of Amusement and Recreation," and with the "Graydon Double Spiral Cloud Railway" for the "By Train to the Heavens in the elegant coaches of the Clouds Through-Clouds Express."

Lieut. J. W. Graydon, the American engineer who constructed the Big Wheel at Earl's Court, informed a representative of the *Daily News* that he had arranged to construct a tower at St. Louis 1,200 feet high, with trains running on the top. He had submitted two designs, and the one which has been chosen was vertical, or ran straight up into the air, to be built entirely of steel, and will be fitted with one cable railway running up outside and another running down inside. The four trains, which will be run simultaneously both ways, will be fixed on to a cable at intervals, so that when a train is made each of the eight will be at one of the different stations. The wheels will run in deep gulleys instead of on rails, and in case of the cable snapping, or the driving gear breaking, each train will be fitted with electric motors. How much it is to cost its inventor did not care to disclose, but he considers the 390,000*l.* one which he wishes the London Corporation to erect on the highest spot in London much cheaper, because it rises to a point from a large base, and enables the ball-rooms, restaurants, theatres, concert halls, and other pleasure resorts constructed on platforms throughout the height to be much more spacious. On the top platform the inventor has his "Monument Light" for throwing pictures on the sky, and also "snowstorm illusions." But the fair-weather

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et been perfected Mr. Graydon thought of this
ailway to the Heavens" some years ago, but he was
o the invention by seeing a couple of very tall double
s ornaments on the mantelpiece of his rooms.

MILL ARCHITECTURE.

of a few industries the work of the mill architect has
preciated until recently. It was formerly held by
ufacturers, says the *Engineering Record*, that they
they needed in the way of machinery, that a local
was competent to put in their power plant and a
er to design and erect their mills. The idea that
er could give them useful information concerning the
in their own industry or tell them how to arrange
to the best advantage seemed preposterous. The
n's buildings answered their purpose, although the
etimes sagged and the shafting was more often out
alignment, owing to the deflections of the structural
The bills for fuel were too high to seem right or the
veloped by the wheels was too small when compared
ead, but these conditions existed in rival mills and no
r them was apparent.

raduates of technical schools found their way in
time into responsible places in manufacturing
ents and brought about a change in the methods of
plants. Skill and experience gained in bridge
re brought to bear on the structural planning of the
with the result that they often cost less than before
always stronger. Men devoting their entire time to
ineering were able to design power plants that saved
tities of fuel, while experienced hydraulicians obtained
power from the same head of water than the old mill-
er dreamed of securing. The mills were lighter and
ence of the better illumination the work was of an
quality. Finally the mills became more comfortable
so that the men looked askance on the older plants
e improvements which increased their respect for
and for themselves.

result of the rapid development of industries of all
e United States a demand arose for the general mill
and this demand has caused the development of the
of mill architecture as it exists to-day. It is un-

questionably one of the most interesting branches of civil
engineering. The mill architect having a large practice is
called upon to plan all kinds of buildings on all kinds of
foundations. In a case that came up not long ago it was
necessary to construct a paper mill on a wharf of piling, filled
in later with earth enclosed by a bulkhead. Some of the
buildings of the Lackawanna Steel Company have their walls
carried by arches sprung from piers that rest on groups of
piles. In still another plant about to be placed under con-
struction it will be necessary to erect most of the buildings by
means of pile platforms constructed about them, for there is no
available place in the vicinity for the storage of materials, and
wharves must be supplied in consequence before work can
commence. The variety of problems which arise in connec-
tion with the superstructures is equally noteworthy. The
structural framing is often just as novel, owing to the arrange-
ment of cranes and tools attached to the columns. In the
power plant the value of the advice of experienced specialists is
equally great and the diversity of work equally interesting.
The information acquired by planning power installations for a
variety of industries often enables the designer to introduce
features from establishments of one class into those of another
much sooner than would be the case were the plant laid out by
a man acquainted with only his own branch of manufacture.

In other words, the development of sound mill architecture
is largely due to the knowledge possessed by the men prac-
tising it of the latest methods in many fields of manufacturing.
The importance of sound construction and equipment, which
will follow from the increasing knowledge of the work others
are doing in mill architecture, was forcibly stated in the address
of President H. E. Walmsley before the New England Cotton
Manufacturers' Association this week. "The competition and
the increasing competition of the modern mill with the mill of
old-time structure and equipment," he said, "is the problem to-
be studied by the older mills. It has been my privilege within
a very recent period to inspect two or three mills of the very
latest and most approved construction. The guiding and
leading principle in the construction and building of these mills
and in their equipment, in fact, in every detail from foundation
to roof, has evidently been the securing of the very best that
human ingenuity and experience could design and devise, and
in this they have succeeded perhaps beyond expectation."

This statement concerning the cotton industry has been
expressed recently by others of equal eminence in paper-
making, steel manufacture, machine tool building and tanning.

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NORTHAMPTON MASTER BUILDERS' ASSOCIATION.

THE annual dinner of the Association took place at the Peacock hotel, Northampton, on the 15th inst. The president (Mr. W. Higgins) occupied the chair, and was supported by the mayor (Alderman T. Purser), Councillor H. Martin, J.P., Councillor H. Green, Councillor A. P. Hawtin, Mr. H. Eady (America), Mr. W. Heap, Mr. G. Butcher, Mr. S. F. Harris, Mr. G. H. Stevenson, Mr. W. Fidler (borough surveyor), Mr. A. E. Anderson, Mr. W. I. Brown, Mr. C. Archer (Wellingborough), Mr. J. Barnard (Norwich), Mr. F. J. Airs (hon. sec.), &c. Mr. H. W. Hanwell (vice-president) and Mr. G. Bird were in the vice-chairs.

The usual loyal toasts were given from the chair.

Mr. H. W. Hanwell proposed "The Army, Navy and Reserve Forces," coupling with it the name of Mr. West, who suitably replied.

"The Mayor, Magistrates and Members of the Corporation" was proposed in an eulogistic speech by Mr. H. W. Hanwell. Expressing admiration for the work of the Mayor, Mr. Hanwell congratulated his Worship on the position he held, and remarked that his Worship occupied a position which should be the ambition of every burgess in the town.

The toast was received with musical honours.

The Mayor at the outset of an interesting speech expressed the hope that some gentleman represented in the trade would occupy the office of mayor during the coming year. He could at the same time assure them that the office of mayor of Northampton was no sinecure. It had been an exceptionally heavy year for the Council. He had done what he considered his duty, and he intended to do so to the end of his year of office. The old Book said, "Woe to the man who is spoken well of." He thought, however, he might say that his services were appreciated by the majority of the ratepayers of the town. Concluding, he wished the building trade every success. Of course, their success depended upon the prosperity of the staple trade. He was no pessimist, but he had known Northampton to be in a worse condition.

Councillor H. Martin, replying, congratulated Mr. Hanwell on the recovery from his accident. Speaking for the magistrates, he described Mr. Bishop as being one of the best clerks in the country.

Councillor H. Green, in a short reply, humorously remarked that it was quite refreshing to hear the singing of "Jolly good fellows" to members of the Town Council. The work of the

Council was an increasing quantity, and the work laid on by the School Board being thrown on them added to the

"The Architects" was proposed by Councillor Hawtin. They were exceedingly sorry, he said, that the building trade was not good, and their sympathies in architects were, therefore, rendered more earnest.

The names of Mr. Harris, Mr. Stevenson, Mr. Archer and Mr. Fidler were coupled with the toast. These gentlemen suitably replied.

Mr. Anderson said there was no town in England whose estates had been cut up and built upon as in Northampton. The builders could not expect to be always continuing progress.

Mr. Jeavons proposed "Success to the Northampton Builders' Association."

Replying, the Chairman said they had sustained a loss by the deaths of Mr. W. H. Smith and Mr. F. Leas.

"Success to the Trade and Town of Northampton" was proposed by Mr. J. Barnard.

Mr. G. F. Wilkinson, in the course of an interesting speech, said that if the depression were singular there might be cause for alarm. But it was not singular. Depressions were general, and they were therefore certain it was not through want of enterprise on the part of the manufacturers of Northampton. He considered that the enormous amount of money spent in extraneous matter had taken up capital and crippled the speculator. There was no doubt that the depression had caused much of the trouble, but they trusted that it would be soon in prosperity again.

Mr. J. Bird proposed "The Visitors," coupling the names of Mr. Eady, of America, with the toast, and that gentleman replied, remarking that he had come from America to attend that banquet.

"The Chairman's Health" was proposed in cordial terms by Mr. G. Fisher.

Mr. E. Heap proposed "The Vice-President," and Mr. Hanwell responded.

The health of "The Secretary" (Mr. F. J. Airs) was proposed by Mr. E. Archer and received with enthusiasm.

Mr. Airs, replying, thanked Mr. J. Bird for help he had given in the discharge of the secretarial duties, and referred to the Association as a great agency for good in the trade.

The concluding toasts were "The Press," proposed by T. W. Smith, and "The Host and Hostess," proposed by J. Bird.

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The Architect.

THE WEEK.

education committee of Brighton, in common with similar authorities elsewhere, are perplexed by the problem which is before them of providing additional schools. The best example, St Luke's Terrace, has cost 36,200*l.*, or 6*s.* 5*d.* per head. In 1881 a school was erected at the cost of 12*l.* 10*s.* 7*d.*, and in 1890 at 15*l.* 4*s.* 9*d.* It is necessary that additional schools should be constructed, as Leicester has gained a reputation for economical building three of the members with the clerk and surveyor visited that town. According to one of the parties they saw some very fine schools, with magnificent halls, which had been provided at a cost of 11*l.* 1*s.* 11*d.* per head, why could not the same be done in Brighton? Perhaps one might quibble and say that the members of the committee had not got the complete figures before them, but they were bound to accept the figures that were given them." So remarkable a discovery excited displeasure at the last meeting of the education committee. One member stated that in Leicester there was nothing on the walls but painting and colouring, and he hoped that in Brighton they would send their children to places that were little better than barns. Another member stated that in Newcastle, Sunderland and Middlesborough schools were erected on economical terms as in Leicester. One effect of the discussion was that alternative plans for a school in Finsbury Park are to be prepared, as the central hall may have to be omitted in order to save expense.

THERE are some streets in Paris which appear to be unchangeable. One is the Rue Lafayette; another is the Rue de l'Université. The former is animated for its entire length; the latter for a great part seems to belong to a dead and abandoned city. It has, in consequence, been a favourite place for official depôts. At one time there were in it warehouses of charts, artillery, weapons, and, on a site which had been assigned for archives, was a depôt of government marbles, or, in other words, the statuary which was to be purchased, but for which there is no room in the Louvre or elsewhere. The latter depôt will probably come up for consideration if ministers can be found courageous enough to grapple with an onerous difficulty. For years there has been an outcry about the danger attending over the invaluable collections of the Louvre, owing to the presence of the Ministry of the Colonies in part of the adjoining premises. It is from time to time announced in order to quiet the misgivings of the public that the minister with his clerks and documents are about to be evicted. But it is not possible to discover even a temporary shelter for them. It is now proposed to erect a big building on the site of the depôt des Marbres. The question then arises, What is to be done with the examples of the sculptor's art which are stranded? The collection has been growing for at least sixty years. It would be disadvantageous to modern proprietors if the statues were sold by auction, for it may be affirmed that the majority of the figures would have to be got rid of for less sums than were paid for the originals. Any course which would bring down the value of the collection would be dangerous. Many of the examples are considered as official art, and the glories of one régime are distasteful to another. They cannot all be sent to provincial museums. Probably the wisest proceeding would be to despatch the majority to French colonies. The utilisation of the depôt as a site will cause another inconvenience. Some of the sheds used to be assigned to painters and sculptors who were executing enormous works for public buildings, and it will be difficult to discover other quarters as roomy which can be obtained gratuitously.

EVERY archaeologist must desire that the remains of ancient buildings in Ireland will not suffer through the change of ownership of the land. The tenants who are to

be the new proprietors were not always distinguished for respecting ruins. THOMAS DAVIS was not afraid to say, "We have seen pigs housed in the piled friezes of a broken church, cows stabled in the palaces of the DESMONDS, corn threshed on the floor of abbeys and the sheep and the tearing wind tenant the corridors of Aileach. The peasant lugs down a pillar for his sty, the farmer for his gate, the priest for his chapel, the minister for his glebe." Last week we mentioned that the remains of Mellifont Abbey were assigned to the Commissioners of Public Works. It is well known that a large corn mill had been erected with stones from the buildings. Is it to be expected that under the new conditions there will be more reverence displayed? The Land Commission have made an effort towards the preservation of ancient monuments, for one of the rules which come into operation on November 1 is as follows:—"Where any land proposed to be sold under the Land Purchase Acts contains any ancient monuments, application to the Commissioners with a view to having the same dealt with under the provisions of section 14 of the Irish Land Act, 1903, may be made by the vendor or purchaser, or by any public body or association interested in the preservation of same." It will be observed that the application is optional. What should have been enacted was that when land was to be sold in small portions to tenants and others the ruins were to be exempted and assigned to the Irish Board of Works as guardians under the Ancient Monuments Protection Acts. Fortunately many are already secured in that way. It was necessary last year to carry out repairs in about forty of the ruins, including the Round Towers of Clones, Monasterboice, Drumcliff and Dromiskin, and the important abbeys of Claregalway, Kilconnell, Sligo, Ennis, Holycross, Moyne, Quin, Athenry, &c., all having historical as well as architectural interest. The new proprietors are not possessed of skill in restoration, and therefore any reparations by them are likely to be no more than another form of destruction.

ALTHOUGH many objects have been discovered which testify to the existence of Greeks and Romans in France, steles or sepulchral slabs are almost unknown. The discovery of one in Paris and in a street called after DOMINIQUE CASSINI, the Bolognese astronomer, seems therefore almost incredible. It was dedicated to the memory of a smith whose effigy appears on one of the sides. He wears a long apron which is fastened to a girdle, and in his left hand is a large pincers. The slab is supposed to date from the beginning of the second century. It has been deposited in the Musée Carnavelet. The Rue Cassini is near the Observatory, and previous to 1790, when it received that name, the street was known by the names of Maillet, Deux Maillets and Deux Anges. There is no doubt about the connection of the Romans with that part of Lutetia. There was a temple of Mercury near the existing Panthéon, and a palace of which the remains known as the Thermes are a survival, and there was a camp at the Luxembourg. In a position about the upper part of the Rue Fosses Saint-Victor was a circus. The Temple of Jupiter was probably on the site of the cathedral.

THE people of Limoges demonstrated their indifference to history when they demolished the fortifications. It is true they might be considered as failures, for in 1370 the city was captured by the BLACK PRINCE, and some 3,000 of the inhabitants were massacred by his command. A few fragments survive, and they are also doomed to pass away. It may be because it belongs to the fourteenth century that the old bridge known as the Pont St. Etienne is likewise to be destroyed by order of the municipal council. Bridges of that period are rare, and it deserves to be preserved. It would be possible to erect another bridge which would meet all modern demands. But that would be treated as a concession to Mediævalism, which at the present time is obnoxious to the people. Limoges has been celebrated during seven or eight centuries for its pottery, and every example of antiquity has a commercial value because it helps to sustain a belief in the continuous prosperity, which was gained not only by the émaux, but by other varieties of the potter's art.

BALUSTRADES ON BRIDGES.

THE hoardings have been removed for a sufficient length on both sides of London Bridge to enable anyone to anticipate the effect of the improvement. We expect the majority of people will be disappointed. The addition of the width of the old footways to the central roadway was assumed to be sufficient to afford adequate accommodation for wheeled traffic. We might imagine that since the widening began the carts, cabs and carriages have increased, for there are occasions every day when the policemen employed in regulating the traffic appear to be in danger. The up and down lines of vehicles have to run so close together as to allow insufficient space for a man to stand between them. The truth is, the exigencies of trade in the Metropolis demand a much wider bridge than could well be constructed. The London County Council have presumed they could do as they please with the northern side of the Strand because they provided a road of 100 feet in width. London Bridge, however, stands in greater need of this width than the Strand. For it should be remembered that all the traffic crossing the bridge does not simply pass from the southern part of the Metropolis to the northern. A large part turns westward, and much which we see in the Strand proceeding eastward is destined to pass over the bridge. In fact, the bridge and its approaches should correspond in width with the broadest street. The expense, however, would now be prohibitive. In 1820 it was impossible to expect enough foresight among the authorities to anticipate the enormous work which the bridge would be called upon to accomplish. As an excuse for the Corporation and JOHN RENNIE, the engineer who was consulted, it should be recollected that a slight change in the position of the bridge had the effect of doubling the estimated cost, and that eventually the outlay was four or five times as much as was originally contemplated.

RENNIE had for twenty years previous to undertaking London Bridge gained a reputation for that class of construction. The people of London were able to confirm what was said about the skill which he had displayed in Scotland and the North of England. Waterloo Bridge and Southwark Bridge, although they differ in character, are alike testimonies to his remarkable power. He did not superintend the erection of London Bridge, for he was buried in St. Paul's in 1821, but the plans had been sufficiently completed to enable his son to conduct the operations. When the bridge was opened one dissimilarity between it and Waterloo Bridge must have struck observers. At the latter RENNIE designed the parapet as a balustrading, while at London Bridge the parapet was solid. RENNIE was not the kind of man to effect a change of that kind without long deliberation. It is possible that as Waterloo Bridge was to be a toll bridge—for it was constructed at the expense of a company—he concluded that the traffic was never likely to be excessive, and would be dealt with in a leisurely manner. By changing the name from Strand Bridge to Waterloo Bridge it is evident the directors and shareholders intended the structure to be a national memorial of England's greatness; it would, therefore, be respected like any other monumental work. That was the view taken by foreigners at the time of the opening. Baron CHARLES DUPIN said:—"The traveller on beholding this superb monument will suppose that some great prince wished, by many years of labour, to consecrate for ever the glory of his life by this imposing structure. But if tradition instruct the traveller that six years sufficed for the undertaking and finishing of the work—if he learns that an association of a number of private individuals was rich enough to defray the expense of this colossal monument worthy of SESOSTRIS and the CÆSARS—he will admire still more the nation in which similar undertakings could be the fruit of the efforts of a few obscure individuals lost in the crowd of industrious citizens." DUPIN's was not the only testimony to the importance of the bridge. JOHN CONSTABLE's great painting is likewise a record of the spirit then animating the people, for it shows us not the completion of a commercial enterprise, but a scene of national rejoicing, because the bridge was the earliest memorial of Waterloo.

Waterloo Bridge was, however, open to objection if judged by architectural principles. The adornment of the piers with unfluted Doric columns was unnecessary for a

bridge pier has another kind of duty to perform besides supporting a weight like a column. RENNIE profited, I doubt by the criticisms he heard, and the piers of London Bridge are expressive of their purpose by their appearance as a mass. He may also have concluded that his balustrades were akin to his columns, although they were not exact in the same style, and he therefore substituted a solid wall. The arrangement could not fail to be approved. In works of construction, whether engineering or architecture, it is essential the spectator should feel the utmost confidence in its safety. Hence arose the maxim, "A little stronger than strong enough," which is sometimes interpreted by imparting an excess of material in order that fear itself might be overcome. It was possible to walk over London Bridge and feel assured that if a waggon came into collision with either parapet the bridge would not be the sufferer.

One of the innovations introduced in connection with the widening has been the substitution of an open balustrade for RENNIE's solid parapet. We do not care to criticise the individual balusters, for they are of the most commonplace pattern, such as would be supplied without a drawing by a manufacturer, and with the utmost indifference to the purpose they had to serve. There would have been a difficulty in designing a special form, and as the balustrading is the part of the structure which will receive most attention from people passing over London Bridge, the insignificant additional expense involved would not cause much confusion in the City's finances. What we object to, however, are not the atoms, which are unworthy of notice but the whole. We maintain that balustrading is not adapted for the purpose of a parapet, especially in a bridge where accidents are always liable to arise, for it suggests weakness where strength is needed; and, what is more, there must say there are not sufficient precedents to warrant the adoption of the arrangement.

It has been held by some writers that balusters were unknown to the ancients, and are among the creations of the Renaissance period. That conclusion should be regarded as at least doubtful. Men at all times were indifferent about making things of only one set of normal dimensions. They produced larger and smaller sizes. There is nothing extraordinary in the proposition that very short columns were to be seen, although on account of their dimensions many examples have not descended to us. In Saxon churches we meet with baluster columns, and we can hardly suppose they were not derived from more ancient examples. Niches were sometimes flanked by short columns, which were also essential for arcading. Whether they were employed in ancient bridges cannot be asserted or denied as a universal fact. But, judging by the remains, the Roman bridges were provided with solid parapets. The old Ponte S. Angelo in Rome has an open parapet, but it is well known to have been one of BERNINI's alterations. In judging of bridges we should always bear in mind that military engineers had some concern in their erection. If they did not serve for the protection of a town they could be used by an enemy as a means for attack, and it would not be considered advisable to allow parts which could help to guard an approach to become so dangerous by their open sides as to make it impossible to place men on the roadway. It is true we no longer live in more peaceable days, and two lines of balustrading, however exposed, would not afford facilities to invaders in London. All we say is that their use is not warranted by examples constructed in periods when no sane bridge builder would dare to utilise balustrades. Historically considered, their introduction in our times is unwarranted.

If we look to Renaissance precedents we find that balustrading was only employed in positions where there was no likelihood of its strength being tested. It was as familiar as an adornment for the uppermost lines of palaces and other buildings in Italy. The Commissioners of St. Paul's, who insisted against the advice of WREN on its adoption as an edging, had, from seeing examples abroad, come to the conclusion that a building in the Italian style was incomplete unless crowned by balustrading which enabled the sky to be seen through it. WREN, however, judged it to be a purposeless appendage, but no one would now venture to suggest its removal. In some of the Italian palaces which appear to be designed in such a way as to resist an attack, and therefore presented few vulner-

le points, a balustrading at the roof level or on the ground would not cause much harm, and diminished to some extent the severe character of the building. Nowhere was balustrading more applicable than in Venice, where it became an element in balconies and arcades, or for the sides of aircases, positions in which there was little liability of danger.

In any question relating to the details of a masonry bridge there are no better models than those to be found in France, and especially in Paris. There are some illustrated parapets through which children can look at the Seine. But it will be observed that the best examples are of the kind which should have been adopted for London bridge. We do not mean to suggest that we should employ flusters because they are occasionally found in French bridges, or that the baluster should be rigorously prohibited from lining the footway of bridges because Frenchmen consider it unsuitable. It is possible to model them in a way that will be suggestive of strength, for a blank wall is not always preferable to one consisting of voids and solids. But to the baluster used for a parapet a character of strength must be imparted, and the practice should be avoided that seems to have been adopted at London bridge of preferring numbers to form, as if a great many significant parts could be eloquent of strength and power of resistance.

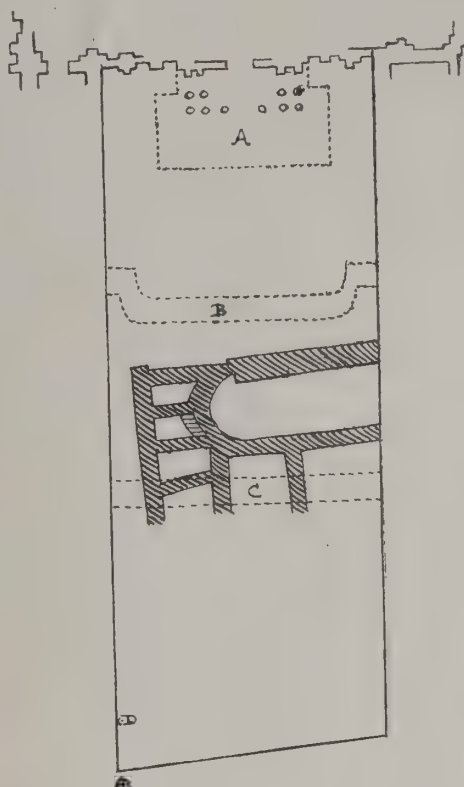
If the people who traverse London Bridge were in the habit of finding enjoyment in gazing at the muddy waters of the Thames through balustrades there would be some reason for making them of a slim form. But the parapet is not too high for people to see over it. Besides, it is a remarkable fact that the only part of the river which seems attractive is the wharf where the steamers are moored near Billingsgate. There is, indeed, no excuse for the arrangement which has been adopted and by which a structure which has inherited so many associations is made to appear unworthy of its renown.

THE MEDIÆVAL SORBONNE CHURCH.

By J. A. RANDOLPH.

THE illustration which we reproduce of "The Sorbonne in 1550," from the Tapestry Map of Paris,* is so picturesque that it is a gain for lovers of the architectural beautiful, that the foundations of that church have recently been discovered under the stones of the great Cour d'Honneur, north of LE MERCIER'S fine church of the Sorbonne. The plan of the old church, recently discovered,

is now being perpetuated in cement *in situ* on the flooring of the repaved quadrangle for the new buildings, and shows a long narrow aisleless and transeptless structure with a circular apse, the nave being about 75 feet long to the chancel and 25 feet wide. East of the apse, and



- A = Steps down to Quadrangle.
- B = Site of Steps in New Quad.
- C = Ditto Old "
- D = Site of Foundation Stone of Richelieu's Buildings.

abutting on it, are two narrow chambers, one with a staircase marked (possibly to cellars or a crypt), and another similar apartment is just north of the one with the staircase, with part of a further northerly chamber showing, and what is apparently the sacristy abuts on due north of the east end of the nave. The orientation is almost exact, and truer than that of the present church.

* See *Le Vieux Paris*, plate 79, by Nouveaux and Asselineau.



THE FIRE PREVENTION CONGRESS*

IT is rather early to estimate the beneficial results of the Fire Prevention Congress which was held in July. The proceedings were too multiplex for the time allowed to consider them. The Chairman admits that at future gatherings there ought to be either a reduction in the programme or an increase of working hours. Mr. SACHS's estimate of what was accomplished does not appear to be exaggerated when he asserts:—

(1) It has laid the basis for the foundation of an effective international policy for the prevention of fire, based upon a regular international exchange of experience and thought; (2) it has brought about an international understanding on the subject of requirements of and methods of testing "fire-resistance" in building materials and systems; (3) it has assisted in breaking down the barrier between some of the personal and vested interests of fire prevention and fire extinction, and has brought together leading representatives of each of these branches with the happiest results.

There can be no doubt that the papers read embodied a large amount of information by English and foreign specialists. Some were in German, some in French. As Englishmen are not masters of foreign tongues inconvenience followed, and Mr. SACHS recommends that for the future the English language should be recognised as the language at fire congresses. But the papers, reports and speeches have been translated, while the papers are also printed in their original language for the benefit of readers who may wish to compare them with the English versions. Considering the difficulties which arose from the use of three languages, the reporters have gained a success which is creditable. The folio volume just published merits to be accepted as an encyclopædia of what is now known in all branches of the subject of fire prevention. From the absence of an alphabetical index it is, however, possible the value of the pages may be underestimated.

The resolutions adopted in the various sections will indicate some of the obstacles to safety as well as some of the measures which it is desirable to adopt in guarding against the ill effects of fires. In the first place, it is advocated that "fire-resisting" should be generally substituted for "fireproof." The character of the resistance should be made evident, so as to have it understood whether it is temporary, partial, or full. The adoption of the metric system is suggested. The establishment of testing-stations and a permanent international technical bureau, as well as a periodical revision of local building regulations, were also considered necessary. Other subjects to which the resolutions apply are technical education, fire brigades and fire prevention, the legal status of fire brigades, records, publication of technical fire reports, maintenance of private fire appliances, fire-insurance rating, insurance influence on fire prevention, theatre safety, theatre fire service, lightning, spontaneous combustion, popularising of fire prevention, consolidation and uniformity in legislation, and international publications.

We have already printed some of the papers relating to building construction. But in the course of the discussions a great deal was brought forward which merits consideration. For instance, it was stated that the automatic sprinkler has done remarkable work in America, but every type must stand a test before it is approved by the insurance companies. Professor WOOLSON said that in America they depended very largely on sprinklers, and he was surprised more use of them was not made in England. Mr. RIVERS, the representative of the Office of Works, declared that "The best weight-carrying and fire-resisting floor construction is that in which the steel members, while reinforcing the concrete on the embedded system, are themselves kept to such a sectional area as to avoid disruption of the concrete under the extremes of expansion and contraction. In this sense it becomes evident that in adopting built girders, rolled joists, or cast-iron columns in connection with floor construction, we incur a risk of failure in case of fire, unless this construc-

tion is supplemented by a costly system of protection, which may even then be of doubtful utility." People will, however, hesitate about undergoing the expense which would afford ample protection to the metalwork. In America, for example, where so much attention is given to the subject, it is sometimes considered that plastering wooden beams without any intervention of metal lathing is sufficient. The timber may not be seasoned and may be exposed to rain before it is plastered. Mr. DUNN, an American delegate, remarked he had seen "pieces of timber as large as 10 inches by 12 inches uncovered in buildings which were being torn down, where dry rot had set in to such an extent that a handful of material could be taken right out just like a sponge."

It would be impossible in a limited space to give a sufficient notion of the varied contents of the official report. It deserves wide circulation as well as preservation. Not only architects should be acquainted with it, but all public bodies in charge of fire brigades. When we recollect that the congress was the first of its kind, the successful organisation is noteworthy, and credit is due to the chairman, Mr. SACHS; the honorary secretary, Mr. ELLIS MARSLAND; Mr. MAX CLARKE and Mr. F. W. HAMILTON, who have been associated in this enterprise.

THE ARA PACIS, ROME.

WE have lately referred to the excavations in progress in Rome for revealing the remains of the Augustan altar. The Rome correspondent of the *Globe*, writing on the same subject, says:—Visitors to the splendid Museo delle Terme have noticed workmen at various times during the past year busily modelling and then setting together portions of a design in relief reproducing evidently some important monument of ancient art. They have been, in truth, working under Professor PASQUI, endeavouring to execute a reconstruction of the magnificent Ara Pacis decreed by the Senate in honour of Augustus, B.C. 13, after his successful undertakings in Spain and Gaul, which signalled the peace of the Roman world. The Emperor modestly refused the proffered dedication to himself, and offered it instead to Peace; and at the close of January of that year he dedicated a colossal altar, surrounded by a marble screen, upon which were sculptured exquisite reliefs, representing processions of the noble friends of Augustus, priests and others. These latter were all crowned with laurel, and bore branches of olive in their hands. Above them ran an enriched frieze displaying elaborately carved foliations, flowers and festoons, typifying the fertility of the earth. It was a golden moment in the art-life of Rome, and the design and workmanship were of the finest. The monument consisted of a rectangular platform, having a front and back of 36 feet, with sides measuring 33 feet, and was reached by a flight of steps from the Via Flaminia (Corso). The sculptured marble precinct wall, covered with the aforesaid reliefs, rose up of year in front of the visitor, its continuity being broken in the middle of its face by majestic gates, possibly of gilded bronze. Within this rose a second platform, reached by four more steps, and upon the further side of this stood the altar itself—thus, in its entirety, it rather resembled a graduated depressed pyramid.

The position given to it in the Campus Martius corresponds precisely with the angle of the Via S. Lorenzo in Lucina, where that street opens out of the modern Corso, nearly opposite Via Frattina and adjoining the Palazzo Farnese. Ottoboni, in the cellars and among the foundations of which the present exploration and excavation was lately commenced. For, inspired by the fine volume devoted to illustrating this great monument by Professor Petersen, of the German Archaeological Institute in Rome, the Municipality and the Ministry of Public Instruction, having come to agreement as to the significance of precisely locating the site, approached Signor Almagia, the proprietor of the palace, who (himself a most skilful engineer and enthusiastic lover of archaeology) not only helped to bring about a proper scheme for the desired research, but has generously aided it with money. In consequence the work was put into the hands of Signor Cannizzaro, who began operations on July 27. Early in August an opening was made in Via Lucina, and presently traces led the explorer right on to the longitudinal axis of the spacious altar, even to the sill of the great door opening to the Via Flaminia.

As far back as in 1568 Cardinal Ricci, of Montepulciano, wrote from Rome to the secretary of the Grand Duke of Tuscany that beautiful reliefs on immense blocks of Greek marble (it should have been Carrara) had been found when the Palazzo Ottoboni was being built, and that they would be soon forwarded to Florence. These are still to be seen in

* The First International Fire Prevention Congress, convened by the Executive of the British Fire Prevention Committee, held in London, July 6 to 9, 1903. The Official Congress Report, with an introduction by Edwin O. Sachs. London: Published for the Committee by the *Public Health Engineer*.

in the Uffizi Gallery. Other fragments went to the Medici on Monte Pincio, where they yet adorn the rear of the college. During a restoration of the same palace some dozen further fragments came to light. On January 16, 1899, whilst visiting the Jesuit Church, where we were going on, the present writer was fortunate enough to recognise another fragment, which had been utilised since as the gravestone of a bishop of Lucca. The upper face had been smoothed and inlaid with verde antico and tello marbles so as to represent the arms and cardinal's of Sebastiano Poggio, the said prelate. On its underside sculptured exquisite scrolls and foliations of quite unmissable Augustan work. This was another fragment, measuring 6 feet by 4 feet.

The present condition of the exposed monument would indicate its having been destroyed by fire and by deliberate and the broken fragments are found lying at no distance from the portions to which they once belonged. Several of the jambs of the doors have been recovered, as well as the angular pilasters projecting from the marble screen. One of the most significant discoveries now made has been that of a second, or posterior, door on the eastern side of the monument, with the broad steps leading to it, as represented in a fine bronze of Domitian. It is necessary to state that the excavation has required the formation of several small tunnels, in which are encountered the beautiful portions still remaining *in situ*, as well as splendid decorated blocks, which are obstructing progress and very difficult of extraction. A later enclosing wall, of brick and travertine, has been since noticed, having been constructed, apparently, with a view to isolate the altar from impinging edifices. Much, however, remains to be explored still before we can hope to have a possible and worthy rehabilitation of this capolavoro of antiquity, to which end it will further be needful that the Uffizi and the Vatican shall generously contribute various portions already in their respective keepings.

TESSERÆ.

De Louthembourg and Scene Painting.

GARRICK, soon after the arrival of De Louthembourg, cognomened "prince of scene-painters," engaged that genius to superintend the scenic department of the boards of Drury, at a salary of 500*l.* a year. The first exhibition of his inventive talent in this theatre was in the splendid representation of the "Christmas Tale," wherein there was a fine display of his knowledge of scenery, machinery and all the pictorial concomitants of spectacle and stage effect. The fire-scene was beheld by the audience with astonishment, and the characteristic appearance of Draco and his demons, combined with that pictorial feeling which assimilated with the imaginative beings represented in the painted incantations of the actor Rosa and the hellish Breughel, electrified the audience to delight. This piece attracted all the world of taste, and the artist and connoisseur admitted that De Louthembourg proved that it was possible to render a dramatic scene completely illusive. Satisfied with the advantage which appropriate scenery and its concomitant suitable costume were capable of rendering the stage, Garrick, with the assistance of De Louthembourg, set about a complete reformation of the theatre. Sir Joshua Reynolds and Benjamin West were enlisted on this proposed improvement, and strenuously recommended its adoption; and from this period the absurd and anomalous dresses of the performers gave way to a costume compatible with the respective *dramatis personæ* collected from the best antiquarian authorities as connected with the history and local attributes of the scene. Garrick lived to see successfully the introduction of this desirable improvement on dramatic representation, and what he left unaccomplished was supplied by the liberality and judicious exertions of his successor John Kemble, who rendered the appointments of the stage so admirable that established painters not only declined themselves of its aid, but recommended the theatre to the public as a useful school for the study of grouping and costume. The last exhibition of the powers of De Louthembourg as a scene-painter was in the pantomime performed at Drury Lane Theatre, entitled "Harlequin Omai, or, Obea, Queen of the Sandwich Isles," which for splendour and pictorial effect was perhaps the most astonishing of any scenic representation that the stage has ever produced. In this, for the first time, the whole length of the stage was occupied; and the scene, which represented the Frozen Ocean, forty-two separate pictures were used, to give continuity to the perspective. The pictorial display astonished the audience, for so powerful and effective was the combination, and so judiciously was it planned, that the imitative scene amounted to reality. The costumes for the numerous characters which figured in this pantomime were all strictly correct, being made up in the theatre from prototypes supplied by Webber, the ingenious

painter who accompanied Captain Cook in his last voyage to the Southern Ocean. Every scene, too, was topographically true. De Louthembourg was enthusiastically devoted to this department of his art; hence, for every scene he wrought an elaborate prototype fitted by scale to a small model of the stage of Drury Lane Theatre, from which the other painters on the establishment executed the large scenes under his superintendence; and he usually added to them such improvements as his rich imagination and spirited hand considered necessary to render them effective. The last scenic representation, which constituted De Louthembourg's memorable Eidophusikon—or a series of moving pictures, which were exhibited on a stage of 8 feet in breadth, at an elegant theatre erected for the purpose—was of that surpassing excellence which excited the admiration of all who were capable of appreciating the imitative powers of painting thus applied.

Decadence of Styles.

Our taste depends upon the models we choose for study. It is therefore of the utmost consequence to select those which should suggest pure first principles and produce a fixed impression of correctness in our sensations. The moderns labour under the disadvantage of having continually before their eyes the bad examples of taste which have been erected in the most unfortunate periods of art. The ancients in this particular were more privileged than we. They had to begin from the very commencement, and their primitive wants suggested simple means to supply them. Thus art in Egypt may be seen in its first step—massive, grand, magnificent and imposing—yielding attention to the more important requisites alone in order to produce effect. Having attained this, in course of time a want of further gratification for the senses introduced the minor details of sculpture and painting; so that in Greece, where an exquisite susceptibility for what was captivating to the taste reigned in a high degree, we find the utmost refinement and delicacy; a departure from which, in search of novelty unattended by the same refinement, gave rise to the monuments of Rome. These, however grand and impressive, still offer to the eye and judgment defects we could wish to see corrected. Man then continued gradually to decline, and the taste became more vitiated during the darker ages, of the Lower Empire. To this downfall of Classic taste succeeded Gothic architecture, which brought into play new laws and rules of its own. It set aside the principles of a foreign conception, as it were, and established for itself a less arbitrary and less strict limitation. It seized and canonised into beauties the very defects of Classic art, clothed it in a new garb and gave a scope to fancy. Thus unrestricted it realised those stupendous and delightful creations of which the Christian world has such just reason to be proud—a new and fruitful school of art and science. Gothic architecture flourished during four centuries but yielded at length to the new direction given to men's minds by the reintroduction of Greek and Latin literature. The revival of Classic art, however, produced only very inferior edifices, the exceptions to which do not reach the standard of antiquity. All these last bad examples in the sight of which we are born and bred unhappily influence most materially our present taste, and this can only be corrected by visiting on the spot the monuments of the Classic times.

Colossal Building Stones.

The lintel over the middle gate of the Propylæa at Athens is 22 feet 6 inches in length, 4 feet in thickness and 3 feet 3 inches in breadth. It must accordingly weigh at least 22 tons. That of the second gate is 16 feet 10 inches in length and 3 feet in thickness. That of the smaller gate is 9 feet 6 inches in length and 3 feet in thickness. The largest masses which remain in Greece are the beams of the Propylæan portico, the architraves of the Parthenon, the beams of the Erechtheion, of the Olympeion, and a block at the Pnyx at Athens, the lintels of the treasuries of Atreus at Mycenæ, and of Minyas at Orchomenos, and some stones in the walls of Tiryns and Messene. Some blocks of white marble are found in Italy which vie with those of Greece, particularly two in the Colonna garden at Rome, which are supposed to have belonged to the Temple of the Sun. The largest is 16 feet 3 inches in length and 9 feet 6 inches in thickness. Nor must we omit the architraves of the Pantheon and of the Temple of Antonine. The granite columns of the Baths of Dioclesian and of the Forum of Trajan, as well as the Egyptian obelisks at Rome, are also examples of these stupendous masses. The architraves of the temple at Selinus in Sicily are 22 feet in length. Tavernier mentions some blocks of an amazing size in a pagoda at Golconda or Bagnagar. Chardin asserts that most of the stones of one of the temples at Persepolis are between 30 and 50 feet in length and from 4 to 6 feet in height, and some of them are stated to be 52 feet in length. The columns of the famous temple at Cyzicum in Mysia, of one piece, were 50 cubits in height, but the largest mass that was ever moved by human means was the monolithical Temple of Latona at

Bubos in Egypt, which was a solid cube of 60 feet. There was another monolith at Sais, of 31 feet 6 inches in length, 21 feet in breadth and 12 feet in height. Wood informs us that in a wall at Baalbec three continuous stones measure 190 feet in length, the longest being 64 feet.

Vicenza and Palladio.

Palladio was born in Vicenza, which contains among a large number of his works several of the most select. His name is more devoutly uttered by the ciceroni than that of the city's patron saint; nor will the English architect withhold his sympathy, for Palladio's fame is connected in some degree with British patronage, and his genius was no doubt greatly influential as the guiding star to a superior condition of British taste. Still, this great artist's merit should be rightly understood. It were most unfair to subject his works to a comparison with many now existing; nor is it prudent to vaunt their superiority in regard to actual beauty, where it chiefly exists, in reference to the different circumstances under which they were designed. Palladio did for the Roman what Stuart and Revett have done for Grecian architecture; but the Italian artist filled not his professional chalice at the fountain head, and Roman art contained no less impurity, when compared with the crystal brightness of its Attic source, than the muddy waters of the Tiber when associated with the virgin snow of the Apennine. As an author of original talent he is to be studied; as a man devoted to his profession he is to be imitated; as an artist, most generous in his estimation of contemporary talent, he is to be beloved; but his greatness as an architect is apart from the present worth of his designs, many of which exhibit as much for our careful avoidance as for our grateful acceptance. Let us, however, hesitate to censure such faults as might perhaps have originated in a workman's inaccuracy or patron's wilfulness. Some of the examples bearing his name are wholly unworthy of the genius which is displayed in others; but there is in several instances so much conjecture as to the share which Palladio had in the composition, and such a bewildering commixture of opinions relative to variations and alterations by Scamozzi and others, that we are scarcely at liberty to express anything less than a very lofty opinion of Palladio's general merits. The thick-and-thin eulogiums of his countrymen would do him an essential injury were there not a certain moral weight in his professional celebrity, which would have established it in spite of opposition, and which with equal certainty will preserve it from the ill effects of extravagant encomium. Vicenza is a complete museum of Palladian design. The Corso, or principal street, is lined with buildings of all degrees, from the neat to the beautiful, though the more distinguished edifices are to be found elsewhere. In the famous Basilica we see a noble conquest of difficulties and a singular instance of powerful invention in adapting the then newly revived Classic garb to a most ill-conditioned Gothic body. In some of the principal residences we also find the requisites of modern convenience grafted on the ancient Roman fashion, as transmitted by Vitruvius; and here, too, may we behold an actual restoration of the antique theatre, in the contemplation of which we dream ourselves back to the days of Terence.

Wren and Freemasonry.

In 1698 Sir Christopher Wren was elected a second time to the honourable and distinguished office of Grand Master of the Ancient Order of Free and Accepted Masons, on the resignation of the Duke of Richmond, and continued to preside over the fraternity till the death of King William in 1702. The introduction of Freemasonry into England is supposed to have been prior to the Roman invasion, and the remains of those gigantic works, Stonehenge, Abury, Silbury and other immense circles, called by some Druidical, are adduced as proofs of the proposition. The fraternity flourished with varied success in England till the reign of Charles I., under whom his eminent architect, Inigo Jones, presided as its Grand Master. The Civil Wars and the prevalence of Puritanism in the times of Cromwell interrupted its progress, but prevented not its meetings, which are more than suspected to have contributed by its secret emissaries to the restoration of monarchy. Charles II. certainly patronised the brotherhood both in exile and on the throne. In 1666 Wren was nominated deputy Grand Master under Earl Rivers, and distinguished himself above all his predecessors in legislating for the body at large, and in promoting the interests of the lodges under his immediate care. He was Master of the St. Paul's Lodge, which, during the building of the cathedral, assembled at the Goose and Gridiron in St. Paul's Churchyard, and is now the Lodge of Antiquity, acting by immemorial prescription, and regularly presided at its meetings for upwards of eighteen years. During his presidency he presented that lodge with three mahogany candlesticks, beautifully carved, and the trowel and mallet which he used in laying the first stone of the cathedral, which the brethren of that ancient and distinguished lodge still possess and duly appreciate. During the building of the city

lodges were held by the fraternity in different places several new ones constituted, which were attended by leading architects and the best builders of the day and brethren of the mystic craft. In 1674 Earl Rivers resigned grand-mastership, and George Villiers, Duke of Buckingham, was elected to the dignified office. He left the care of the Grand Lodge and the brotherhood to the deputy Grand Master Wren and his wardens. During the short reign of James II. the lodges were but thinly attended, but in 1685 Sir Christopher Wren was elected Grand Master of the Order, and nominated Gabriel Cibber, the sculptor, and Edward Strong, the mason at St. Paul's and other of the City churches, as wardens. The society has continued with various degrees of success to the present day, and lodges under the constitution of the Grand Lodge of England are held in every part of the habitable globe, as its numerical and annually increasing membership abundantly show.

Lawrence as a Portraitist.

In the first part of his career Lawrence was inclined to carry his taste for the colouring of the old masters a little far, and the pursuit of tone, chiaroscuro and breadth led him into a style rather artificial and approaching to manner; but he gradually got the better of this error, and by incessant study and application became at once more artful and more natural. Indefatigable, and never satisfied with his production, Pope, "he laboured hard to gain a reputation, and laboured hard to maintain it." On one occasion he is said to have painted thirty-eight hours together, without rest or taking any sustenance but coffee. It is remarkable in the latter part of his life, when his great practice might have been expected to make him more rapid in the completion of his works, the increased pains he took, arising no doubt from his improved perceptions, acquired for him the character of slowness—for him who had painted that admirable picture of *Hamlet* in so short a time as one week. But this insatiable ardour, this incessant aim at excellence, enabled him to obtain so consummate a mastery in the theory and practice of the art of painting, and finally to establish an indisputable claim to rank with Titian and Vandyke, Reynolds and Velasquez. Perhaps the genius of Lawrence was best adapted to portraiture; but possessing so far more intellect as he did, with such complete technical skill, more than probable that, under other circumstances, he would have achieved a very high reputation as a painter of history. He was a finished draughtsman, had a perfect knowledge of the human figure in its various classes, an exquisite feeling for the beautiful, the grand and the pathetic, with a rich and luxuriant taste in landscape and background—in short, deficient in no one requisite. He possessed, too, an enthusiastic love for the higher qualities of the art, as was evinced by his admiration of Michel Angelo and Raphael, of Fuseli, Flaxman and Stothard, which, in a country where there was any demand for historical painting, would inevitably have led him to the first rank of excellence. The few examples he has left behind him in this way help to prove it; if we ought not to rate his portraits, such as his Kemble, Siddons, young Lambton, &c., belong equally to this class of art. Titian's portraits have a grave and quiet dignity, and are not to be excelled; to this no doubt the costume and the colouring in which they are embodied is admirably adapted. In these qualities Reynolds came nearest to Titian, and his exquisite representations of infant character surpassed him. Lawrence must yield to his great rivals in these points, but beyond them, and Vandyke, too, as a draughtsman—like them against the latter and Velasquez he may dispute the palm for all respects, and with greatly the advantage in point of originality of invention. His great technical excellence seems to have been drawing, which is undoubtedly the true foundation of painting. Reynolds is a remarkable and almost singular instance of what chiaroscuro and ingenuity may do to compensate the want of it; but it enabled Lawrence to make out his pictures with a surprising minuteness and accuracy of detail, which perhaps were never before combined with so much boldness and delicacy. Some of the Italian critics, however, objected to the harder continental style of finish, though deficient in this particular. "Non è reso" was their remark. "He does not define." This perhaps was an additional reason for their not calling him "Il Tiziano Inglese." In fact, his details are so delicate as to escape a cursory notice, and he knew that brilliancy and vivacity of effect are incompatible with elaborate smoothness.

The Institution of Civil Engineers will hold the ordinary meeting of the eighty-fifth session in their hall in Great Court Street, Westminster, on Tuesday, at 8 o'clock, when William White, F.R.S., will deliver his inaugural address as president.



EXETER CATHEDRAL, No. 469A.—TOMBS OF SIR A. CHICHESTER AND HUMPHRY DE BOHUN IN SOUTH CHOIR AISLE.

NOTES AND COMMENTS.

THE announcement that the French Government will derive a surplus from the Exposition of 1900 will excite not only amazement but chagrin among the unfortunate exhibitors who contributed to that result, and with whose losses there is no sympathy. Probably the profits are no more tangible than the savings of the works committee of the London County Council. Official book-keeping does not always correspond with that employed in successful mercantile establishments. People will, however, be glad to find M. PICARD, at the close of his office as chief commissioner, retiring with so high a reputation. All the other international exhibitions in Paris combined have not been able to show a balance in favour of the State amounting to 2,800,000 francs, or over 100,000*l*. Its predecessor of 1889 gained 1,058,000 francs. There were no profits from the exhibition of 1878. It remains to be seen whether the Paris Municipality will be equally satisfied with the result. The citizens at least who are hotel-keepers have no reason to grumble.

THE advantages of the Ordnance Survey have been especially exemplified in connection with the sales of Irish estates. When the Encumbered Estates Commissioners first began their operations the maps were made the bases for the plans of the estates issued with the descriptions of the property. Subsequently transfers of the maps were employed. In the instructions issued a few days ago in connection with the new Land Act it is ordered that with every originating application or request the vendor is to lodge an Ordnance map on the 6-inch scale mounted on strong linen. The map is to be accompanied by a certificate of the tenement valuation obtained from the office of the Commissioner of Valuation and Boundary Surveyor, a schedule of areas which shall be in such form as the Commissioners may from time to time direct, and an affidavit from a competent surveyor stating that he visited the lands and examined the map upon the ground, that the several holdings, parcels of land and demesne proposed to be sold are correctly marked on the map, and that the schedule of areas is correct. The maps are to show the boundaries in distinctive colours of the holdings; the demesne and parcels of land which the vendor desires to sell and not repurchase; the demesne and parcels of land which the vendor desires to sell and repurchase; and any other lands in the neighbourhood, demesne or otherwise, which the vendor owns but does not desire to sell. Where the holdings are so small that the 6-inch scale is insufficient, an Ordnance map on a larger scale may be used, or an enlargement of the smaller holdings may be made. Maps are to be prepared and furnished by "townlands" or groups of townlands, and when practicable are not to exceed 18 inches by 12 inches in size, and in every case the names of the adjoining townlands are to be shown upon the map. In no case should more than one map be used for sales of parts of the same townland, and the Commissioners may reject any map which appears to them incorrect, insufficient or unsuitable, and require a correct map to be prepared at the expense of the vendor. The Land Act will afford some employment for surveyors, but its extent will be insignificant if compared with what would arise if proper surveys were necessary.

BYRON apostrophised the Pantheon and asked of it:—"While falls or nods arch, empire, each thing round thee, and man plods his way through thorns to ashes—glorious dome, shalt thou not last?" No other relic of ancient Rome has so well resisted all that time and man could do; and what was once said of the Coliseum seems to be more applicable to the Rotunda:—"While it stands Rome shall stand, and when it falls Rome shall fall, and with Rome falls the world." We can therefore well understand the excitement caused in Rome last week when the rumour spread that the building was collapsing. Happily for the world the alarm was not well founded. Some of the stucco which had taken the place of the ancient marbles had fallen, but there was nothing of a graver character to record. An official examination was immediately made, but no new indications of failure were perceived. Everyone knows that

there are cracks in the structure, and indeed they are considered as advantageous to some extent, for it was to them M. CHEDANNE was enabled to examine the and to effect the discoveries which proved that the of the building commonly accepted was entirely erroneous.

LAST year we reported a meeting which was held in connection with the Building Exhibition respecting endeavour to obtain uniformity in the size of bricks. now announced in the "Journal of the Royal Institute of British Architects" that the following standard has been agreed upon between the Institute and the Brick Manufacturers' Association, and has been drafted in consultation with these bodies and representatives of the Institution of Civil Engineers, and ordered to come into force on May 1, 1905. The Council recommend that members should insert in their specifications under the title of "R.I.B.A. Standard Size of Bricks." 1. The length of brick should be double the width, plus the thickness of vertical joint. 2. Brickwork should measure four courses of bricks and four joints to a foot. Joints should be $\frac{1}{8}$ inch thick and an extra $\frac{1}{8}$ inch, making $\frac{5}{8}$ inch, for the bed joints to cover irregularities in the bricks. This gives a standard length of $9\frac{1}{4}$ inches centre to centre of joints. The bricks are to be measured in the following manner:—A. Bricks laid stretchers laid square end and splay end in contact with a straight line to measure 72 inches. B. Eight bricks laid side to side, frog upwards, in a straight line to measure 35 inches. C. Eight bricks, the first brick frog down and then alternately frog to frog and back to back, to measure $21\frac{1}{2}$ inches. A margin of 1 inch less will be allowed as to A, and $\frac{1}{2}$ inch less as to B and C. These rules apply to all classes of walling bricks, both machine-made and hand-made.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: SPEKE CHANTRY, AND CHAPEL OF ST MARY MAGDALENE.

ABOUT Sir JOHN SPEKE nothing is known, for he did not act a prominent part in the history of his country, but heraldic bearings and insignia adorning the little chapel which was dedicated to his memory suggest his position. Heraldry has done its best for him, and it must be allowed the success is unquestionable. It is supposed that George's Chapel or Chantry was founded in 1518, and would therefore be during the episcopate of HUGH OGDEN or OLDHAM, who had been chaplain to the mother of HENRY VII. He was a resolute prelate in defending the rights of his see, and beside his endowments of Christ College, he founded and endowed the grammar school at Manchester. The chapel is evidence that would not allow the cathedral to be desecrated by unwelcome traditions.

COTTAGE, WEST RUNTON, NORFOLK.

THIS cottage was recently erected, with a frontage of 30 feet facing the village common, at West Runton, about four miles distant from Cromer. It is built of red bricks, with rough-cast and solid half timbered work. The roof being a mansard, reduces the amount of the work without materially reducing the accommodation. The hall is the principal sitting-room; the staircase leading to the first floor from this room forms a feature, and it economises space. The joists over sitting-rooms are visible. Mr. T. PANK, builder, of West Runton, carried out the work for a sum of 490*l*., under the superintendence of Messrs. HAYWARD & MAYNARD, 20 John Street, Adelphi, London W.C.

NEW FRONT TO AN OLD HOUSE.

THIS treatment was intended for an old stock house in Chelsea in which the local character of the building was in some manner thought to be preserved. The materials are Portland stone and red bricks of a good colour, with all woodwork brought well out to the surface, a little modelled plaster being introduced on the bay window. The architect is Mr. W. F. HARBER, Chelsea.

ILLUSTRATIONS—II.

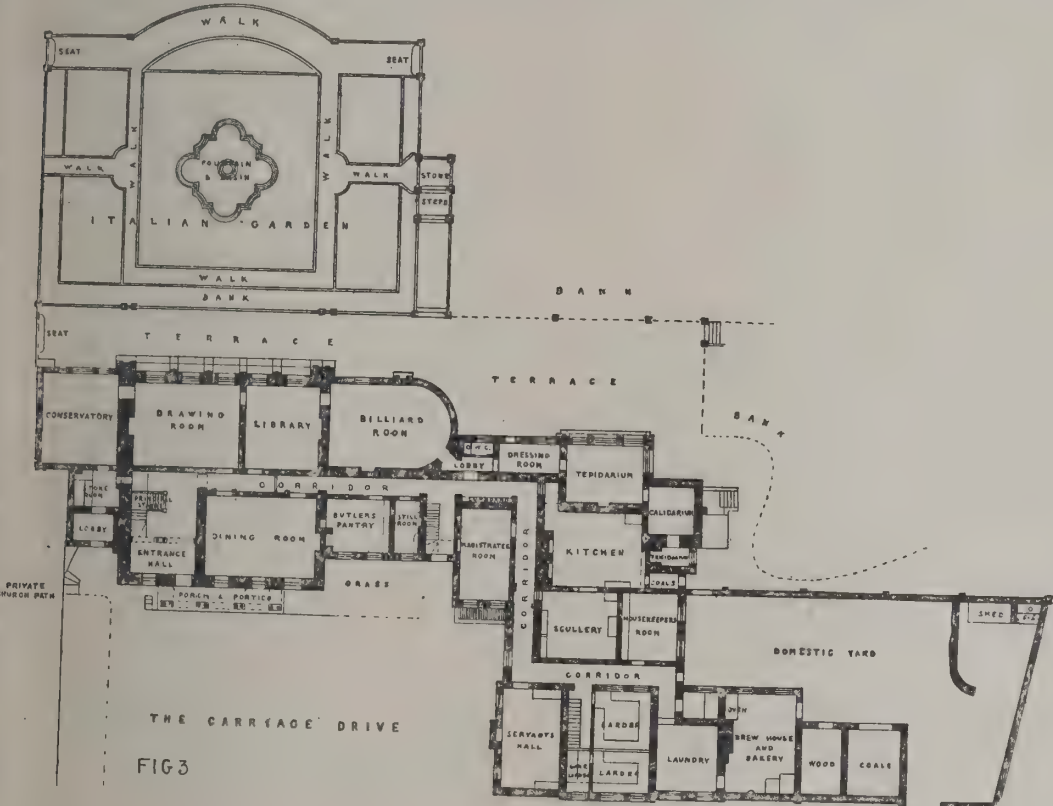
WILEY MANOR.—SOUTH FRONT, SHOWING TERRACE AND GARDEN.—SOUTH FRONT, SHOWING LAKE.—NORTH FRONT.—EAST FRONT.

WILEY Manor-house is situated on the Cotswold hills, about six miles from Cheltenham, ten miles from Cirencester, and eleven miles from Cirencester, and is the residence of Mr. JAMES HORLICK, High Sheriff of Gloucestershire. It is an interesting property, as the source of the River Thames is in the grounds. It appears that the house (fig. 1), which consisted of three floors of about five hundred and fifty square feet, was partially demolished by alterations made between the years 1856-58 (fig. 2), and was the result of an earlier alteration which had been made about 1790. The rubblework and construction of the house as well as the chimney-shafts, gave evidence of the century work of a Domestic character. WILEY Manor-house, like so many of the old country houses in this part of Gloucestershire, was built close to the river and within 25 feet of the tower—an evident disadvantage nowadays, as it materially limits the extension of the house on one side, unless a faculty could be obtained

and the owner of the house were willing to give a piece of land and build a new church on it in another situation.

In or about the years 1856-58 the alterations and additions to the house were considerable, and we learn that even in those days they so much exceeded the original intentions as to involve almost an entirely new building, and that a new block of kitchen offices and additions to the stabling were erected.

Fig. 2 shows what these alterations and additions consisted of. The south front, and portions of the east and west fronts were destroyed, and the north front was recased in stone. A portico, window dressings, cornice and balustrade in stone were added. It appears that the grounds about the house contained a walled kitchen garden on the north side. The carriage drive was on the south side, hemmed in with trees and shrubs. The quick-set hedge was done away with, and an elaborate Italian garden, with terraces and fountains, was laid out. The stone then used for the facing of the house was Birdlip, a quarry of this stone being on the estate. The plinths and steps were from the Forest of Dean. Enriched plaster ceilings, new oak floors and staircase, with maple, walnut and mahogany



WILEY MANOR
CHELTENHAM



veneer doors, were fitted in the principal rooms. The dining and drawing-rooms were painted and gilt in the style of GIULIO ROMANO. The masonry and carpenter's-work were executed by the workpeople collected for the purpose on the estate.

By the year 1874 more alterations and additions had taken place (fig. 3). The boudoir had been turned into a conservatory. A Turkish bath, consisting of a tepidarium, calidarium, frigidarium and dressing-room had been added on the south-west front. Part of the kitchen had been converted into the "magistrate's-room." A new kitchen had been added, and a corridor had been formed to the

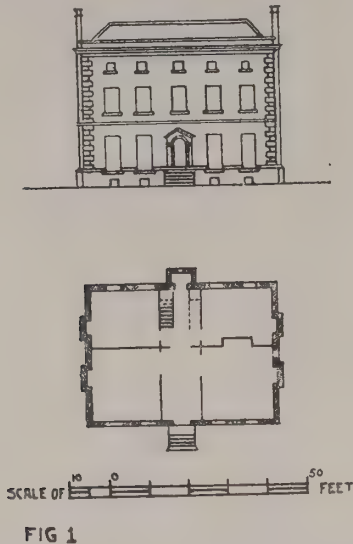


FIG 1

servants' offices. In the year 1898 the Turkish bath seems to have received attention from the owner of the house, as we find that the "tepidarium" had been converted into a music-room and the "calidarium" into a strong-room.

In 1900 the present owner of the house decided on making further alterations and additions, and from that date up to the end of 1902 these, with still further alterations and additions, have been in course of construction (fig. 4).

They consisted of the then existing billiard-room and butler's pantry being pulled down, and a new dining-room (42 feet 6 inches by 23 feet 3 inches), billiard-room (30 feet

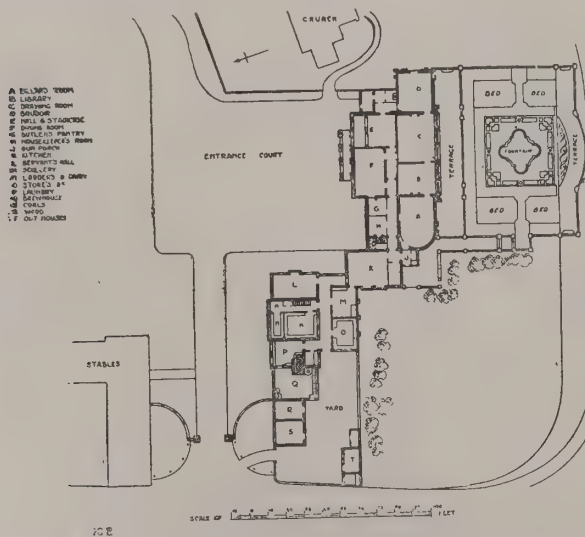


FIG 2

by 18 feet 9 inches), own room, verandah and porch being added, with some twelve bedrooms and two bath-rooms over same, the north and south fronts being extended to form one large block. A secondary staircase was contrived out of part of the kitchen, and the kitchen itself was enlarged. Then a conservatory (27 feet 6 inches by 12 feet) and a ball-room (65 feet by 31 feet) were added on the west side. Over the butler's pantry and adjoining servants' offices six new bedrooms were added, together with extra larders, gun-room, coal and wood sheds. The Italian garden and terrace were also extended to about double their

original size, and a flight of stone steps and terrace to the garden.

The main central south block was also extended, additions already mentioned to about twice its original length, and the details of the existing building were put out in the new work. The new conservatory room were designed to harmonise with the central block, although the details have been kept as plain and as possible. And although the church on the left of the building balances fairly well in elevation with the new room, it is hoped that at some future date a new building will be erected in place of it, so that a perfect balance of the south front may be obtained.

The walls were faced with Birdlip stone, the plinth and dressings being of Hollington stone. The stonework has already toned down so that it is difficult to detect where the new work joins on to the old. Part of the ball-room was covered with green Welsh slates.

The views of the interior show the treatment that has been adopted for the new panelling, staircase, fire mantelpieces, so as to harmonise with the existing work, &c., which were retained.

The ceilings of the hall, dining and billiard rooms were carried out by Messrs. G. JACKSON & SONS, of 15, Place, W., are of plaster, heavily enriched, the frieze of the ceiling and frieze in the dining room being painted. The rest of the ceilings have been painted white. The panelling and mantelpieces in these rooms are of mahogany, the carved shields and swags in the ceiling being of lime wood left "in the white." An elegant mahogany staircase was erected in the front of the house, continued up to the second floor, about 5 feet wide, in lieu of the old one, which was only 2 feet 9 inches.

The panellings, mantelpieces, staircase and fireplaces throughout were executed by Messrs. H. H. MARTYNS of Cheltenham.

The ball-room is painted white and various panels in the wall being covered with crimson. The plaster ceiling and cove, &c., were also painted and carried out also by Messrs. H. H. MARTYNS.

The general contractors were Messrs. J. J. SON, of Rugby.

Messrs. RAWLINGS BROS., of Gloucester carried out the electric wiring and fitting. Messrs. CLEMENTS JEAKES were responsible for the electrical arrangements, and Messrs. ESCARÉ & DUBOIS, of Wardour Street, supplied the large glass electric light fittings. The ormolu grate and fender in the ball-room. Mr. HODNETT acted as clerk of works.

The whole of the work was designed by and carried out under the superintendence of Mr. R. A. BRIGGS, of 12 Norfolk Street, Strand, W.C.

ROYAL WATERLOO HOSPITAL

THE Duchess of Albany, who was accompanied by her daughter the Princess Alice, visited South London on Monday afternoon for the purpose of laying the foundation stone of the new Royal Waterloo hospital, an institution which has outgrown its present accommodation. The new building, which will contain 200 beds, and is now in course of construction on the old site. Designed by Messrs. Waring & Gifford, of Parliament Street, the hospital is being built in three sections, so as to avoid interference with its daily work. The present out-patients' department covering a plot of 10 acres will not be disturbed until the first portion of the new building is ready for use. The building will comprise in-patient, theatre and out-patient departments, with separate waiting-rooms for each member of the medical staff. Every appliance demanded by modern surgery and surgical science is to be furnished, and the total cost of the building will exceed 50,000*l*. On upkeep the further annual expenditure estimated at 10,000*l*, but the assured income is about 2,000*l* per annum less than the expenditure of the old hospital, so that liberal help towards the building is much needed. The constitution forbids the admission of paying patients, and no applicant is ever refused provided there is room and the case is a suitable one for treatment.

BRITISH SCHOOL AT ATHENS.

Annual meeting of the British School at Athens was held on the 22nd inst. Professor Butcher was chairman. Part of the managing committee for the session 1902-03 at the work of the school had been carried on chiefly by Mr. Bosanquet, the director, Mr. Marcus N. Orléans, the assistant director and eight students. They spent six months in Athens arranging the library, increasing the Finlay library, and working on epigraphy with Dr. Orléans. He also spent three months in Crete, after a preliminary study of the epigraphy of Eastern Crete, and assisted in the excavations at Kouraméno, Hagios, Nikólaos and Gortyna. Mr. W. L. H. Duckworth, Fellow of Jesus College, Cambridge, University lecturer in physical anthropology, on the Cretan branch of his subject, and his report was presented to the British Association, to obtain a further grant. Mr. C. T. Currelly, of Victoria College, Toronto, and assistant to Professor Flinders Petrie, was in Palaikastro in the middle of April, on the conclusion of his successful explorations at El Amarah, in Egypt. Mr. J. L. Myres, scholar of Emmanuel College, had made excavations in Sicily and Northern Greece and prepared for the publication of a detailed and illustrated report of Mr. Hogarth's excavations from Zakro. Later he pursued his philological studies in the little visited island of Carpathos. Mr. E. S. Orléans, scholar of Oriel, classified and published the terra-cotta found at Praesos. Mr. A. J. B. Wace, of Pembroke College, Cambridge, chose the comprehensive subject of Hellenic art, which he studied in Germany, Austria, Italy, Egypt, Constantinople, and had published a coin bearing a hitherto unknown Pergamene portrait. Mr. E. W. Webster, scholar of the school, travelled for three months among ancient sites in the remaining two architectural students were Mr. J. L. Myres and Mr. E. F. Reynolds. Two former students of the school had also been at work. Mr. Hasluck, scholar of the school, made four separate journeys to Mysia, and was preparing a dissertation on the history and topography of the region. Mr. A. E. Henderson, of Constantinople, to whom a small special grant had been made, had also been working at Cyzicus. The report contained also an account of excavations at Roussolakkos (Palaikastro proper), which was the ground plan of a Mycenaean farmstead with a courtyard and many other interesting objects. Among the books acknowledged was a most valuable one from the library of the secretary of the Embassy in Constantinople, a reprint of *editio princeps* of Pausanias, printed at Venice in 1568, in the Hostel 581—the highest sum as yet received for a book. The accounts were satisfactory, the balance of 204*l.* odd on revenue and nearly 120*l.* on Mr. Tod had generously foregone his stipend of 150*l.* Craven Fellow, and the late Lord Leighton's sisters, Mrs. Ireland Orr and Mrs. Matthews, had presented 154*l.* of a fund at their disposal. The passengers in the *Argonaut* had given 70*l.* to the school, including new annual subscriptions, while 180*l.* was handed over to an Exploration Fund.

Professor Butcher, in moving the adoption of the report, referred to the death of the first director, Mr. F. C. B. Petrie, and observed that the main work of the school had been carried on in the past year in Crete, where also Mr. A. J. B. Wace was carrying on his fascinating explorations. He would refer to Mr. Evans's paper in the "Annual" of the school, where they would read how the palace at Knossos, with the romantic features of its story, was also a study with elaborate apparatus for making and storing water, and could read also of the remarkable system of drainage arrangements which, according to Mr. Evans, was a parallel in the ancient world; of the stone walls with skillfully constructed curves for carrying off the torrential rain-water; of the porcelain mosaics or *mosaics* representing houses of three or four storeys with apparently a street front, with ladies standing in verandahs or sitting at open windows. There were reproductions of youthful acrobats worked in ivory, and of acrobatic performances, such as backward somersaults of a galloping bull. It was further noteworthy that the symbol of the double axe or *labrys*, the emblem of the deity of Knossos, was found impressed on a number of objects in the Minoan palace, and the discovery was corroborated which made this palace the legendary labyrinth. Continuing, he said that the work of the school for its purpose of training students for archaeological exploration and research was still slight and that there were two chief lines in which such training was given by the school. First, there was the great mass of evidence that had been brought to light in recent years, facts that still to be classified and the conclusions drawn therefrom. Here was so much laboratory material on which the school was constantly receiving fresh accessions from the excavations which did not come before the public eye. For the study of the historic period there was Athens

itself, its monuments, its topography and the contents of its museums. If the school was to fulfil its whole purpose it must do its part in training the explorers of the future. He also desired to put in a word in regard to classical students who could not hope to become experts. The professed archaeologist was perhaps sometimes inclined to look a little coldly on these amateur votaries of his science. Yet even a slight knowledge of archaeology, provided it was sound in its kind, enriched in a wonderful manner classical study. He alluded not merely to the direct light shed on classical texts by archaeological discovery, or to the invigorating influence which the infusion of the scientific spirit exercised on literary training, but to the fact that the literature itself was thus seen in a new and larger setting; it became more real, more concrete. Archaeological research had gone far to efface the boundary lines between historic and prehistoric times. Indeed, in certain respects they could realise a prehistoric civilisation unearthed before their eyes and revealed in such authentic detail as that of Crete, even more clearly than they could the civilisation of the Periclean era. To the classical student, however, the written record, the literature, must of course be the supreme concern; yet he himself had known instances in which a trip to Athens or a cruise among the islands of the Ægean had brought the classical teacher into a fresh contact with reality, which had vivified his teaching by vivifying his own interest in the subject he taught.

Mr. J. L. Myres described his recent successful excavations at Petsofá, in Eastern Crete. The most singular feature of the finds was the abundance of prehistoric terra-cottas throwing new light on the dress and on the religious beliefs of early man in Crete. Especially noteworthy were the large quantities of representations of vermin, apparently for some dedicatory purpose.

COMBINATIONS OF STEEL AND CONCRETE.

THE following regulations about the employment of concrete with strengtheners of steel have been issued by the Bureau of Buildings, Borough of Manhattan, New York:—

1. The term "concrete-steel" in these regulations shall be understood to mean an approved concrete mixture reinforced by steel of any shape, so combined that the steel will take up the tensional stresses and assist in the resistance to shear.

2. Concrete-steel construction will be approved only for buildings which are not required to be fireproof by the Building Code, unless satisfactory fire and water tests shall have been made under the supervision of this Bureau. Such tests shall be made in accordance with the regulations fixed by this Bureau, and conducted as nearly as practicable in the same manner as prescribed for fireproof floor fillings in Section 106 of the Building Code. Each company offering a system of concrete-steel construction for fireproof buildings must submit such construction to a fire and water test.

3. Before permission to erect any concrete-steel structure is issued, complete drawings and specifications must be filed with the superintendent of buildings, showing all details of the construction, the size and position of all reinforcing rods, stirrups, &c., and giving the composition of the concrete.

4. The execution of work shall be confided to workmen who shall be under the control of a competent foreman or superintendent.

5. The concrete must be mixed in the proportions of one of cement, two of sand and four of stone or gravel, or the proportions may be such that the resistance of the concrete to crushing shall not be less than 2,000 lbs. per square inch after hardening for twenty-eight days. The tests to determine this value must be made under the direction of the superintendent of buildings. The concrete used in concrete-steel construction must be what is usually known as a wet mixture.

6. Only high-grade Portland cements shall be permitted in concrete-steel construction. Such cements, when tested neat, shall, after one day in air, develop a tensile strength of at least 300 lbs. per square inch; and after one day in air and six days in water shall develop a tensile strength of at least 500 lbs. per square inch; and after one day in air and twenty-seven days in water shall develop a tensile strength of at least 600 lbs. per square inch. Other tests, as to fineness, constancy of volume, &c., made in accordance with the standard method prescribed by the American Society of Civil Engineers' committee, may from time to time be prescribed by the superintendent of buildings.

7. The sand to be used must be clean, sharp grit sand, free from loam or dirt, and shall not be finer than the standard sample of the Bureau of Buildings.

8. The stone used in the concrete shall be a clean, broken trap rock, or gravel, of a size that will pass through a $\frac{3}{4}$ -inch ring. In case it is desired to use any other material or other kind of stone than that specified, samples of same must first be submitted to and approved by the superintendent of buildings.

9. The steel shall meet the requirements of Section 21 of the Building Code.

10. Concrete-steel shall be so designed that the stresses in the concrete and the steel shall not exceed the following limits:—Extreme fibre stress on concrete in compression, 500 lbs per square inch; shearing stress in concrete, 50 lbs.; concrete in direct compression, 350 lbs.; tensile stress in steel, 16,000 lbs.; shearing stress in steel, 10,000 lbs.

11. The adhesion of concrete to steel shall be assumed to be not greater than the shearing strength of the concrete.

12. The ratio of the moduli of elasticity of concrete and steel shall be taken as 1 to 12.

13. The following assumption shall guide in the determination of the bending moments due to the external forces. Beams and girders shall be considered as simply supported at the ends, no allowance being made for continuous construction over supports. Floor plates, when constructed continuous and when provided with reinforcement at top of plate over the supports may be treated as continuous beams, the bending moment for uniformly distributed loads being taken at not less than $WL \div 10$; the bending moment may be taken at $WL \div 20$ in the case of square floor plates which are reinforced in both directions and supported on all sides. The floor-plate to the extent of not more than ten times the width of any beam or girder may be taken as part of that beam or girder in computing its moment of resistance.

14. The moment of resistance of any concrete-steel construction under transverse loads shall be determined by formulæ based on the following assumptions:—

(a) The bond between the concrete and steel is sufficient to make the two materials act together as a homogeneous solid.

(b) The strain in any fibre is directly proportionate to the distance of that fibre from the neutral axis.

(c) The modulus of elasticity of the concrete remains constant within the limits of the working stresses fixed in these regulations.

From these assumptions it follows that the stress in any fibre is directly proportionate to the distance of that fibre from the neutral axis.

The tensile strength of the concrete shall not be considered.

15. When the shearing stresses developed in any part of a concrete-steel construction exceed the safe working strength of concrete, as fixed in these regulations, a sufficient amount of steel shall be introduced in such a position that the deficiency in the resistance to shear is overcome.

16. When the safe limit of adhesion between the concrete and steel is exceeded, some provision must be made for transmitting the strength of the steel to the concrete.

17. Concrete-steel may be used for columns in which the ratio of length to least side or diameter does not exceed twelve. The reinforcing rods must be tied together at intervals of not more than the least side or diameter of the column.

18. The contractor must be prepared to make load tests on any portion of a concrete-steel construction, within a reasonable time after erection, as often as may be required by the superintendent of buildings. The tests must show that the construction will sustain a load of three times that for which it is designed without any sign of failure.

USHER HALL, EDINBURGH.

THE Lord Provost's committee of the Edinburgh Town Council have approved of the recommendation that the plans for the Usher Hall should be prepared by the Superintendent of Works. The following are samples of the letters which have appeared in the *Scotsman* on the subject:—

"I gather from the *Scotsman* that the Lord Provost's committee has adopted the recent recommendation of its sub-committee to entrust the city superintendent of works and his staff with the preparation of the plans for the erection of the Usher Hall.

"It appears that when the subject came before the sub-committee the question raised 'was whether or not the plans for the hall should be thrown open to competition.' The members of the committee 'were predisposed in favour of competitive plans, but when the matter had been fully discussed they unanimously decided that competition, in the circumstances, was altogether unnecessary. It was contended, and generally admitted, that the site was not one which lent itself to much architectural treatment. It was therefore recommended that the work should be left in the hands of the city superintendent.

"I venture the opinion that the decision of the Lord Provost's committee is based upon misconception, and I am certain that the citizens of Edinburgh will not endorse the view that the erection of the Usher Hall does not display opportunities for architectural treatment. The donor left 100,000*l.*, and although the acquisition of the Synod Hall site restricts the exterior to one principal frontage, it is none the less im-

portant to secure a well-designed frontage and nobly finished interiors for the hall and its many important adjuncts, way of entrance halls, corridors, staircases, &c.

"The erection of a City Hall should afford the opportunity for the display of the greatest architectural skill, and the citizens are entitled to insist upon.

"Should the present proposal be adopted, the Council have to accept the design submitted by the city superintendent and his staff, without any choice, and the city may be left with an unsatisfactory public building.

"The most suitable design can only be obtained by a competition among independent architects, and such a competition must be conducted under proper conditions, so that the best men will prepare and submit designs. An architectural assessor of the highest standing qualified to advise the Council in the selection should be appointed, to secure that the city will obtain the best possible design that can be obtained.

"The latest phase of the Usher Hall question is so ordinary that no apology is needed for writing you on the subject. The painful history of Mr. Usher's munificence, burned into the public mind that I do not need to repeat facts even to our town councillors.

"The report in yesterday's *Scotsman* states that which led the Lord Provost's committee to adopt the committee's recommendation that Mr. Morham be entrusted with the designing of the proposed hall. From the sub-committee meeting, as published in the evening of Monday, we are led to understand that this sub-committee was 'predisposed' to ask that competitive plans be submitted, as 'the site did not lend itself to architectural features' and did not think this necessary. What a tactful way of doing it! How all parties must relish such gentle flattery, while that Mr. Morham's work is good enough only because it is not first-rate; how gratified the relatives and friends of the late Mr. Usher must feel when they hear that at last proposed to erect a hall, but do not think it worth the trouble to try to get the best possible design, for it is not so much to Mr. Morham to suggest that a public competition, as it would the various ways in which different merits the site might be treated, would give the public the best result, having the most architecturally suitable design.

"And, further, although the position may demand a 'featureless' exterior—a point upon which the public can be convinced by the pronouncement of a mere superintendent—it does not follow that there is no planning required for the interior.

"It is stated that some members of Council favour a proposal to hand the work over to Mr. Morham on the ground that his department has already carried out such works as the City Chambers extension and the new fever hospital. At present the air is charged with 'inquiries' as to whether there is any truth in the rumour that the City Council's extension was carried out chiefly on plans, approved by the department certainly, but designed by an architect connected with the department except that he drew through it, who worked in his own office and not in the City Chambers. As regards the new fever hospital—well, the better. But in this case also it is freely stated that the expert was brought from London, and was given the work to carry through the work. Considering that this gentleman's salary, and paid his staff during the drawn-out period of erecting the hospital, further provided all materials and office room, and finally Mr. Morham got an honorarium of 1,000*l.* voted him, for that we might have had at least as cheap and as good a hospital if there had been an open competition, and the plan accepted and carried out under the direction of the architect. But perhaps your own articles are to blame; a success of this Council, which has so freely wasted its resources, it sees a chance of making money by farming the services of an official for whose whole time the hall already pays. 'Let Mr. Morham build the hall,' say the faithful guardians of the city purse, 'and we will pay him.' The architect into the city funds out of the sum left by the late Mr. Usher, following the precedent of that most unfortunate case regarding Mr. Cooper the late burgh engineer's connection with the cabling of the car system.

"Sir Andrew M'Donald has always told us of his interest in the Usher Hall. He is reported to have said on Tuesday evening that the matter 'pained him' and unless things went on satisfactorily he would convene a meeting of citizens to discuss the question. Will a member of the Lord Provost's committee 'preside' at what potent reason made a sub-committee 'preside' at an open competition recommend that the work be handed over to the Public Works Department? Will he tell us what advantages this course offers? Will the citizens get any advantage? Certainly not, for it stands to reason that an open

the attention of front-rank workers, as such an competition must, will be more likely to give us the in all the efforts of even an ably officered Public tment. Will money be saved? Most certainly has to be given out and paid for, as is alleged in mbers extension, or if a numerous and highly-paid e engaged and a substantial honorarium given, as the hospital.

aving all such considerations on one side, the e in the present instance merely administering a t dealing with city funds, which, as a matter of through city departments. Do they think that in rk to the Public Works Department they are nanner which would accord with the wishes of the i donor of the money? If they do, I think they thers willing to credit Mr. Usher with such narrow- Is it too much to ask our councillors even yet to minded, even a national view of their responsi- them offer a premium for the best design sub- tem employ a non-resident assessor of the highest et them decide from the first to abide by that ling. By such a procedure our councillors would k themselves great credit, and also act in the best e citizens, but, further, by conducting such a r the erection of a public hall in the capital of y will do much to stimulate architecture, not only g, but all over the country, a public service it is t councils to do.

ot someone may object to such a course on the e organising and carrying out of such a com- mean loss of time. In view of the delays which e already submitted to, they will make no protest brief delay which promises to secure for the city ble hall. Moreover, at the present juncture such possibly allow stock to so appreciate as to prevent ion of the heavy loss with which the fund is at ened owing to the depreciation of city stock, in may be invested."

ETRUSCAN AND HYKSOS.

ing interesting communication, signed by Messrs. ackay, Percy E. Newberry and John Garstang, in the *Times* :—

problems of ancient history are the mysterious e Hyksos in Egypt and the Etruscans in Italy. aces submitted below suggest that a single e found in a common relation of both peoples to

neological researches of living scholars have ay be claimed, the existence of Hittite diffusion, d domination during a period as remote as the s of Israel, and as late as the Assyrian conquests, oughly, from the Black Sea to the frontier sands an Delta and from the Upper Euphrates across e Ægean. During four centuries, 1600-1200 t kings, resting, as it were, on the Taurus range, of Syria, the Orontes and the Upper Euphrates, length shook off the Pharaohs at the height of a and fade away 500 years later before Assyria. oils and tribute arose, so to say, one of the vast ak, so on the walls of Abu Simbel and the es the eye can still see their fortress stormed, tory, and the treaty between the most renowned hs with their own great king whose daughter . Their sculptures and inscriptions, both still een found as far as Smyrna, on the coast of the Greek Ionia, inland along the plateaux of and the southern gates, at their royal seats e Syrian river and Karkhemish, the chief ford ia to the west. Although their inscriptions rest red, their weathered sculptures reveal distinctive pigtail all Tartars wore, and the tip-tilted shoe is e Chinese, it is said, got both from the Huns e lion is their symbol of power; the human head of the lion (the sphinx) is their familiar monu- divinities stand upon the backs of lion and ekh was their common deity. In the later heon the goddess of their Syrian capital, which rmed, stands on a lion's back holding flowers d and a serpent in her left. Her ornaments d anklets, and upon her head is a horseshoe- ith curling ends. Other deities adopted also an Astarte, lioness-headed lady of horses and Anta, a Syro-Hittite divi. of war. The Hittite decorations are monstrous animal forms, riffin; creatures and figures, winged, double- human-headed, halved and conjoined, the lion chariots and horses, their new and formidable

arm. Their patterns are the concentric circle, the rosette, the twist and coil. They had a rude square lyre; their jewellery is of inlaid stones and granulated goldwork.

Already in the twelfth dynasty, before that eclipse in Egyptian history, the Hyksos period, there is in the statues of Queen Nefert and Amenemhat III. a clear Mongolian or Turanian strain—she wears on her head the horseshoe-like attire, he a pigtail to his wig. The Sphinx appears—indeed, to the reign and to the features of that monarch some scholars have independently related the great Sphinx at Gizeh. The Dahshur jewellery, associated with the daughters of this Queen Nefert, unlike any earlier Egyptian art, is of inlay and granulated gold. An immigrant company is depicted on the walls of a tomb at Beni-Hasan. They wear woven tapestry and fringed garments, and the tip-tilted shoe. One carries a square lyre. Their prince is entitled the ruler of a foreign (mountainous) land—the Sinaitic deserts, it has been conjectured, to the south of Hebron, where Hittite and Semite had intercourse and intermarriage in the age of the patriarchs.

The Hyksos were a confederacy of such chiefs. The statues they made or usurped are Mongoloid: Turanian on a Semitic stock, Hittite-Semite. Before their chariots and horses, the Hittite arm, Egypt yielded. The lists of kings engraved on the national monuments, except those of Thebes, become blank. After the restoration of the monarchy, from some monuments which the Hyksos had made or adopted, their very names were effaced, but amid the silence of Egypt the scarab seals of their administrative system survived. Upon three is the earlier term Hekkhaskhet, significantly altered to the new régime, and the device of sphinx, griffin, animals winged, human-headed; patterns of the twist and coil and concentric circles. The name of one ruler is found also in Crete and Bagdad; the name of another is compounded from the Syro-Hittite deity Anta. The last of the Hyksos lost his throne in the effort to impose upon the Egyptians his foreign deity, the Hittite Sutekh. Ruler and people were driven finally into the mountains of Syria and were lost among the Hittites.

To pass to the Etruscans. The monuments of Imperial Egypt and such documents as the cuneiform despatches of the fourteenth century B.C. are definite history. Among the invaders of the Western Delta were Libyans and pirate peoples of the Asian and Ægean coast, once defeated together before Memphis. They plundered, too, the coast of Syria, amid the disintegration of the great Hittite kingdom, about 1200 B.C. Their galleys are depicted. Among them the Lycians are universally recognised, and the Tursha have been often identified with the Tyrseni. From Herodotus downwards, and particularly among the Latin writers, it was the all but universal belief of antiquity that the Tyrseni sailed to Italy from Lydia and settled among the Umbri beyond the Tiber; corsairs still, they gave their name to the upper and lower waters of Italy, the Tyrrhenian or Tuscan Sea. The classic tradition of their origin has been discredited by modern scholars, who accept Tyrian factories along the African coast in remote antiquity, and can credit the planting by petty Greek towns, neighbours to the ancient Lydians, of colonies beyond the Bay of Naples, and near the mouths of the Rhone. But the new material supplied by Hittite and Egyptian studies places the old problem in a new light. Evidence in support of this classic tradition may well be sought in a comparison of the Asian and Etruscan monuments.

Though the early monuments of Asia Minor are still scarce, the buried tombs and cities of Etruria have given up to history their dead. To turn to these monuments :—

Alike in Hittite Asia Minor and in archaic Etruria are the tip-tilted shoe and top boots; an ample cloak, sometimes under-belted or under-girdled, leaving one arm free or sleeved, with an end thrown over the other shoulder; a tunic belted, with close short sleeves; a fringed or plain garment continuous over the whole figure and under-belted; a skirt or shirt embroidered and fringed; a flounced skirt; a close round cap, a hooded cap; a robe, plain or edged, continuous with the cylindrical hat or the close cap; a conical hat with brim upturned, or with the brow-band decorated; a horned head-dress; a plain fillet; a cylindrical head-dress fluted (hence perhaps the mural crown); the hair in two plaits on each side, with curled ends or without, or gathered together behind like a full pigtail; the significant horseshoe-like head-dress with curling ends; the hand-mirror, a low table with curved legs like the curule seat, and the lyre.

In both alike also are chariots and horses, with almost identical trappings and fittings; for arms and armour—a sword, with short arc-handle, a lozenge spearhead, a short bow, mail, a round shield decorated in concentric circles and devices of animals; for emblems—the double axe, a hammer or mallet, a curved staff (like the *lituus* of the Roman augur), a plain staff, a staff with horned disc or ring at the end of the staff (a Hittite hieroglyph and the Etruscan *caduceus*), and the dove; for emblematic, pictorial or decorative motive, often indeed in similar attitudes—lions rampant, winged or human-headed, bulls, cheetahs or panthers, deer, goats and boars;

monstrous creatures—sphinx, griffin, winged sphinx, winged horse; patterns of the coil, scroll, rosette and concentric circle, and heads for mural carvings. Faces with protruding tongue are suggested by a Hittite hieroglyph. Even for the Asian divinities standing upon the backs of animals there is in Etruria an amulet with similar figures. For ornaments are armlets, necklets and earrings; the resemblance between the beaten bronze and metalwork is notable, while the Dahshur jewellery and the Etruscan in their inlay and granulated work have been related independently. With regard specially to Lydia, in the Western Empire, and Etruria, the similarity in their sepulchres, in decoration, doors, side chambers, funereal couches, their conical tombs, the arch, their towered walls, their alphabet has been often remarked by scholars who have studied particularly the monuments in either country.

The Turanian or Mongolian cast among the Etruscans is portrayed on some of their monuments. In this examination and comparison by detail between Hittite and Etruscan there are very few of the available Hittite characteristics which are missing.

In sum, a triple series of coincidences, Hittite, Hyksos and Etruscan is here submitted to the criticism of scholars without indicating the influence on or relation to earlier, contemporaneous or later civilisations, but in order to elucidate the origin both of the Hyksos and of the Etruscan through the Hittite, restoring for Etruria her classic tradition, reconstituted from that site:—

Saxo incolitur fundata vetusto
Urbis Agyllinæ sedes, ubi Lydia quondam
Gens, bello præclara, jugis insedit Etruscis.

Professor Flinders, in a letter to the *Times*, says:—The theory of connection between these three people is by no means new. It has been threshed over by De Cara at full length in a long series of papers ten years ago in the *Civiltà Cattolica*, and has been since then in the minds of most real students. But—possibly from faults of presentation—it has never raised any serious debate. Before estimating what more may be said for it, we may as well clear the ground in some directions.

The Dahshur jewellery is quoted as in some parts resembling Etruscan. It cannot be compared with either Hittite or Hyksos jewellery, because none is known in detail. Now, so far as it is connected with Etruscan style, so far it defeats the argument, as neither Hyksos nor Hittites were connected with Egypt in those days. It is of an age before either race had appeared on the Mediterranean; and thus points to Etrurian art being already in the Mediterranean before either of the other peoples were present.

The immigrants shown at Beni Hasan have nothing to do with either Hittites or Etruscans, as they are entirely different in features.

Of the Hyksos nothing whatever is yet known as to features, all of the monuments bearing their names being older carvings usurped by them. As to gleaning their art from a few small remains with scarcely any distinctive motives, it must first be shown that the motives are not older, nor belonging to other sources. Practically identifications with Hyksos can only rest on guesses and possibilities at present, as there is no material to give proofs either way.

The question really open to debate is the similarity between Hittite and Etruscan details. As both peoples came down through Alpine countries to their later homes, all that relates to clothing would be evolved under the same conditions, and therefore probably similar in nature. Of the other connections many belong to Egypt before the Hyksos or Hittites—such as the use of mirrors, the hair dressing in plaits and pigtail (women) and horseshoe head-dress. The horned head-dress is not Hittite, but Western. The plain fillet is common to many lands. In short, much of what is named is Egypto-Mediterranean, long before Hyksos or Hittites.

THE EVOLUTION OF DESIGN.*

THE architect can never count on immediate recognition of his efforts. Although his achievements be the product of an earlier period of his professional life when, unnoticed and not comprehended by others, he conceived the inspired thoughts which eventuated in his final success, it is not until after years of trials and tribulations that he may secure the ideal reward. He must therefore draw very largely on his conscientiousness, born of a sense of "duty well performed," for his recompense, and content himself with a mere pecuniary reward for his labours—a compensation which often dwindles into insignificance compared with that of kindred professions.

Endless study and constant toil in the endeavour to meet the modern demands; to obtain the mastery over the principles

* A paper by Mr. J. L. Smithmeyer, read at the Convention of the American Institute of Architects in Washington.

underlying sound construction and the use of the new building materials; to understand the new heating and ventilating, and other appliances of a comfort-giving nature, exact more time and energy from the architect than at any previous era; and he casts his lot to the votaries of the sister arts, sculpture and painting, who, as a rule, reap the fruits of their labours easier than he.

Architecture is a useful art. Its first requirement is utility. "Beauty," the visible form, is a secondary consideration; yet no architectural effort can be a success without its concomitancy. Its origin traces back to the shelter and protection of the primitive man from weather and mishap.

The development of this pristine abode into a structural art, and its crude floral, armorial, and other adornments into a work of fine arts, is the result of the continuous upward progression, from simple to more complex types to higher and more complex structures calculated to ameliorate and elevate the status of the human race.

New necessities of the human family and the development of new building materials (iron, steel, brass, copper, concrete, cement, &c.) develop new constructions and new methods of construction. The highest perfection of this development constitutes the architecture of the respective era. Our modern period has produced numbers and greater varieties of new constructions than any previous one, but the development of new forms must be slow, owing to the time consumed in testing the qualities and suitability of the new materials, the delays encountered in obtaining them in proper quantity, and also to the tendency of the architect to cling to the venerable old forms in preference to the new. The unprejudiced eye must perceive that the classical "Modern architecture" and the "Renaissance" are no to-day than that between the "Renaissance" and the "Antique." This is a convincing proof that we are in the midst of an evolution which ere long will bring forth a new style, which will be the result of the necessities and the embodiment of the artistic ideas of the day.

Our age is a prosaic and eminently practical age. It will, therefore, be the predominating characteristic of the style. This modern style will obviously tend to be Perpendicular architecture; but, notwithstanding this, it will be independent of any existing style, and will be the result solely through the earnest efforts and endeavours of the profession.

"Forms are not invented; they grow, if we will, by them to do so, by cultivating and irrigating the soil. The elevator, have already possessed us of many advantages over former days, foremost among which are the saving in cost and time of the erection of high buildings, the availability of space, and minimising of the cost of commercial and manufacturing centres of our large cities.

Architects and students, eager to become conversant with the study of the forms of architecture, often confine themselves to the study of the forms of architecture and neglect all others. They select one style of architecture and neglect all others. They have the greatest number of votaries; they are simple, are carefully sorted, measured and labelled, and are easily obtained." The prospective practitioner, for a while, and soon concludes that they are the best for the purpose of his practice. Hence the great popularity of the Greek forms, and their resultant—the "Renaissance."

Thus, in the early days of this country, the architecture was Greek temples. Not only churches, but residences, railroad depôts, court-houses, libraries, houses, but also music and dancing halls, hostels, houses, and even livery stables, were Greek temples. They were large and small; built of stone, brick, or rough-cast walls. The simplicity of the simple temple structure seemed to adapt itself to the needs of the people and to the compass of the construction. The characteristics by which the exterior of the temple distinguished from any other one-cell structure—the peristyle, tympanum, entablature, column, pilaster, baluster, &c.—were copied from illustrated editions of libraries, and were freely used by the designer. Aesthetically viewed, the selection of the temple for the mosque of the Mohammedan, the synagogue of the Israelite, the cathedral of the Christian, or any other place recognised as a place of worship, for secular or religious purposes, must be unpleasant to the cultured mind and eminently bizarre.

The disgust of the thinking minds of the Middle Ages at the prevailing political, religious and social conditions, with the forms of art expressive of peculiar political conditions conditioned on rude force, oppression, superstition and personal greed, had finally terminated the upheaval of the Reformation and in the return to the

forms, which, with further developments, necessary to the new and complicated ideas of Christianity advanced state of social and political civilisation, Renaissance" like the "Antique," has fulfilled its and, like it, must yield to the law of evolution, upward progression, from simpler forms and so more complex structures, greater comforts and sanitary conditions. And yet, in full view of this, there are still many adherents to the forms, who steadfastly antagonise, or ignore, all styles of architecture, and retard the advent of a new style.

ly increased commercial, political and social our days with the people of all parts of the untold new archaeological and traditional treasures of the modern architect, which enrich his repertory as never before, and which will, when readjusted to our new constructions and to the materials, place him in a favourable condition to expectations of the time in which he lives without temple architecture.

out requirement of a successful competition for is "absolute freedom" from restrictions as to style of a structure. The requirements given programme, together with the dimensions of the ground, its shape and environments, and the structure, should constitute the list of restrictions. Divisions and subdivisions, grouping and material, disposition of the openings, but, more thought and form of the structure, should be entirely artistic feeling of the architect, resulting as they (ie) from the construction and composition of his due interference with the free development of an exception must prove a detriment to his design—a hindrance to the level of a fashion and a hindrance of evolution.

examined the site and studied the conditions im- programme, the architect next devotes himself to of the city, for the purpose of acquainting with the relative elevations of the various grounds public and private edifices of an imposing character ed. By this means alone can a correct idea be of proper height and form a structure should have ar locality, and with reference to the artistic silhouette of the city.

monumental structure in the country demands a the part of the architect with the topography and estics of the scenery which environs the site of such as lakes, rivers, cascades, creeks, moun- ags, woods, meadows, farms with tilled lands, hey are most essential in developing a form harmonious with, and appropriate to, the land- lect on the part of the architect to duly consider nents in his composition would eliminate the at which architectural construction cannot rise to "high art."

al effect and dignity of a monumental structure largely on the elevation and environments of the it. If a site has been selected which lacks the ize necessary for a suitable display of such a professional skill, ingenuity and experience of should be called into requisition to obliterate this shortcoming by an adequate increase of the structure, and thus to avert its dwarfing.

THE DRESDEN EXHIBITION.

ctural League of America held its annual con- in St. Louis on the 5th and 6th inst. The main of the convention was delivered by its president, Stymetz Lamb, a prominent artist of New York, retary of the New York Municipal Art Society. spoke on the Dresden Municipal Exhibition, ned early in the spring and has been running mmer months. He has just returned from re he made a careful study of the exhibition and icipal affairs in general.

as many things to learn from Germany in the icipal affairs, said Mr. Lamb in a recent inter- ible reporter.

s which perhaps more than any other appealed ere those relating to expansion of cities, trans- et paving and corporate care of art. The handicapped in many ways unknown to the n. Relics of Mediævalism, like moats and prejudices and customs, make the growth of a y peculiarly difficult problem to handle, and yet, these difficulties, Germany has solved many of problems in a most satisfactory way.

In the matter of transportation the United States is far behind German methods. Government control of railroads there makes it possible to obviate the evils of paralleling elevated, trolley and underground lines. Terminals and stations also are made works of art, instead of the unsightly encumbrances inflicted on the American city by private management.

The plan generally pursued in the larger cities is that of radiating roads from a common centre. Intercommunication is secured by circular or belt lines, connecting stations on the main lines. They are ordinarily trolley lines, and differ little from American systems except in their general attractiveness of street fixtures, &c.

A study of paving in German cities gives one an excellent opportunity not only for comparison, but of noting the most recent innovations. As yet no one material seems to have demonstrated marked superiority. The Belgian block, either of granite, sandstone, basalt or other stone, as locality may make most economical, is still a favourite and extensively used, although the wooden block has many advocates. Cement paving, combination blocks of slag and composite blocks are also in use. The secret of success in every instance, however, seems to depend upon the foundations rather than upon the material used on the surface. The most successful streets all have a concrete foundation of most permanent character, and it is therefore immaterial whether wood, brick or asphalt is used as the final layer. One advantage, however, in the use of the composite block is the possibility of varying the colour, which in large squares and open plazas is a distinct gain. It is interesting to note that this use of different colours in pavements is traceable to Roman influence, and that to-day the same tones are used as were employed by the Romans thousands of years ago.

But it is in the corporate care of art that America needs to study German methods. In every town in the empire there is evidenced a wonderful pride in public art. Their public buildings, parks and railroad stations even are made to stand for something artistic as well as useful.

"But is this not to be expected in a country as old as Germany?" he was asked. "There the problems of a newer country, where the cities are growing, are no longer troublesome."

That is where we need enlightenment again, he responded. The cities in Germany in the last twenty years have experienced a growth as rapid as anything you can point to in America. Furthermore, there they have had a great many obstacles to confront in the way of old-established customs and relics of Mediævalism, as, for instance, the old city walls, &c. The treatment of these latter makes an interesting study.

One of the surprising things to an American who studies the cities of a country like Germany is the fact that he finds our municipal problems are also theirs. We are inclined to think of Germany as old, and therefore settled. We excuse many things in our own cities on the plea that they are still engaged with the problems incident to their rapid growth. It is therefore somewhat surprising to learn that cities in Germany are growing with a rapidity equal to that of American cities, and it becomes interesting to study how they of the older country cope with the problems that we have been inclined to think were peculiarly ours.

To Americans, possibly, the most interesting and instructive exhibit in the recent Dresden Municipal Exhibition was that of "city plans," showing recent developments and improvements in the arrangement of city parks, streets, &c. Fortunately there were a few comparative plans showing cities as they existed at an earlier date, about 1870, as they exist to-day and as they are projected for the future. They show that these German cities have been growing not only with a rapidity equal to our own towns, but that, too, in the face of many handicaps not existing in our country. While we complain of the difficulties confronting us, we do not realise those confronting the older cities, with their Mediæval inheritances and the prejudices of established customs. Great praise is therefore due them for what has been accomplished.

All plans for expansion exhibited at the Dresden exhibition showed most clearly that none of the city governments were prepared for the recent enormous and inexplicable growth. All plans existing in 1870 were far inadequate to the demands of recent times. Many cities at that date still retained their walls, and were subj ct to many conditions now obsolete. In every case walls have been pierced or removed entirely to permit the necessary expansion to outlying districts. In many cases the space thus obtained has become the most beautiful section of the city.

Most pleasing as well as most instructive is a study of the ways in which the old walls have been modified to meet modern requirements. In some of the smaller cities they have been removed entirely, and the space absorbed by the regular street system; in others, but half the wall has been removed allowing the street system to extend on one side only and

retaining the other half for park space; in still others the entire space occupied by the walls has been reserved for parks and public buildings.

The most interesting solution of the problem perhaps is offered by Nuremberg, where the old picturesque walls are retained almost intact, but pierced at convenient intervals to permit the necessary intercommunication between the old city and the outlying districts. The walls form an almost continuous series of parks, parkways and promenades. The old moat is a beautiful flower garden. Restaurants and public gardens abound. Public buildings as well as important private dwellings, cluster near the wall, and the result is a most happy combination of the old with the new. A fast trolley-line circles the city on the outside of the walls, and gives the necessary intercommunication. Instead of there being buildings of an inferior character on the outside of the walls, strange to say, some of the very best are to be found there.

Not every city, however, is as fortunate in its solution of the wall problem as Nuremberg. Some cities, as Freiburg, have endeavoured to eliminate the walls and retain merely the entrance-gates or towers. While this may, perhaps, give greater immediate building space, the effect is far inferior to that obtained by such a treatment as carried out by Nuremberg. The towers are isolated and look unnatural and out of place.

In the exposition there were good opportunities also for studying building methods. Plans and models were shown. Nothing radically different from our own methods obtains, however, except as to the matter of limiting the height of the buildings. Private dwellings, tenements and workmen's cottages were shown in every conceivable development, and while not demonstrating anything strikingly new, were yet an evidence of the earnest effort on the part of every city to ameliorate the condition of the poor.

The handicrafts were not overlooked in the exhibits. Schools exist in every city for the proper training of the young, and work in every material is suitably encouraged. Museums are maintained with complete and exhaustive collections of the representative work of other countries, and no effort is spared to place before the rising generation complete information of the most improved methods employed in competing countries.

The exposition contained as well complete information on the question of sanitation and the improved methods of caring for cities. Interesting models, full size, of the drainage system and the disposal of waste, as now practised, were shown, and those interested could find complete tables of statistics showing density of population, prevalence of disease, death rates, &c.

The poor were not forgotten. The system of caring for the poor was shown in models. There were models of hospitals without number, and every detail, not only of the construction, but of the management was distinctly portrayed.

A special department was devoted to information in reference to schools and education. The school system was carefully explained and samples of the students' work shown. Here again we note the attention given to handicrafts and the insistence upon skilled workmanship. Classes exist in design, mechanical drawing, wood-carving, metalwork and lacemaking. These are classes that are not pretences, but practical preparatory schools for the factory, fitting the pupil upon graduation to take part with ease in that competitive industrial struggle that Germany is waging with the world at large.

The exposition embraced one main building in which were to be found comprehensive exhibits on transportation, expansion, public art, sanitation, schools and education, poor-houses and hospitals, banks and finances and statistics, and some twenty odd minor buildings, in which were to be found exhibits relating to machinery, street cars, street construction, methods of using gas, water and electricity, methods of cremation, automobiles, fire engines, samples of building materials, &c. Landscape gardening, flower culture, and even models of street fixtures, were exhibited as actual details in the general arrangement of the grounds. The minor buildings were filled with the exhibits of firms dealing in machinery and municipal supplies. These exhibitors were, however, well controlled, and forced to so display their goods as to make each exhibit a logical part of the whole. This arrangement enabled one in a very short time to get a thorough knowledge of what the exposition contained, and also to obtain information on any particular subject desired.

M. Bouvard, inspector-general of the Department of Architecture, Promenades and Plantations of Paris, has paid a visit to Brussels on the invitation of the King of the Belgians. He has also received the distinction of Grand Officer of the Order of SS. Maurice and Lazare from the King of Italy.

GENERAL.

The Emperor of Germany has presented amongst gifts to the Museum of Howard College, U.S., representing the Golden Gate of Freiburg Cathedral and the bazaar of Hildesheim Cathedral.

The Junior Institution of Engineers have awarded Institution premium to Mr. R. W. Neuman for a paper on "Design and Construction from a Contractor's Point of View."

Mr. Alfred J. Dunn has, on account of pressure, resigned his lectureship in building construction and design (elementary, advanced and honours) at the Birmingham Municipal School of Art. The committee have appointed in his successor Mr. Francis B. Andrews. Mr. Andrews is an experienced lecturer, and has received from the Royal Institute of British Architects one of the twelve "certificates of competency to act as building surveyor" issued by the Institute as the result of examinations held up to 1901.

Professor George de Thierry, the official designer of waterworks and navigation in Bremen, has been appointed to teach practical hydraulics in the Technical High School of Berlin.

The Foundation-stone of a new church in Tisbury, Wiltshire, was laid on Saturday. Messrs. Devereux are the contractors, and the architect is Mr. A. A. Heath.

The Brighton Corporation works committee have decided that application be made to the Local Government for sanction to borrow £12,938 for the purpose of coast defence.

The Westminster City Council have decided to refer to the Board of Trade that the Council are of opinion that the streets should be furnished with further powers, in order to give greater control over the breaking up of the streets within the jurisdiction of electric supply companies, and that a clause should be inserted in all orders granted by the Board, making it obligatory upon such companies to supply light and power for public buildings or for public lighting in the district at rates not greater than the lowest rates charged to their consumers.

Mr. W. Curtis Green will read a paper on Monday at the Liverpool Architectural Society on "Street Architecture, Formal or Irregular."

The Worthing Town Council are taking steps to plan for the erection of a new library on a site belonging to the Corporation, in connection with Mr. Carnegie's endowment of 5,000 £.

A Project has been arranged to provide work for the operatives of the building trades of Paris. It consists of repairs and alterations in several of the hospitals, and the construction of some new hospital buildings. The outlay is estimated at about 2,000,000 £ sterling.

Mr. John Lavery, R.S.A., has been awarded the gold medal in connection with the International Art Exhibition at Venice.

The Director of the Paris Opera House has decided to issue an illustrated programme for each performance, and the competition for the cover will take place. Designs are to be submitted before November 20. They will be exhibited publicly in a library, and then submitted to a jury of artists. The first prize will be 1,000 francs, the second 500 francs. An anticipated similar competition will be held every year.

An Interesting Discovery has just been made at Wilthorpe, Lincolnshire, in connection with the new Manchester to Wilmslow railway. Workmen have found portions of the old Bollin Mill, which had to be taken down to make way for the present line, sixty-four years ago. The hall was of considerable size, and the portions now found are considered by antiquaries to be as old as the parish church, which was erected in the thirteenth century ago. The remains of an ancient well have also been found. Further discoveries are expected. The site was formerly in the Booth and Trafford families, and tradition says that Anne Boleyn, one of the unfortunate wives of Henry VIII, was born there. An old Norman chapel is also supposed to have existed here.

The Bishop of Oxford on the 24th inst. attended the service at Little Marlow (Bucks) Church, to commemorate the completion of the restoration of the church, which has been carried out at a cost of about 1,000 £.

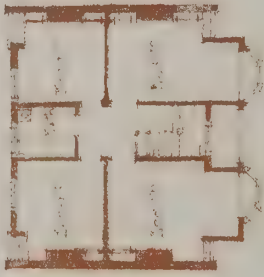
The Sanitary Institute will meet on December 10 at Leicester. There will be a discussion on "Flooding of the River Thames in London by Sewage" at the Parkes Memorial Lecture on December 9. The next congress will be held in Glasgow.

The Fifty Designs received in the Bromley Library competition will be on view at the borough offices, Poplar, on Friday, between the hours of 10 A.M. and 4 P.M. to October 31.

Mr. J. Martin Brooks, architect, eldest son of John James Brooks, the ecclesiastical architect, died on Saturday at his fiftieth year.

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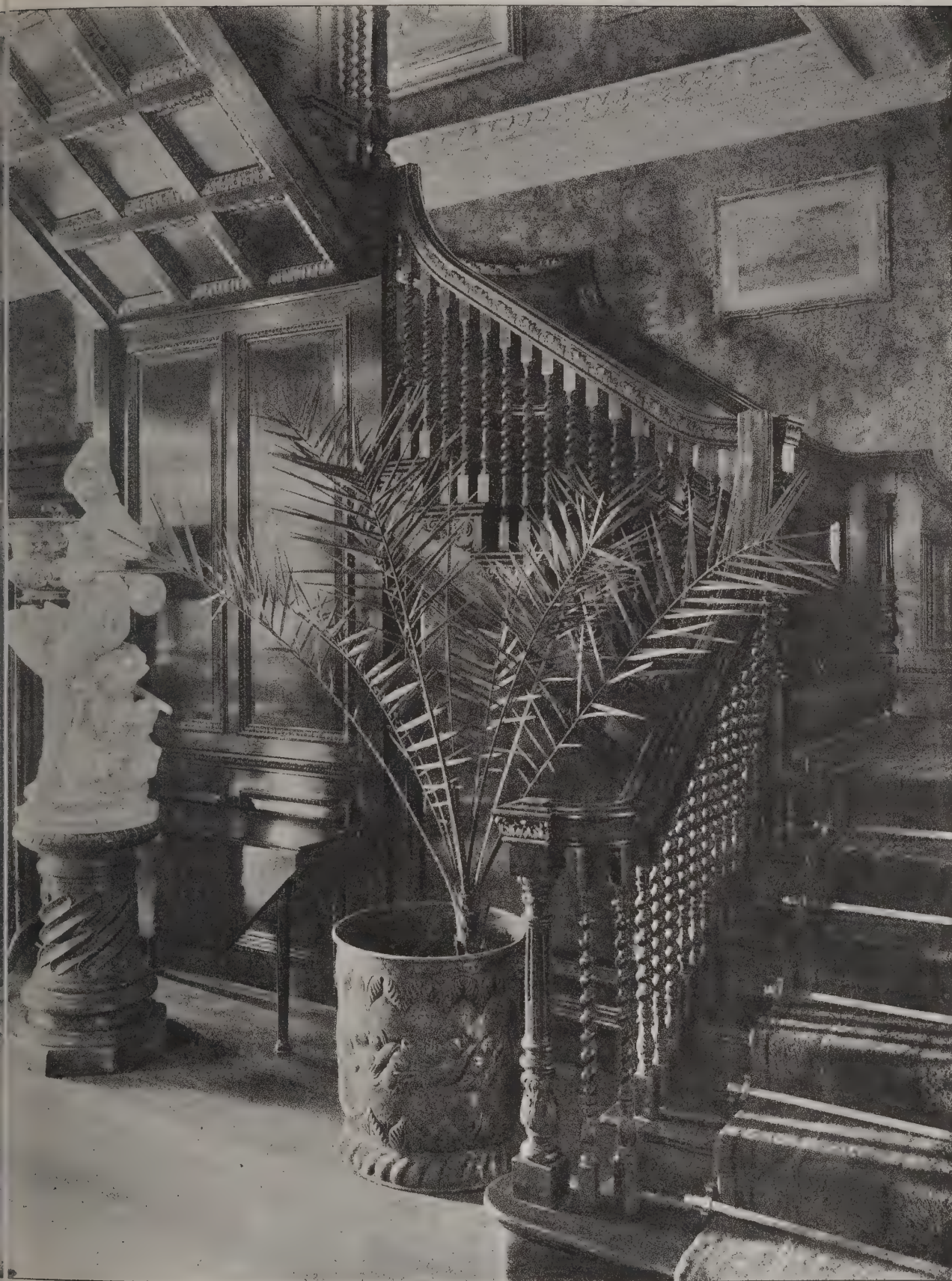


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COWLEY MANOR: STAIRCASE.

R. A. BRIGGS, F.R.I.B.A., Architect.

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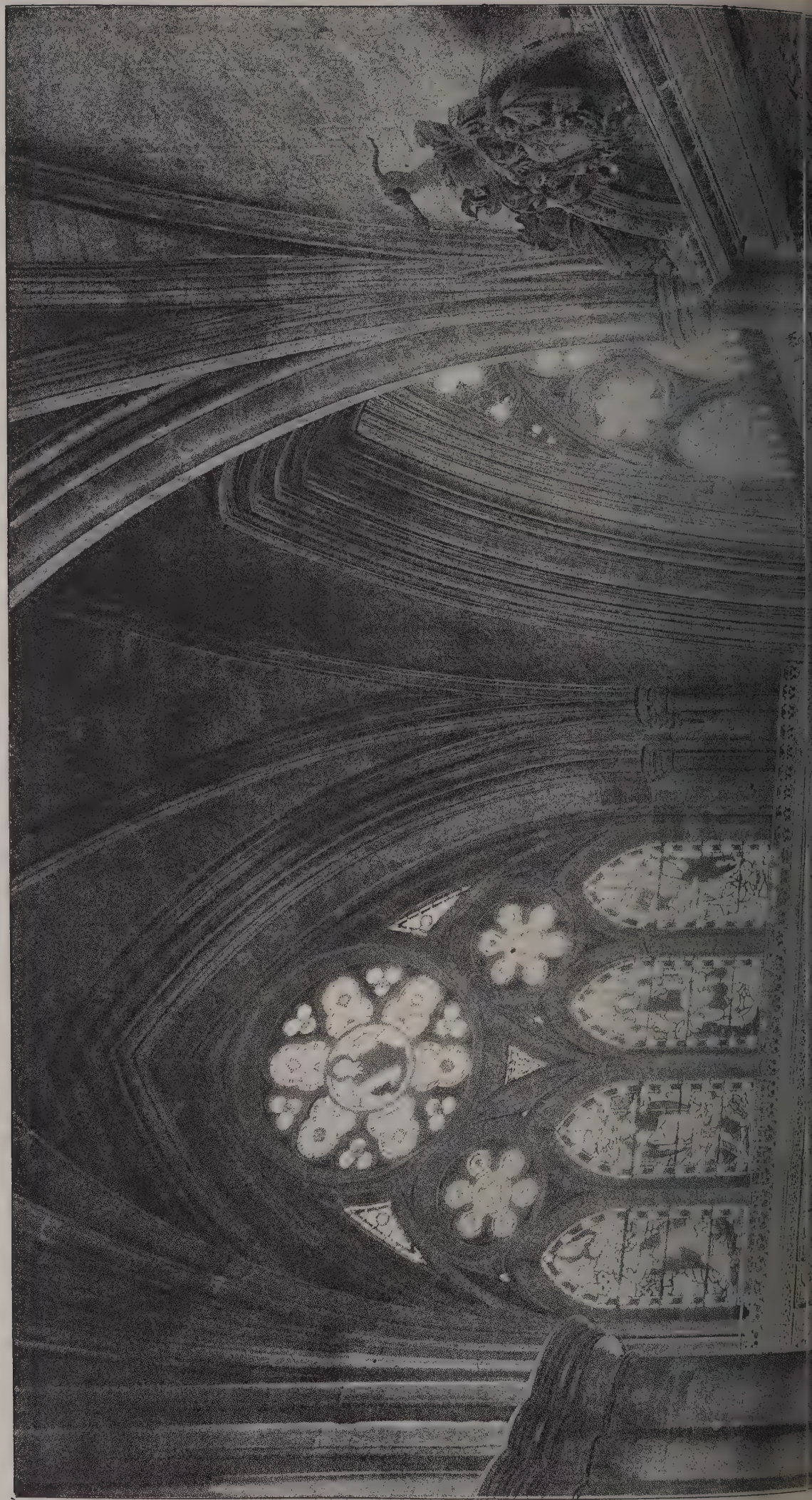
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NEW FRONT TO AN OLD HOUSE.

W. F. HARBER, Architect.

L 421
UNIVERSITY OF ILLINOIS

The Architect, Oct. 30th 1903.





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CATHEDRAL SERIES, No. 469.—EXETER: SPEKE CHANTRY, AND CHAPEL OF S. MARY MAGDALENE.

THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our list a VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

We will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders, and other particulars of Works in progress in which they are interested.

Contributors of signed articles and papers read in public must be held responsible for their contents.

Communications can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Readers are requested to make their communications brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

Great disappointment is frequently expressed at the non-acceptance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

Nov. 30.—The committee of Bray Pavilion and Gardens invite plans for proposed pavilion and winter garden at Bray. First prize, 30*l*.; second prize, 15*l*.; third prize, 10*l*.; with three prizes of 5*l*. 5*s*. each. Messrs. Frank Edw. Lee and P. Macdonnell, hon. secretaries, Town Hall, Bray.

Nov. 9.—Designs are invited for a new public library. Premiums of 50*l*., 30*l*. and 20*l*. will be paid to the first, second and third premiated designs respectively. Parap to Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Brighton and Hove Hospital for Women, 76 West Brighton.

Dec. 16.—The Lambeth Borough Council are erecting a public library, with residence for librarian, in the Hill ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for a public library, with residence for librarian, in the Hill ward of the borough to Mr. H. J. Smith, town clerk, Lambeth Town Hall, Kennington Green, by 12 noon on Dec. 16. General information as to the extent and the accommodation required in the proposed library can be obtained on application to the town clerk.

SCOTLAND.—Competitive plans are invited for the erection of a new infectious diseases hospital and a public library in Fraserburgh. Mr. William Alexander, burgh surveyor, Fraserburgh.

SCOTLAND.—Nov. 9.—Competitive plans for the erection of a tenement of shops and workmen's dwelling-houses on ground belonging to the Kilmarnock Corporation in Fore Street are invited. Premiums of £15 15*s*., £10 10*s*. and £5 5*s*. will be given for the sets of plans and certificate which may be adjudged first, second and third respectively. Mr. W. Middlemas, town clerk, Kilmarnock.

SCOTLAND.—Dec. 7.—The Elgin Landward School Board invite competitive plans and estimates for the erection of school buildings at New Elgin capable of accommodating about 340 pupils. Mr. Hugh Stewart, clerk to the Board, Elgin.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums of 100*l*., 50*l*. and 25*l*. will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough-engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20*l*., 10*l*. and 5*l*. will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WALES.—Competitive designs are invited for a pavilion to hold 10,000, to be erected at Rhyl for the purposes of the Royal National Eisteddfod of 1904. No prizes are offered. Messrs. Tilby & Jones, general secretaries, Town Hall, Rhyl.

WALES.—Nov. 9.—Competitive designs are invited for a public library to be erected in Evelyn Road, the total expenditure, including fixtures, not to exceed £2,000. A premium of £10 10*s* will be paid for the approved design. Mr. Samuel Jones, clerk, Old Road, Skewen, Neath.

CONTRACTS OPEN.

ACTON.—For about 70 rods of brickwork, labour only, at Acton. Messrs. Barnett & Brothie, 68 Salisbury Road, West Kilburn, N.W.

ASHTON-UNDER-LYNE.—For the erection of office and stable buildings at Victoria Works, Pitt Street, Hooley Hill. Messrs. Burton & Percival, architects, 150A Stamford Street, Ashton-under-Lyne.

BARNSELEY.—Nov. 4.—For the erection of business premises in Eldon Street. Messrs. Crawshaw & Wilkinson, architects, 13 Regent Street, Barnsley.

BARROW-IN-FURNESS.—For the erection of sailors' home on Barrow Island. Mr. Tonge, architect, Furness Railway, Barrow.

BRADFORD.—Nov. 16.—For additions to the central offices in Manor Row, Bradford, for the Guardians. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

BRICKENDON.—Nov. 6.—For the erection of a bridge and piling at Brickendon. Mr. J. W. Riggs, surveyor, St. Etmo, Fanshawe Street, Bengoe, Hertford.

BRISTOL.—Nov. 2.—For taking-down and re-erecting the side wall of 42 Mary-le-Port Street, Bristol. Mr. John A. Wright, surveyor, 6 Unity Street, College Green, Bristol.

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CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CHICHESTER.—Nov. 6.—For the erection of an open shed and laying concrete paving, drainage, &c., at the cattle market. Mr. I. Pym-Jones, city surveyor, Lion Street, Chichester.

EWELL.—Nov. 6.—For the erection of laundry and mortuary buildings at the epileptic colony, Ewell, Surrey. Forms of tender and contract, with specification, can be obtained on application to the Clerk of the Asylums Committee, London County Council, at the offices, 6 Waterloo Place, S.W.

GILLINGHAM.—Nov. 5.—For the erection of twenty-six cottages in Burnt Oak Terrace, Gillingham, Kent. Mr. Ernest J. Hammond, 21 Balmoral Road, Gillingham.

HAYLE.—Nov. 4.—For the erection of a dwelling-house at Hayle Town, Cornwall. Mr. H. T. Broad, builder, Hayle Town.

HEBDEN BRIDGE.—Nov. 6.—For the excavation and rubble walling required in the formation of a bowling-green on the May Royd estate, Hebden Bridge. Mr. Howard, secretary to the Hebden Bridge bowling club, Foster Lane, Hebden Bridge.

HINDLEY.—Nov. 21.—For the erection of a palisade wall near the grammar school, Park Road, Hindley, Lancs. Mr. Alfred Holden, surveyor, Council Offices, Hindley.

IRELAND.—Nov. 6.—For the erection of cells for prisoners at Enniskillen court-house, Fermanagh. Mr. H. Hugh Archdall, secretary, Court House, Enniskillen.

IRELAND.—Nov. 9.—For painting, repairing and alterations at certain dispensary stations of the union. Messrs. Young & Mackenzie, architects, 2 Wellington Place, Belfast.

IRELAND.—Nov. 10.—For the erection of kitchen, laundry, disinfecting chamber, chimney-shaft, trenches for pipes, &c. at Limerick workhouse. Mr. Joseph O'Malley, architect, Limerick.

KETLEY.—Nov. 5.—For the erection of a school and teachers' dwelling-house at Ketley, Salop. Mr. C. R. Dalglish, architect, Shrewsbury.

KNARESBOROUGH.—Nov. 28.—For the construction of a purifier-house and lime shed. Mr. J. E. Walker, surveyor, Town Hall, Knareborough.

LEAVESDEN.—Nov. 4.—For taking-out old iron sashes and supplying and fixing double-hung sashes to certain windows at Leavesden Asylum, near Watford, Herts. Mr. W. T. Hatch, engineer and surveyor to the Asylums Board, Embankment, E.C.

LEEDS.—For the erection of one or more pairs of detached cottages at Adel. Mr. George W. Atkinson, architect, 1 Market Lane, Leeds.

LEEDS.—Nov. 9.—For the extensions and alterations hospital block A and for erection of new receiving wards block at the Leeds Union workhouse, Beckett Street. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LEICESTER.—Nov. 10.—For the erection of Government offices at Leicester, for the Commissioners of H.M. Works at Public Buildings. Conditions and form of contract may be seen on application to the Registrar, County Court, Leicester.

LISCARD.—Nov. 14.—For the erection of a new school, Manor Road, Liscard, to accommodate 1,000 scholars, for the Wallasey education committee. Mr. Edmund Kirby, 5 Colton Street, Liverpool.

LONDON.—Nov. 4.—For demolishing the temporary ward Nos. 18 and 19, at the Northern Convalescent Hospital, Winchmore Hill, N. Specification prepared by Mr. W. Hatch, engineer and surveyor to the Metropolitan Asylums Board.

LONDON.—Nov. 4.—For completing the boundary wall at the Grove hospital, Tooting Grove, S.W. Mr. W. H. Hatch, engineer and surveyor to the Metropolitan Asylums Board.

LONDON.—Nov. 9.—For the erection of a new hospital building adjoining St. Stephen's Church, Haverstock Hill. Messrs. Young & Hall, architects, 17 Southampton Street, Bloomsbury, W.C.

LOWER SYDENHAM.—Nov. 10.—For the erection of a branch library. Mr. J. R. Vining, architect, 89 Chancery Lane, W.C.

MANCHESTER.—Nov. 11.—For the erection of a telephone exchange and engineer's office and store at Quay Street, Manchester. Conditions and form of contract may be seen on application at H.M. Office of Works, New Bridge Street, Manchester.

NORWICH.—Nov. 9.—For alterations and additions to the laundry at the workhouse. Mr. Henry Stone, clerk to the Guardians, St. Andrew's Street, Norwich.

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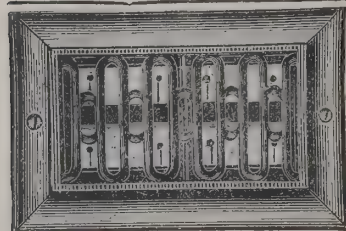
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For sewerage works, Blacker Road, Staincross. Messrs. CRAWSHAW & WILKINSON, surveyors, 13 Regent Street, Barnesley.

M. RUCKLEDGE, 1 Livingstone Terrace, Silver Street, Barnesley (*accepted*).

BIRMINGHAM.

For the erection of house, Bristol Road, Selly Oak. Mr. ALFRED J. DUNN, architect, 86 Colmore Row, Birmingham.

T. LOUD & SONS (*accepted*) £910 0 0

BRENTWOOD.

For sewerage works, Nag's Head Lane, Brook Street, near Brentwood, Essex. Mr. J. E. FOTHERGILL, surveyor, Brentwood.

Wilson, Border & Co. £182 0 0

J. Jackson 105 17 6

R. Claydon 86 0 0

F. RILBY, London (*accepted provisionally*) 71 6 0

BURNLEY.

For street works in the court between Bridgefield Street and Castle Street, Hapton. Mr. S. EDMONDSON, surveyor, 18 Nicholas Street, Burnley.

R. H. Wadge £120 0 3

J. Green 119 14 2

J. Miles 115 19 2

W. SUTCLIFFE, Burnley (*accepted*) 109 1 3

BURSLEM.

For fencing and gates to the gymnasium and volunteer armoury. Mr. A. R. WOOD, architect, Burslem.

GRANT & SON (*accepted*) £197 0 0

CANNOCK.

For sewerage works at Essington, with outlets, manholes, lampholes, &c. Mr. HERBERT W. WHITEHEAD, engineer, Penkridge, Stafford.

H. Holloway £166 0 0

W. H. READING, Wolverhampton (*accepted*) 122 10 0

CROYDON.

For the erection of a proposed pair of houses to be built on Temple Road, Croydon. Mr. FRANK WINDSOR, architect, 1 High Street, Croydon.

J. Horrocks £1,618 0 0

D. W. Waller 1,585 0 0

D. W. Barker 1,565 0 0

E. J. Saunders 1,480 0 0

HAMPSTEAD.

For new mahogany shop-front and fittings, marblework electric lighting at 5 Frognaal Parade. Mr. T. WILLIAMS, architect, 34 New Bridge Street, E.C.

J. PUGH (*accepted*) £657 0 0

HOLME.

For rebuilding the Tower Farm bridge, Holme, Hunts.

T. SMITHDALE, Ramsey (*accepted*) £127 0 0

HUDDERSFIELD.

For the erection of a mill chimney, main flue, &c., at G. Works, Colne Road, Huddersfield. Messrs. JOHN KIRK & SONS, architects, Huddersfield.

W. MALLINSON & SONS, Lochwood Road (*accepted*).

HULL.

For painting work at the East Park, for the Corporation. JOSEPH H. HIRST, city architect, Town Hall, Hull.

Lightowler & Son £180 0 0

Adams & Usher 169 1 0

C. Crane 153 0 0

G. Harbron 136 0 0

Stephenson & Christopher 102 0 0

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For various works for the City Council.

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Jones & Sons, Pleasant Street, Liverpool, for erection of the Hornby Bequest Library in connection with the main library buildings in William Brown Street £9,991 0 0

W. Hall, 60 Christian Street, Liverpool, for erection of a new branch library in Brock Street, Kirkdale 8,928 0 0

Holme & Green, 10 Benson Street, Liverpool, for erection of labourers' dwellings on land in Clive Street 7,949 1 0

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ay & Greenwood, Ltd.	23,689	0	0
y Bros.	23,642	0	0
enwood, Ltd.	23,627	0	0
I. F. Higgs	23,540	0	0
land & Sons	23,465	0	0
owns	23,107	0	0
urance & Sons	23,096	0	0
owyer	22,963	0	0
on & Co	22,736	0	0
th & Sons, Ltd.	22,695	0	0
T. Patrick*	22,268	0	0

erection of special school for physically defective			
ren, Forster site, Holloway.			
& Co.	£5,290	0	0
ant & Hirst	5,234	0	0
S. Williams & Son	5,178	0	0
aring & Son	5,149	0	0
all & Co.	5,132	0	0
is Bros.	4,996	0	0
an & Sons, Ltd.	4,992	0	0
lmott & Sons	4,898	0	0
pson & Son	4,802	0	0
egar & Son	4,765	0	0
ver & Son	4,675	0	0
ure & Son	4,646	0	0
essum & Sons*	4,433	0	0

itary and drainage works, Beresford Street school,			
Waltham			
n, Wells & Co., Ltd.	£3,200	0	0
owns	2,768	0	0
ell Bros., Ltd.	2,079	0	0
Falkner & Sons	2,064	0	0
Beattie	2,023	1	6
y Bros	2,021	0	0
leby & Sons	1,920	0	0
owyer*	1,869	0	0

* Recommended for acceptance.

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For improvement of Flint Street school, Waltham.			
J. Carmichael	£14,936	0	0
John Greenwood, Ltd.	14,808	0	0
Holliday & Greenwood, Ltd.	14,808	0	0
Patman & Fotheringham, Ltd.	14,113	0	0
J. Smith & Sons, Ltd.	13,989	0	0
Johnson & Co.	13,170	0	0
F. & H. F. Higgs	13,045	0	0
J. Marsland & Sons	13,010	0	0
Lathey Bros.	12,991	0	0
J. Garrett & Son	12,695	0	0
W. Downs	12,680	0	0
J. & C. Bowyer	12,473	0	0
E. Triggs	11,985	0	0
J. Appleby & Sons*	11,770	0	0

For new school, Finlay Street site, Fulham.			
J. Carmichael	£24,365	0	0
J. Simpson & Son	23,184	0	0
Martin, Wells & Co., Ltd.	23,170	0	0
J. Allen & Sons, Ltd.	22,897	0	0
J. Garrett & Son	22,575	0	0
F. & H. F. Higgs	22,516	0	0
Leslie & Co., Ltd.	22,089	0	0
G. E. Wallis & Sons	21,960	0	0
E. Lawrence & Sons	21,558	0	0
C. F. Kearley	21,529	0	0
Treasure & Son	21,415	0	0
Holloway Bros., Ltd.	21,385	0	0
Lathey Bros.	21,380	0	0
J. & M. Patrick	20,734	0	0
Stimpson & Co.*	20,650	0	0

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For street works in Codrington Hill, Brockley, and Rhyme Road, Lewisham.

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B. Martin, George Lane, Lewisham—Codring-			
ton Hill	£1,295	3	9
Fry Bros., Lion Wharf, Greenwich—Rhyme			
Road	580	0	0

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Jenkins & Sons, Ltd.	£1,453	0	0
H. Stevens & Co.	1,450	0	0
Wright & Son	1,427	0	0
W. Ward	1,370	0	0
Dyer & Sons	1,360	0	0
F. Osman	1,332	10	0
J. Nichol	1,294	0	0

MANSFIELD.

For sewerage works, with manholes, street gullies, &c., in Westfield Lane. Mr. R. FRANK VALLANCE, borough surveyor.

H. F. Houfton	£765	0	0
H. Ashley	690	9	9
J. Greenwood	667	0	0
J. H. Vickers, Ltd.	566	10	0
Langley Bros. & Tozeland	555	2	1
J. Bradley	510	14	6
H. Bennett	508	6	7
Belshaw	480	0	0
LANE BROS., Hermitage Works (accepted).	460	2	6

NORFOLK.

For building, &c., Keswick Hall, Norfolk.
J. S. SMITH, Lakenham, Norwich (accepted).

PADIHAM.

For widening Padiham bridge, Lancs.
J. WILSON & SONS, Easthorpe, Mirfield (accepted).

PONTEFRAC.

For the erection of a free library in Salter Row, Pontefract.
Messrs. GARSIDE & PENNINGTON, architects, Pontefract.

W. Walker	£2,005	0	0
J. Bentley	1,986	12	2
Perry & Sons	1,972	2	7
G. Spurr	1,959	4	8
A. Askam	1,902	15	11
Thompson & Sons	1,847	0	0
Gelder Bros & Woodcock	1,798	12	0
H. GUNDILL, Pontefract (accepted).	1,744	4	8

RADLETT.

For the extension of sewers in Watford Road. Mr. ERIS

LAILEY, surveyor.	
Clark Bros.	£875
Bracey & Clark	847
H. B. Watkins	815
H. BROWN, Watford (accepted)	790

RAVENSTHORPE.

For additions to schools, North Road, Ravensthorpe, York.
Messrs. MARRIOTT, SON & SHAW, architects, Church Street Chambers, Dewsbury. Quantities by architect.

Accepted tenders.

Whitehead & Sons, mason.
J. W. Harrop, joiner.
Bagshaw & Sons, ironwork.
A. Shaw, slater and plasterer.
B. Jackson, painter.
Unity Wood and Iron Co., heating apparatus.

RAWMARSH.

For sewerage works at Roundwood, Rawmarsh, Yorks, and the erection of brick piers in connection therewith.
C. E. GEARY, Greasborough, near Rotherham (accepted). £69

RICHMOND.

For the construction of two entrance shafts on the main accepting sewer at Richmond Green, Surrey. Mr. FAIRLEY, engineer.

Accepted tenders.

Contract No. 1.—Reynolds & Co., Richmond, fencing (seven tenders).
Contract No. 2.—Johnson & Langley, Leicester, entrance shafts (six tenders).

RUSHDEN.

For the construction of a brick culvert, 6 feet by 4 feet, at intersection of College Street and Duck Street.
W. B. MADIN, town surveyor.

Harrison & Winsor	£178
H. Sparrow	132
T. Wilmott, jun.	125
E. Bayes	122
W. G. WILMOTT (accepted)	119

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SOUTHAMPTON.

ations to Chilworth Manor. Messrs. COLSON, FARROW			
SBETT, architects, Winchester.			
mb	£25,326	0	0
	23,996	14	0
	21,890	0	0
opson	20,981	0	0
ts	20,968	0	0
ey	20,474	0	0
rd	20,250	0	0
	19,270	0	0
	18,987	0	0
is	18,290	0	0
KLIN, Southampton (accepted)			

SYDENHAM.

ations and additions at 138 Sydenham Road. Mr. T.			
ASON, architect, 34 New Bridge Street, E.C.			
ler	£765	0	0
	715	0	0
hley & Smith	678	0	0
r (accepted)	667	0	0

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pipes. Messrs. WILCON & RAIKES, engineers,			
ion Chambers, 63 Temple Row, Birmingham.			
z Crowe	£1,476	2	7
Nevitt	1,354	17	3
ward & Co.	1,137	9	4
hompson & Co.	1,112	3	6
land	1,107	13	0
le	1,082	6	3
Westwood	1,061	15	3
OBERTS, West Bromwich (accepted)	1,026	6	0
ey & Sons	963	4	0

WALES.

novation of chapel and rebuilding school, Bethany			
ptist church, Pembroke Dock, Carmarthen. Messrs.			
MORGAN & SON, architects, 24 King Street, Carmarthen.			
VN BROS, Pembroke (accepted)	£1,893	0	0
lding a house in Longacre Road, Carmarthen. Messrs.			
ORGE MORGAN & SON, architects, Carmarthen.			
AVIES, Catherine Street (accepted)	£585	0	0

WALES—continued.

For rebuilding Jabez chapel, Dyffryn Gwaun. Messrs.			
GEORGE MORGAN & SON, architects, Carmarthen.			
D. THOMAS, Letterstown, R.S.O., Pembroke			
(accepted)	£880	0	0

WANDSWORTH.

For the construction of a floor over the first-class swimming-			
bath at the public baths, High Street.			
B. E. Nightingale	£270	0	0
B. M. Enson (General Builders, Ltd.)	267	9	0
W. C. Rippen	260	0	0
R. Iles, Ltd.	249	10	0
E. Parsons & Co.	248	0	0
T. Pearce	244	0	0
E. B. Tucker	244	0	0
R. A. Jewell	240	0	0
W. Norton	233	0	0
H. Dakin & Co.	200	0	0
C. PEACOCK & Co, St. Andrew Street, Clapham			
(accepted)	190	0	0

CONTRACTS OPEN.

Received too late for Classification.

HORWICH—Nov. 25.—For the construction of a storage reservoir at Marklands, catchwater reservoir on Wildersmoor, the laying of cast-iron pipes, also the construction of sewers, with manholes, &c. Mr. Peter Taverner, clerk to Urban District Council, Council Offices, Horwich, Lancs.

ILFORD—Nov. 9.—For street works in Coventry Road between Granville and Bathurst Roads. Mr. H. Shaw, surveyor, Town Hall, Ilford, Essex.

MANSFIELD—Nov. 3.—For sewerage works in Skerry Hill and Carter Lane. Mr. John Harrop White, town clerk, Town Hall, Mansfield, Notts.

SCOTLAND—Nov. 7.—For the removal of the present bridge carrying the Strathaven and Muirkirk highway over the Lochar Water, Lanark, and the construction of a new stone bridge in lieu thereof. The site of the bridge is distant about four miles from Strathaven railway station. Mr. W. L. Douglass, district engineer, District Offices, Hamilton.

TUNBRIDGE WELLS—Nov. 5.—For street works in Denbigh and Dynevor Roads on the Grosvenor Wood Estate. Mr. W. H. Maxwell, Town Hall, Tunbridge Wells.

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TRADE NOTES.

THE Glanadda schools, Bangor, North Wales, are being warmed and ventilated by means of Shorland's patent Manchester stoves and grates, by Messrs. E. H. Shorland & Brother, of Manchester.

THE Newtown Free Library, Montgomery, has recently been fitted with the latest improved hot-water heating apparatus, by Messrs. John King, Ltd., engineers, Liverpool, employing their well-known "Rahnee" radiators.

A LARGE clock, with Cambridge chimes, has just been erected in Pen-y-fai Church, Glamorganshire, by Messrs. John Smith & Sons, Midland Clock Works, Derby. It is fitted with all the latest improvements, and is similar to a clock erected a short time since in Baglan Church, Glamorganshire, by the same firm.

ELECTRIC NOTES.

MR. THOMAS BARTON, M.I.E.E., has been instructed to prepare a scheme for electric-lighting works at Clitheroe, in Lancashire.

MR. STEPHEN SELLON has resigned the position of chief engineer to the British Electric Traction Company, and has started in private practice at 36 Victoria Street, Westminster, S.W.

THE London County Council are making a number of temporary appointments at the present time—four civil engineering appointments with salaries about 5*l.* 5*s.* per week, and four with salaries up to 4*l.* 4*s.* per week; two surveyors at 5*l.* 5*s.* per week, and two mechanical draughtsmen at the same salary.

MR. WARDEN-STEVENS, of Connaught Mansions, Victoria Street, Westminster, S.W., the consulting engineer to the borough of Wednesbury, is prepared to receive tenders for electric wiring and fittings for the following public buildings:—The town hall, municipal offices, art gallery, public baths, public library and the electricity station.

THE Arbroath Town Council have agreed, on the recommendation of a special committee appointed recently to negotiate with private companies in regard to the installation of the electric light in the burgh, to accept the offer of the Empire Electric Light and Power Company, Ltd. The first

installation has to be completed by November, 1905, the effort is to be made by the company to complete it within a year from the date of agreement.

THE Wandsworth Borough Council are considering whether or not the Council shall agree to make a contribution of 65,000*l.* towards the cost of the widening of Streatham High Road, for the extension of the London County Council tramway from the present terminus at the Tate Lido, Streatham, to the county boundary at Norbury. The Council has on a previous occasion refused to make any contribution, but it is now proposed that the resolution embodying that refusal shall be rescinded, in view of the advantage which would accrue to ratepayers in the Streatham Ward if the proposed extension was carried out.

A NUMBER of local gentlemen interested in the improvement of Pitlochry as a health resort have taken up the question of introducing the electric light into the village and neighbourhood. It is understood that a scheme has been drawn up and very favourably reported on by an electrical expert. It is proposed that the necessary motive power be derived from the river Tummel, and the present estimate is that the new installation can be supplied at about half the cost of the gas, of 7*s.* 6*d.* per 1,000 cubic feet. Arrangements are being made for ascertaining as to what measure of support the proposal will accord the proposal.

VARIETIES.

ON Saturday last the Bishop of Llandaff consecrated a new church of St. David, Tynyrefail, which has cost 3,500*l.* to build.

THE Bishop of Winchester dedicated on the 20th inst. a spire which has been added to St. Paul's Church, Bromley, in memory of Queen Victoria, at a cost of 2,000*l.*

THE Roman Catholic Bishop of Northampton officiated at the opening of St. Etheldred's Church at Ely. The building has cost between 3,000*l.* and 4,000*l.*

ON the 23rd inst. Lord Avebury opened the new Cambridgeshire and County school, which has been erected at a cost (including freehold ground) of 10,200*l.*

A LINE of railway is contemplated to give direct communication between the east and west coasts, starting at

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of the design for public baths which has been submitted by Mr. Alfred Saxon Snell, of London. They also recommend application to the Local Government Board for sanction to borrow 75,000*l.* to carry out the work. Upon another portion of the same area the new offices of the Mersey Docks and Harbour Board are to be built, and further space is to be devoted to the erection of blocks of Council property. Altogether a very significant improvement in this portion of the city is to be entered upon.

DR. R. J. REECE, M.D., Local Government Board inspector, held an inquiry at Burslem on Tuesday with respect to an application by the Town Council for sanction to borrow 13,000*l.* for the provision of an infectious diseases hospital, and 275*l.* for the provision of a disinfecting station and apparatus. With respect to the proposed loan of 275*l.* the town clerk stated that, in March last, Dr. Wheaton, an inspector of the Local Government Board, expressed surprise that the Corporation did not possess an efficient disinfecting apparatus, and suggested that they should take immediate steps with a view to providing one. The Town Council had accordingly decided to erect a disinfecting station. With reference to the loan of 13,000*l.*, it was explained that the Town Council were desirous of providing a new isolation hospital in the borough, on land at Stanfield. The Council were at present using the Bradwell sanatorium, in conjunction with the Wolstanton Rural District Council and the Tunstall Urban District Council. The Wolstanton authority had the sole management of the hospital, the other authorities paying their proportion of the expenses. Of the loans raised for the purposes of the hospital there was 1,820*l.* still outstanding, and Burslem was responsible for a proportion of that sum. It was believed, however, that the Corporation would be relieved of that responsibility by the other authorities on surrendering their interest in the hospital. In 1900 it was found necessary to provide additional accommodation, and the Council decided to build a new hospital of their own. The estimated cost of the site, buildings and furnishing was 13,000*l.*, which would involve an annual expenditure of 706*l.* if the money was borrowed for thirty years. The estimated cost of maintaining the hospital was 1,030*l.* a year. If they continued in conjunction with Wolstanton and Tunstall the annual cost to Burslem would be 1,413*l.* Mr. R. T. Longden explained the plans of the proposed new hospital, which he said would con-

tain forty beds and three convalescent wards, with necessary administrative accommodation. There was opposition.

BRILLIANT SIGNS.

AMONG the most attractive stands at the recent Brewster Distillers' Exhibition was the conspicuous one of the Brilliant Sign Company, Ltd., of 38 Gray's Inn Road, who have appointed official sign contractors to the Cape Town Exhibition 1904-05, and the rapid expansion of whose business necessitated their opening branch show-rooms in Sydney, N.S.W., and Auckland, N.Z. At this stand, which measured a frontage of 40 feet, were to be seen a large variety of tablets, incised fascias, stallplates, enamelled letters, glass, wood, and metal letters, &c., adapted to every department of advertisement and similar purpose. They were showing the new shape "Brilliant" letter, which has found favour with so many leading architects. This letter is made under "Brilliant" patents, and is stamped out of stout sheet copper and gilded with the purest quality English gold leaf. It is introduced to prove to the public that the Brilliant Sign Company are the inventors and pioneers of the "Brilliant" letter, and to supply the original and only perfect "Brilliant" letter in various shapes, styles and designs, and at a cost lower than the standard shape "Brilliant" letter, and lower even than the imitation "Brilliant" letter.

The company have made up a quantity to the order of Messrs. Worthingtons, Ltd., Messrs. Younger & Co., Ltd., and J. M. Hazlehurst, of Burton-on-Trent.

The new letter has been much admired for its shape and its brilliancy in gilding, and it can be used not only for mirror tablets, but for all kinds of fascias, stallplates, hanging signs, pier signs, window decoration. In fact, cannot, so to speak, put the letter out of its place, as when glass is employed the new "Brilliant" letter will be found undoubtedly the best advertising medium.

The firm have secured an order to send a large quantity of the letter to Natal, and no doubt there is a very bright future for it, as it has already shown itself to be most popular.

The manager of the Brilliant Sign Company informs that, *inter alia*, they have just recently secured the contract from Messrs. J. Lyons & Co. for the large metal lettering so much in evidence at all their depôts.

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ACASE.

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NEW FRONT TO AN OLD HOUSE.

A PARTNERSHIP CASE.

Darwen County Court Messrs. Dunkerley & Co.,
med from Messrs. Woods & Thackeray, archi-
sum of 32l 18s 6d for iron goods delivered.
ndle, jun., for the defendants, denied liability on
Mr. C Woods, on the ground that the iron goods
in the claim were ordered by Mr. Thackeray, the
ner, on his own private account, and not on behalf of
The goods were delivered from Spring Vale station
ry, an ironfounder in Bury Street, to whom he owed
d Mr. Thackeray was paid for them by Mr. Bury,
he amount of the debt. Mr. Thackeray could give
ation of the goods being ordered, and no bill had
red. He argued that the order as placed by Mr.
did not come within the scope of the partnership.
Honour said the case involved a very nice and correct
the law.

Woods said the partnership between himself and Mr.
was dissolved in July, and at that time he knew
all of that account. Upon the dissolution of part-
nership asked Mr. Thackeray for his keys, but he
to give them up until all outstanding accounts had
red. Upon that witness put a fresh lock on the
A fortnight after the dissolution witness received
not rendered" for the amount of the debt. Knowing
out it, he asked for particulars, and ascertained that
orders for which the money was owing had been
from Spring Vale Station to Mr. Bury, who had paid
eray for them as to 15l by settlement of the out-
account. As a firm Messrs. Woods & Thackeray had
t with Messrs. Dunkerley, although they had many
ified their goods. Mr. Thackeray had admitted his
liability in respect to the goods to witness.
ry, ironfounder, said that Mr. Thackeray owed him

15l. privately, and he had asked for payment many times. He
had the debt in mind when he ordered the iron goods from
Mr. Thackeray, and told him that the debt owing would be
taken into account on the settlement. He never saw anyone
other than Mr. Thackeray in the matter, and his transaction
was not with the firm.

His Honour decided in favour of the defendant, and upon
the application of Mr. F. Hindle, who represented the
defendant, costs were allowed against the plaintiff and Mr.
Thackeray.

THE INTERNATIONAL FIRE EXHIBITION.

THE International Fire Exhibition, organised under the
auspices of the British Fire Prevention Committee with the
view of arousing public interest in fire prevention and fire
protection generally, was closed on Saturday last, after a
duration of about six months from the opening by its president,
the Duke of Cambridge.

The Exhibition had as vice-presidents the Right Hon. the
Lord Mayor of London, the president of the National Fire
Brigades Union, and the chairman of the British Fire Pre-
vention Committee. It had an advisory council, numbering
over sixty members, a working advisory committee and
numerous sub-committees, the members throughout being
thoroughly representative of the interests involved.

The number of industrial exhibitors was 140, including
numerous firms from Austria, Belgium, France, Germany,
Holland, Italy, Scandinavia and the United States, and there
were also seventy general commercial exhibitors.

The loan exhibitors numbered some 400, who together
placed about 2,500 exhibits at the disposal of the Exhibition.
They included numerous Government and municipal depart-
ments, public institutions and fire service organisations from
all parts of the world.

At the instance of the British Fire Prevention Committee,
the Exhibition was visited by several hundred deputations from
public bodies, technical institutions and fire service organisa-
tions, nearly every British municipality of importance being
represented, and there were many visitors from the colonies
and abroad.

By far the majority of firemen in England visited the
Exhibition, many brigades sending their whole staff by sections
of fours and eights in turn. The National Fire Brigades
Union (under whose direct control the Fire Brigade Tourna-
ment was held) alone issued 55,850 day passes to firemen.

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The fire brigade side of the "spectacle" in the Empress Theatre, which was presented over 300 times, was entirely in the hands of provincial firemen of the National Fire Brigades Union, under the chief officer of the Hampton Brigade, who organised a special brigade for the work of forty-three, all ranks.

The attendance at the Exhibition was fully in accordance with the expectations, considering the abnormal inclemency of the weather of the past season, whilst the number of spectators who visited the "fire spectacle" surpassed all predictions.

General interest in fire preventive and fire service matters throughout the United Kingdom was stimulated to a remarkable degree by the Exhibition, and an enormous amount of valuable instruction has been obtained from it by all those professionally concerned, as well as by a very considerable section of the public.

THE MODERN STEAM BOILER.*

Two hundred years ago in Newcomen's engine, which was little more than a superior kind of pump, the piston in the cylinder was made to descend by the pressure of the air on its upper surface, when a vacuum was formed beneath it, and this rising and falling was sufficient to make the beam move, which communicated with the other parts of the machine. One of James Watt's improvements was the substitution of steam instead of atmospheric pressure. The steam was admitted above the piston for that purpose, and the direct force of the atmosphere ceased to be of much avail. The packing of the piston in such a way as to render it steam-tight necessitated several months' constant study, and "pistons pressed by steam" would appear to stand fifth in the order of Watt's improvements.

Prior to Watt's time the boiler used for the generation of steam resembled an inverted frustum of a cone, and sometimes a cylindrical iron flue was carried through it longitudinally in order to increase the surface to be acted on by the heat. In course of time a cylindrical form was adopted for the boiler, and the furnace was placed in another cylinder inside in order that by being surrounded by water there would be no loss of

* "The Practical Physics of the Modern Steam Boiler." By Frederick J. Rowan, A.M.I.C.E., &c. With over 314 illustrations. (London: P. S. King & Son.)

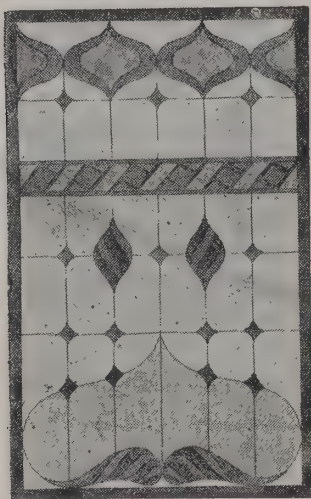
heat through radiation. Then came tubular boilers, in which the steam was generated in pipes which communicated with a common steam chamber. But for a great many years this arrangement was not generally approved. Ordinary steam-power believed the tubes were liable to get out of order, and there was no wide demand for such high-pressure tubes as they were able to produce.

Of late a number of reasons have combined to bring the water-tube boiler into prominence. The principal ones are the necessity of enabling war vessels to attain a speed at one time would be thought impossible. What that means to stokers and engineers is a question not to be asked. Convenience is of little account when it is known that victory may depend on the efficiency of a boiler. The principle which John Stevens and William Fairbairn enunciated is peculiarly applicable in such cases, viz:—"A boiler should be so constructed that it shall not be liable to explosion, and a boiler should also be so constructed that should it explode through neglect and carelessness, inevitably here and there, with in the weak humanity which must be entrusted with that explosion does occur, the explosion shall be as dangerous." Those conditions are specially desirable in vessels of a fleet, but they are also demanded in marine engines, perhaps we might say in the majority of them, and the subject is deserving of all possible attention.

Mr. Frederick J. Rowan, who has gained a reputation as an expert, has in his last important volume devoted his attention mainly to the water-tube boiler. Avoiding subjects which are common to all classes of boilers, his aim is, "not so much to treat of how boilers are made as to consider on what lines they may be improved." He has received the aid not only of several other specialists but of manufacturers, and his work is therefore remarkable for its fulness of detail. The case is made out of those modern boilers, and the pages must compel operators of the system to be more careful in their allegations.

There is one advantage which tubes must possess which will be apparent to all who have no more than a general knowledge of metals. In the tubes the thickness of material has to resist strains is proportionately greater than in an ordinary cylindrical boiler. It has no ratio with respect to diameters. Mr. Rowan therefore invokes Wöhler's laws in regard to the behaviour of metals in use. For although they were established by experience in connection with railway structures they are no less applicable

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of all varieties. They are as follows:—(1) Fracture produced by the continual repetition of oscillating stress of them much below the breaking stress. It is the effect of strain, defined by the extent of the oscillations, to produce fracture. (2) The absolute value of these stresses enters into the question so far that the greater the smaller are the differences which will finally produce fracture. Short of producing fracture (though close to the point of fracture), considerable changes in the structure of the metal are produced by the "fatigue." This should be borne in mind by all who use metals, for it is exemplified by examples on a very small scale. The degree of strength, however important, is not the advantage which tubes can claim. They are all in a spirit both philosophical and practical in this valuable book.

BIRKENHEAD TOWN HALL.

Birkenhead town hall tower, which two years ago last wrecked by fire, has been reconstructed and once again stands as a monument of municipal stateliness and a landmark for miles around. The completion of the work is to be marked by a ceremony in which the Mayor (Mrs. Morris) will play a leading part. When the question of rebuilding after the fire, a new design for the tower was recommended. It was a change met with a good deal of adverse criticism from various members of the Council and also by the public. But the appearance of the new tower has found great favour, and indeed is considered to be an improvement upon the former building. The ravages of the fire rendered it necessary to rebuild the lower portion of the tower beneath the original design. The new upper portion, which is in a more modern style, and now uniform with the rest of the building, consists of eight columns and entablature of the Doric order. The four angles are finished with massive carved lions, and the tower is surmounted with a steel spire covered with copper. The position of the clock is higher than in the former building. Over the clock are eight spandrels are carved with figures symbolical of the hours of time. A new and ingenious contrivance has

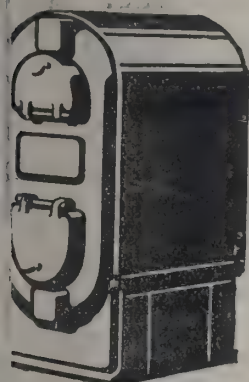
been introduced into the clock by means of which the four faces will in future be illuminated automatically, the time varying with the period of the year. The new tower has been made as fireproof as possible by the omission in the construction of all inflammable material and the introduction of concrete floors. The architect is Mr. Henry Hartley, F.R.I.B.A., Liverpool, and the contractors, Messrs. Thornton & Sons, Liverpool.

NORWICH MUNICIPAL OFFICES.

REPORTS have been prepared by the town clerk, city engineer and the medical officer of health on the sanitary defects existing at the municipal offices.

The town clerk states that though he considers his room the best in his office, yet in order to render it at all habitable he has continually to keep the windows open; otherwise he is afflicted with a severe headache. He attributes an illness of his little daughter from poisoned glands to the sanitary defects in the building, which she visited the day before her attack. The late Mr. Worrall was continually complaining of the bad smells in the office and of nausea, and was ill through it. The room he occupied was the worst in the office. Mr. McIlveen, the assistant town clerk, also has complained that his room is rarely ever free from a heavy offensive smell, emanating, he thinks, chiefly from the fish market, though at times it appears to arise partly from the lavatories. Other members of the staff have complained of the unbearable atmosphere in consequence of the obnoxious smells, which produce the most unpleasant sensations, even on occasions causing vomiting. Owing to the necessity of sitting in draughts from the windows and door, with the alternative of closing them and breathing foul air, the staff suffer from colds in the head, tooth-ache and sore throats. The whole of the staff are in unison on the subject. The town clerk asks whether, if the same state of affairs existed in connection with the property of a private individual, it would be allowed to continue. How much more should it be rectified in the home of the sanitary authority, which should be an example rather than a scandal?

The city engineer says that ever since his occupation of his office under the Corporation he has experienced nuisance and annoyance because of the proximity of the fish market to the municipal offices, and because of the storage of fruit, fish, &c. in the cellars connected therewith. He had received number-



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less complaints from members of his staff and others coming to his office as to these nuisances, which are not due to any neglect as regards the cleaning of the public portion of the fish market. While the ordinary business of the fish market is a nuisance, and should be abolished from the neighbourhood of public offices, dwelling-houses and factories, the greatest annoyance arises from the fact that the tenants lock up fish, fruit, &c., in the shops and cellars, and, as a rule, are not careful to keep their premises clean. He reminds the committee of the fact that, with regard to the architectural assistant in Mr. Buchan's time, it was traced that the illness that caused his death arose from stenches from the fish market and cellars. The smells, he states, are not attributable to the drainage.

The medical officer of health repeats the recommendation he made soon after he came to Norwich, that the fish market should be removed, as the only step that would sensibly abate the nuisance. He says:—"It is difficult to express in words the intolerable smell which from time to time pervades the underground approaches to the fish market. It is an acrid, pungent odour, which gives rise at once to burning sensations in my own throat. If ever I get a sore throat, I find it aggravated by contact with fish-market air, and on at least three occasions I attribute the origin of a bad throat to that source. Few substances have greater efficacy as a throat irritant than decaying fish refuse; it is a fact that the incidence of diphtheria in this city shows the highest percentage amongst those exposed to this predisposing agent—decaying vegetable garbage ranking next. I have no hesitation in affirming, and in unequivocal terms, that the fish market in its existing situation is a danger to the health of the public." He also condemns the public urinals and closets near the offices. The use of the chimney-shafts to ventilate, as is done in the ground floor men's closets and urinals, means a serious liability for the escape of noxious vapours into rooms above the fireplaces which are in connection with the same chimney. Speaking generally, he has found throughout the offices not so much specific disease as a lowered vitality. Deficient lighting aggravates the evil. He had known three officials who have died from preventable diseases. He does not affirm that they contracted their actual diseases in the offices, but he has no hesitation in affirming that in each case the ailment was aided and abetted, in that their tissue resistance was lessened by the deleterious atmosphere. In a postscript he adds:—"On October 5 I received a notification of enteric fever with this

note written upon it by the notifying doctor (Dr. Reade):—"This patient appears to have contracted the disease while staying at the municipal buildings with her aunt, who is caretaker." From inquiries I have made I concur in this opinion.

BUILDING OVER SQUARES.

THE parks and open spaces committee of the County Council prepared a report on the threatened utilisation of certain areas of squares. The committee state how the Council purchased Ford Square and Sidney Square in Stepney, and their being immediately built upon, and paid practically building-land price to secure the gardens as public open spaces. This, however, it is explained, is a course that the Council is not likely to adopt in many cases, and the committee have been considering other means. The Council is reminded that there already exists power under the Open Spaces Act, 1906, for owners to hand over to the public their interests in certain gardens. In this way Lord Halifax transferred his interest in Nelson Square Garden, Blackfriars, to the Council. The Ecclesiastical Commissioners have promised that as soon as the remaining lease of the property shall expire, the garden of the Council in the Square shall be vested in the Council as a public open space for the benefit of the public. The committee expect that one of the principal livery companies of the City will make arrangements for two gardens in the eastern part of the county to be maintained for public use. On the other hand there is apparent a feeling particularly indicated in the case of a large square in the western part of London, which is advertised for sale by part of some owners to obtain building-land value for the earliest moment. The committee think, therefore, that legislation should be promoted with the object of preventing any square-garden in London, which has existed for two years or more, from being used for building purposes, unless it is done in the course of rearranging an estate, and the area is set aside as a garden. The Parliamentary Committee will be asked to advise in what form legislative action for this purpose might best be promoted next session.

Mr. Stuart Sankey, at the meeting on Tuesday last, pointed out the pressing character of the question, and referred to the fact that Edwardes Square, Kensington, was announced for sale by auction next month. He regretted the committee



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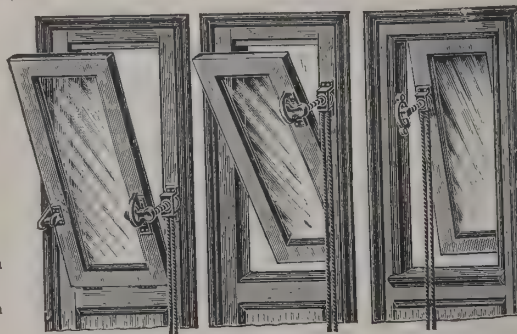
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matter before the Council in this particular form
 osing some definite scheme.
 inson moved an addition to the recommendation
 "And in particular to report what steps should
 render impossible the building on the square
 rtised for sale." He thought the buying by the
 ilding-site prices of certain East End squares had
 owners of other squares to the fact that they were
 valuable assets, which they were anxious to turn
 The Council ought not to purchase any of these
 to put boldly before Parliament the proposition
 uares ought not to be built upon at all, because
 necessary as air spaces. That was certainly a
 osition, and they would have some difficulty in
 od; but, with the example of Edwardes Square
 he believed the difficulty might be reduced.
 and (chairman of the committee) accepted the
 and, with this addition, the recommendation of
 e was adopted.

ENGINEERING STANDARDS.

Engineering standards committee have issued a state-
 resolutions which they have adopted on the subject
 direct current pressures and standard frequencies:—
 uly stage in their deliberations the sub-committee
 the most advantageous method of approaching
 e, beset as it is with so many difficulties, would be
 int of view of these most affected, namely, the
 ps and of motors for power purposes. It was
 eered that the standard pressures to be suggested
 easured at the consumers' terminals as settled by
 present time there exist many different pressures
 the various lighting and power authorities. In
 great desirability of obviating this unsatisfactory
 as, it was deemed advisable to suggest the minimum
 standard pressures which would best meet present
 requirements and at the same time utilise to the
 the consumers' existing appliances.
 ceeful consideration it became evident to the sub-
 at the direct current pressures of 110, 220, 440 and
 ould best meet the requirements, because carcasses
 e standard pressures could be utilised for pressures

10 per cent. above or below the suggested standards without
 any alteration whatever in the castings or mechanical com-
 ponents, by merely altering the windings and excitation.

It is to be hoped that now these direct current pressures
 have been fixed as standards by the committee, they will in
 future be universally adopted by the engineers advising corpora-
 tions and others distributing electrical energy. In course of
 time the benefits to the electrical industry at large, which will
 certainly follow the adoption of these standard pressures, must
 become more and more apparent.

A circular was drafted embodying the suggestions of the
 sub-committee, and this was submitted first to the manu-
 facturers for their consideration, and secondly to the leading
 consulting engineers and users of motors.

The information so courteously placed at the disposal of the
 sub-committee by the consulting engineers and manufacturers
 was most carefully weighed and considered by the sub-com-
 mittee, and certain definite conclusions were arrived at, the
 circular being sent, in the first instance, to the manufacturers,
 as they were the people most directly interested. Replies were
 received from all the leading firms, who expressed themselves
 unanimously in favour of the recommendations of the sub-
 committee. The consulting engineers similarly gave their
 adherence to the proposals of the sub-committee.

Before coming to their final decision the sub-committee on
 generators, motors and transformers conferred with the sub-
 committee on electrical tramways, of which Mr. A. P. Trotter
 is chairman, and a joint meeting took place, with the
 result that the pressure of 500 volts, which most concerned the
 latter sub-committee, was agreed to, and in addition to the
 pressures already agreed to 600 volts was decided upon as the
 standard pressure for electrical railways.

The question of the adoption of standard frequencies,
 although of equal importance with that of standard pressures,
 was not surrounded with the same difficulties. It was, how-
 ever, deemed advisable to fix upon the standard frequencies at
 the earliest possible stage of the work, as no progress could be
 made in the standardisation of prime movers for driving alter-
 nate current machinery until such time as the frequencies had
 been settled upon. On this question there appeared to be a
 great preponderance in favour of frequencies of 25 and 50.
 The only point upon which any serious difference of opinion
 appeared to exist was the advisability of the adoption of a third
 frequency of 40 or 42, to enable rotary converters to be used to
 the fullest advantage. All the arguments in favour of this

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third frequency were fully discussed, but after carefully weighing the pros and cons the sub-committee decided not to recommend the adoption of more than two frequencies, namely, 25 and 50.

The recommendations of the sub-committee were then submitted to the electrical plant committee, the publication committee, the main committee and the Board of Trade for their approval.

This having been obtained, it was deemed advisable in the interests of the electrical industry of the country that the findings on the questions of direct current pressures and frequencies should be published at an early date without waiting for the completion of the entire report to be issued at a later date.

The following are the resolutions on standard direct current pressures and standard frequencies:—

1. That the standard direct current pressures, measured at the consumers' terminals, be 110, 220, 440, 500 volts.

2. That the standard direct current pressures, measured at the terminals of the motors, be for tramways 500 volts, for railways 600 volts.

3. That 25 periods per second be the standard frequency for (a) systems involving conversion to direct current by means of rotary converters; (b) large power schemes over long distances; (c) three-phase railway work, where motor gearing and the inductive drop on the track rail have to be considered.

4. That 50 periods per second be the standard frequency for (a) mixed power and lighting on town supply mains; (b) ordinary factory power plant; (c) all medium size power plant where rotary converters are not employed.

The engineering standards committee have received a grant of 1,000% from the Government of India in recognition of the special work done by the committee for the Indian railways. The secretary of the committee, in forwarding a report on standard locomotives for Indian railways to the Secretary of State for India, stated that he was desired to point out "that, although the consulting engineers and manufacturers have placed their personal services, as well as those of their draughtsmen, &c., at the free disposal of the committee, the consideration and compilation of the resolutions arrived at by the committee, together with the necessary calculations and drawings, have involved great expense; this has been partially met by grants from the Board of Trade of 3,000% and from institutions supporting the committee. As therefore the sub-

ject of the present report is primarily applicable to the committee trust it may be possible for your Lordship to grant in aid of the work for this year, and beg to be 1,000%." To this letter a reply was received that the Secretary of State in Council had been pleased to sanction the grant of such a sum.

THE LONDON TRAFFIC COMMISSIONER AMERICA.

THE members of the Royal Commission on London Transport, delegated to inquire into the transport system of the United States as it affects crowded centres, and incidentally the housing problem, arrived in London on Saturday evening after an absence of five weeks.

The following account of their visit has been communicated to the *Times* by a correspondent:—

The sub-commission comprised the chairman of the commission (Sir David Barbour), Lord Ribblesdale, Sir Dickson-Poynder, Sir George Bartley, M.P., Mr. C. H. Gibb (general manager of the North-Eastern Railway), Mr. Lynden Macassey, the secretary. The objects of the commission were to inquire into the various means of transport existing in the principal cities of the United States, with their relative efficiencies from the public view, to ascertain the respective authorities from which franchises to rapid transit are granted in the principal States, to investigate the extent and nature of the control exercised by the carrying into effect of the powers granted by franchises or charters. The sub-commission arrived in New York on September 26, and were accorded "free entry" by the courtesy of the Secretary of the Treasury, Washington.

In New York the sub-commission opened their work. There the system of rapid transit consists of elevated railways, elevated railways, a subway (in course of construction), and the suburban sections of the main line entering the city. The street railways and elevated railways in Brooklyn belong to and are operated by the Brooklyn Transit Company. The street railways in the borough of Manhattan, which until 1898 was the City of New York, were owned and worked by the Interurban Rapid Transit Company. In the borough of Manhattan a subway some 20 miles

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constructed by the Board of Rapid Railroad Transit
ers, of which Mr. A. E. Orr is chairman and Mr.
Parsons, M.Inst.C.E., chief engineer. This is a
uted in 1894 by the Legislature of the State of
nsisting of eight members, the mayor and the
of the city of New York, the chairman of the
ommerce (these *ex officio*), and five other persons
the Act. The board is empowered to locate and
ys and elevated railways, to put up the franchises
abined with the obligation to work) to public
s an alternative, subject to conditions, to let out
e construction of subways and elevated railways
e of the municipality. The board may also grant
private parties authorising the construction of a
e extension of an existing railway or railroad in or
y. The subway at present under construction
by Mr. Parsons, and is being constructed at the
e city by popular decision, following on a referen-
e citizens according to the Act of Parliament.
ing company is the Interborough Rapid Transit
which Mr. August Belmont is president, Mr.
vice-president, and part of the contract between
y and the Transit Commissioners is, by Act of
he operation of the subway for fifty years on a
to the interest on the municipal bonds issued for
ion of the subway, with 1 per cent. in addition as
nd. The Interborough Rapid Transit Company
l the elevated railways in Manhattan, and the
go work the Manhattan Elevated Railway in con-
the subway. An important feature of rapid transit
is the proposed electrification of the suburban
e New York Central and Hudson River Railroad,
hich in its entirety includes the building of an
e elevated railway over the existing tracks from the
al depôt throughout the suburban section, and the
nection of the system near the depôt with the sub-
extension of the Pennsylvania Road is from its
inus outside New York city to New Jersey, then
Hudson river by means of an electrically-
nel, and the further extension thereof across
ver to a junction with the Long Island Rail-
sub-commission inspected the methods of
ffice, especially those in operation during the
rs or at special points of congestion, and
e manner in which the subway is being constructed,

especially in thoroughfares where traffic is densest and there
are heavy underground works. In addition, Mr. Barclay
Parsons, Mr. Vreeland, the president of the Interurban Rapid
Transit Company, Mr. Winter, the president of the Brooklyn
Rapid Transit Company, Mr. Orr and Mr. Shepherd, the
counsel to the Transit Commissioners, attended before the sub-
commission at the Waldorf-Astoria Hotel and gave much
valuable information. The details of the New York Central
scheme and of the Pennsylvania extension scheme were
explained by Mr. W. J. Wilgus, the fifth vice-president of the
New York Central, and by Mr. Samuel Rea, the fourth vice-pre-
sident of the Pennsylvania Road, and by the kindness of Mr.
Newman and Mr. Cassat, the presidents of those respective
railroads, the sub-commission were put in possession of the
plans, specifications and all available data connected with the
schemes. In addition to information on purely traffic matters,
the sub-commission investigated the procedure of granting
franchises, and the character of the powers of controlling
thereover vested in or reserved to the State Board of Railroad
Commissioners, the Rapid Transit Commissioners and the
City Council.

From New York the sub-commission journeyed to Boston,
in Massachusetts. In Boston urban transit is provided by a
system of street railways, elevated railways and a subway, all
belonging or leased to and worked by the Boston Rapid
Transit Company. The subway was constructed by the
Boston Transit Commission, a body somewhat similar to the
Rapid Transit Railroad Commissioners of New York, at the
expense of the city, and leased to the company to work. The
subway is situated in the most congested districts of the city,
and is used by surface cars, which run into the subway on the
edge of the crowded locality, and by the trains of the Elevated
Railway, which forms a physical connection therewith. At the
Hotel Touraine, which the sub-commission made their head-
quarters, Mr. George C. Cucker and Mr. Howard C. Carson,
the chairman and engineer respectively of the Transit Com-
mission, furnished information as to the constitution, powers
and procedure of the commission and as to the construction of
the subway. From the Massachusetts Board of Railroad
Commissioners the sub-commission obtained a comprehensive
account of the system in Massachusetts of granting franchises
for railroads and railways, and of the control exercised by the
board over the subsequent working thereof. In regard to the
main-line railways entering Boston, the commission obtained
much valuable data from Messrs. Van Elten, Curtis & Tuttle,

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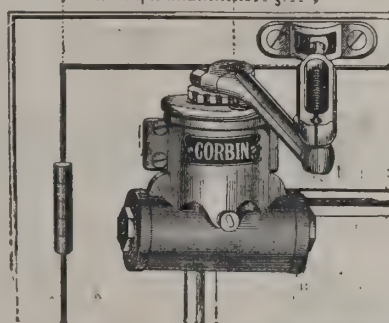
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more particularly as to the attitude adopted by those trunk-line companies in the matter of rapid transit

The sub-commission next proceeded to Washington, in which city there is an extensive and efficient system of street railways of the underground conduit type. They were received by the President of the United States, who evinced great interest in the matter of the inquiry. The Inter-State Commerce Commission, which is the possessor of perhaps the most complete library of railway literature in the world, generously placed their department at the service of the sub-commission and gave them much valuable information.

From Washington the sub-commission next proceeded to Philadelphia. There the requirements of urban transit are served by the extensive system of street railways belonging to the Philadelphia Rapid Transit Company, into which all the previously existing separate systems have lately been consolidated. To reduce the congestion in the central districts of the city, this company is now constructing a subway on the lines of the subways in New York and Boston. The Pennsylvania Railroad Company has of late made special inquiry into the matter of suburban traffic, on the result of which they have recently closed a number of suburban stations near their Broad Street terminus as affording a short-distance traffic the cost of handling which was out of all proportion to the revenue to be derived therefrom. The reasons for this policy the company placed before the sub-commission, and from that company and from the Philadelphia and Reading Railroad, the other main-line road entering Philadelphia, the commission derived much useful information relative to suburban railway passenger traffic.

From Philadelphia the sub-commission returned to New York, and there, before their departure for England, discussed with Captain Piper, of the New York Police, and with Mr. Robert de Forest, the tenement house commissioner, a number of questions relative to street traffic and the housing problem as affected by locomotion in the city of New York.

In addition to the cities mentioned above Mr. Macassey, in a preliminary journey of inquiry, visited some other cities. Among the latter, which the sub-commission themselves did not think necessary to visit, were Chicago, Detroit, Cleveland and Albany. In Chicago the whole conditions of urban transportation, which are now in a chaotic state, are under re-organisation at the hands of Mr. B. J. Arnold. In Detroit (Michigan), an important centre of inter-urban railways, communication between outlying country districts and the centre

of the city has been developed to a high degree of efficiency both by the extension of the city lines of the Detroit Railway Company as high-speed trolley lines outside the city and by the system in use of interchange of traffic between independent country lines and those of the city company. Interchange of traffic is claimed in the United States as an essential factor in rapid transit, and in Cleveland and in other cities similar systems of traffic interchange prevail.

The sub-commission were highly gratified by the able reception in the United States, and by the efforts of all connected with rapid transit in its various efforts to give them such information as they required. When it was not at the moment available, a special investigation was once ordered, and no trouble was spared to make the information as instructive and profitable as possible. Many kindnesses in the matter of transportation were shown them by the railway companies, who, in the quaint but expressive phrase, "took care" of them by placing private cars at their disposal for railway journeys, and by every one with whom they came in contact.

LAYING OF GAS MAINS.

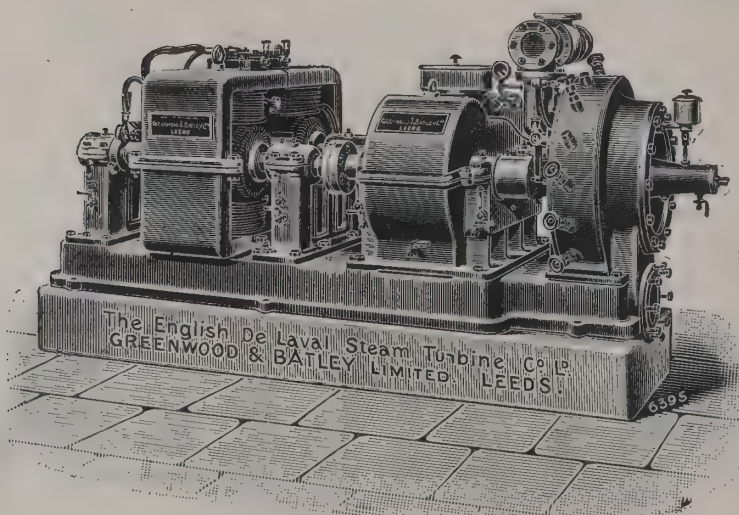
IN the Kingstown police court, before Mr. Drury, a case heard in which the Gas Company were plaintiffs and the Dublin County Council were defendants. The Gas Company wished to open up the road known as Stillorgan Park Road for the purpose of laying gas mains and pipes, but the Council refused to approve of the plans selected by the Gas Company for laying the pipes, and the summons called on the Gas Company to attend before the magistrate and state their case. An existing difference, and the magistrate was to determine the plans according to which the road or street should be laid up and the depth at which the pipes should be laid.

Mr. Ronan, K.C., said the only question at issue between the parties was as to the depth and the mode of laying the pipes. In 1902 a serious litigation took place between the County Council and the Gas Company owing to injury by the gas mains being broken by the steam-roller of the County Council, and the witnesses of the County Council gave various depths at which the pipes should be laid, of which they should be laid as deep as 2½ feet. Mr. Collier, the Master of the Rolls was of opinion that the pipes

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ay years ago at 9 inches was sufficiently deeply
en traffic. This was a case of a new main, and
l to decide was how it was to be properly made to
y by a steam-roller.

y : Yes; and we must also take into consideration
the steam-roller.

on : The heaviest roller we have is 15 tons.

n (continuing) said in this case the Gas Company
it the mains at a depth of 2 feet. Mr. Collon,
or, objected to this depth unless the Gas Company
ne County Council against any damage, or else to
at a depth of 3 feet. However, if the pipe was
the footpath it could be put at a depth of 2 feet.
iles of mains all over Dublin, and the depth was
inches, and until the introduction of the steam-
never had a break, and now 2 feet had been
safe in Dublin, and the traffic in the city was
t was on a country road.

consulting engineer at Westminster, stated, in
Ronan, that he had large experience in different
and of laying gas mains. Before the use of steam-
ins were laid at from 12 to 18 inches, but after
on of steam-rollers the mains were laid at 2 feet
at was to the satisfaction of the bodies in control
He was of opinion that 2 feet was an ample

y.
o Mr. Shannon, he said that if the mains he laid
were damaged he would hold the body in charge
responsible for the breakage. He would not
Council.

ng, chief engineer of the Edinburgh and Leith
tion, said his mains were laid at 2 feet, and they
ollers without doing any injury to the mains. His
that 2 feet deep would be perfectly safe, and he
uld be a waste of money to put the mains deeper.
on : Do you ever lay mains under a footpath?—
blic would not like the inconvenience of being
he use of the footpath while the mains would be
s of laying.

y : If they lived in Dublin they would not mind,
well used to that.

field, chief engineer of the Gas Company, stated
inion, 2 feet was deep enough to lay a main with
any roads in and about Dublin the depth is not
al those roads are steam-rolled. He had never

known of an injury from steam-rolling to a main laid 2 feet
deep.

To Mr. Shannon : They proposed to lay this pipe at
Stillorgan Park at a depth of 2 feet 5 inches, as that was the
depth of the old main. If the main was injured by a steam-
roller the County Council should pay for it, but he believed
that the main would be safe from injury at that depth of 2 feet
5 inches.

Is Mr. Collon, the county surveyor, to have any voice as to
the way the main should be laid?—I don't know.

Mr. Collon asked that the pipes should be laid on a 6-inch
bed of stiff clay when a rock was met?—We have never done
that.

Mr. Shannon pointed out that in the case before the Master
of the Rolls, it was decided that the old mains laid down by
the Gas Company thirty or forty years ago were properly laid,
inasmuch as they were laid deep enough to withstand the
traffic then on the roads before the introduction of steam-
rollers. The Master of the Rolls also said that the county
officer was the proper authority to see how the mains should be
laid. The Gas Company say that they would lay the mains at
a depth chosen by themselves rather than the depth suggested
by the county surveyor, and, in addition to doing that, they
were to hold the County Council responsible for injury to the
mains.

Mr. Collon, county surveyor, stated in reply to Mr. Shannon
that he considered that the main in question should be laid at
a depth of 3 feet. He asked the Gas Company to indemnify
the County Council for any damage to the mains if they were
laid at a depth of less than 3 feet. He thought the company
would jump at that offer, but it was refused. The pipes should
be better laid by the Gas Company, as their system of pipe-
laying was about the worst that could be carried out. There
was no proper care taken in the laying of their pipes, and if
there was there would be fewer disputes about these pipes.

Cross-examined by Mr. Ronan : Will you pledge your oath
that 2 feet is not reasonably safe?—I will not. It is reasonably
safe, but I want to safeguard the county against damage by
having the depth 3 feet. I say 2 feet would be sufficient if I
was engineer for the Gas Company.

Mr. Drury : What you mean is that you would not have any
hesitation in giving an indemnity at 2 feet deep?—I would not,
and if the pipes were properly laid I would have no hesitation
in giving an indemnity at a depth of 18 inches.

Mr. Drury : That is a very strong answer.

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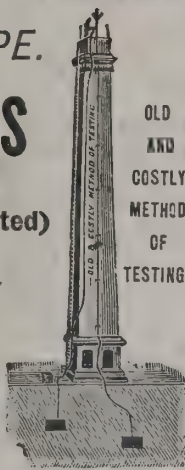
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Mr. Drury said he had not the slightest doubt that the depth of 2 feet 5 inches mentioned in the plan was sufficient, and he made an order to that effect.

Mr. Ronan applied for costs.

Mr. Shannon did not think that the magistrate had power to give costs in this particular case.

Mr. Drury said he had and he awarded 10% costs.

EMPLOYERS AND WORKMEN IN THE IRON AND STEEL TRADES.

ON the 24th inst. the first meeting of the session in connection with the Staffordshire Iron and Steel Institute took place at the Institute, Dudley. Mr. W. Somers, in his presidential address, said a few words as to the best way to serve both masters and men. The first thing that every manager should realise was that men needed encouraging in the idea that it should be their aim and object to consider the employer's interest as identical with their own. Workmen would then know that it was their duty to get out as much work as possible, and that the work should be of the best quality. In return for this the manager would be on good terms with the men and would appreciate their endeavours by paying them good wages, always bearing in mind that the best workmen were the cheapest in the long run to the employer. A manager's duty was to be a proper medium between the employers and the employed, and to see no injustice on either side. He could safely say that their workmen to-day were much steadier and more sober than they were, say thirty years ago. There was no doubt that they were more intellectual and aimed at a higher standard, but there was certainly a lack of seriousness and a love of pleasure which was detrimental. This remark, he was afraid, applied to all classes. Many managers would doubtless be familiar with the great rush there was at midday on Saturday to attend football matches. There was, in fact, a general laxity in the work during the whole of Saturday morning, due, no doubt, to the fact that the prospect of the afternoon's sport was uppermost in the minds of the workmen. This was a want of seriousness. They did not find that this was the case abroad, where they were much impressed by the fact that the average workman spent his recreation time in educating himself thoroughly for whatever business he had entered. He did not wish to imply that men should have no pleasure or that the hours of labour should be increased, but that there was a need for more

interest and earnestness being shown whilst men were. We were apt to be too confident of our own superiority and to think that our neighbours abroad had no capabilities and advantages. On the contrary, they reaped the benefit of our experience, had educated themselves to a high state of efficiency, and their workmen all the advantages of modern science and of modern training and skilled in every detail. It was no longer employers spending enormous sums of money to reconstruct their works if the workmen did not also move forward times by putting more energy and earnestness into their work. He thought it was in the power of every manager to bring his men somewhat into line with regard to the matter, but so many of them wanted themselves more advanced in more mastery of detail and more thought for what was to happen in the future. Great Britain used to be the workshop of the world. What was it to-day? He did not think it had not prospered, but our pace was not quick enough in comparison with the rapid strides of other countries. There was no doubt there was a degree of foresight and industry amongst foreigners to-day which was not to be despised. It was the outcome of serious thought and earnest effort, and was bringing them to the front with startling rapidity. It must be met by us with the same serious thought and earnestness, and with a dogged determination that, come what may, we would hold our own. One of the difficulties we had in competing satisfactorily with foreign countries was a barrier of protective tariffs, but as that question was generally discussed throughout the country he would not enlarge upon it. It was certainly a question that required thoughtful consideration, and he hoped that the people would consider it without any political bias, but simply on the basis of loyalty, common sense, and what was the best for the country. The Railway monopoly was another great difficulty with which British manufacturers had to contend, and he was glad that the trade of this country would be materially helped if the State took over the railways. A comparison between the cost of carrying materials and goods with those of other countries showed results that were positively monstrous. In his opinion the only cure for this, so far as the Midlands were concerned, was a canal from Liverpool to London right through the shire.

Professor Turner proposed a vote of thanks to the speaker for his address, and the resolution was seconded by Mr. (vice-president) and carried.



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THE WEEK.

always creditable to an Englishman when he insists on indicating his rights under French law, regardless of the expense or inconvenience which in consequence may arise to him. This is especially the case when it comes to a tenancy, for Frenchmen commonly say that there are no remedies for tenants' grievances. MR. WILLIAM CAS WRIGHT, who was the plaintiff in a case brought before the Tribunal Civil de la Seine on January 1, 1903, had a lease of an appartement on the fourth floor in the Meyerbeer at a rent of 4,000 francs. As usual, the conditions imposed were severe, and he accepted them, thinking that the other tenants of the mansion were similarly bound. He soon discovered that the appartement of his seemed to be a music-hall combined with a dancing academy. The street is near the Opera House, and the class of music performed could hardly be termed artistic. Part of the amusements consisted in striking the ground floor with sticks and hammers. Before a month had passed Mr. WRIGHT was obliged to call in the aid of a *huissier*, in order that he might testify to the annoyances. When the preparations were made for the proprietor, who is a viscount, as well as the other tenants, to be summoned before the Tribunal, the plaintiff, who as an Englishman did everything in the best style, engaged M. FELIX DECORI as advocate. After presenting the evidence on both sides, and taking a week for deliberation, the judge ordered the noisy occupant to pay MR. WRIGHT 40% with expenses. The proprietor should have been mulcted, for although he might not be responsible for the disturbances, he had in the person of the tenant a representative who should have endeavoured to secure a quiet possession for all the tenants. The case is interesting for another reason. Much has been said concerning the rigidity, the invulnerability and other excellences of the flooring in Paris houses. Mr. WRIGHT has found, to the great surprise of many other people, that they are not at least fire-proof. Indeed, we consider that much of the inconvenience suffered was due to their extreme sonority. That is a defect, or as POLONIUS says, "effect defective," requiring consideration in all cities where the flat system is employed.

ALTHOUGH Essex is one of the most interesting counties in England and is so close to London, there is no doubt that it has been made a victim of prejudice. It possesses a great variety of soils, and some of the most productive in an agricultural sense lie low. But many people suppose that the county mainly consists of unhealthy marshes. The growth of the Metropolis as well as other causes are gradually dispelling the old illusions about the flatness and insalubrity of the county. The people of Essex also are in many ways progressing; they are not backward, and a county of so much local interest certainly deserves more recognition than it has lately received. One indication of the modern efforts of Essex men to keep up with the times is to be found in the arrangement of a grand exhibition of art applied to manufactures, which will be held in the Shire Hall, Chelmsford, from December 1 to 5. The objects of the exhibition are (1) to stimulate the application of art to manufactures in all sections of the community; (2) to show the work produced by the students of the Chelmsford art school; and (3) to raise funds towards the equipment and completion of the new Chelmsford art buildings. The total net proceeds, after deducting expenses, will be handed over to the Chelmsford technical instruction committee for this purpose. Many of the elements which usually secure success will be combined. Besides an exhibition of art manufactures of various kinds, processes will be exhibited and demonstrated, and the students of the art classes will illustrate their competency in several forms. The committee favour is to suggest what is being done in the art school as elsewhere in the county, and in that way to show that Essex can produce something else besides corn and crops. Mr. C. H. BASKETT is the art director, and Mr. F. A. FAWKES, of the Red House, Chelmsford, has

undertaken the onerous duties of honorary secretary. The president of the exhibition is the Earl of WARWICK, who, with the Countess, will hold a reception of visitors on December 1. No efforts are being spared to insure successful results, and the anticipations of the committee will, we hope, be fully realised.

THE Commons and Footpaths Preservation Society have been successful in obtaining about 1,650*l.* from subscribers, in order to enable an action to be taken for the purpose of determining whether Sir EDMUND ANTROBUS has exceeded his rights as proprietor by enclosing Stonehenge with a barbed wire fence, by stopping some of the approaches and by exacting payment for admission to the ancient stones. The law of England upholds landlords' rights under conditions which often seem to be inequitable, and it is possible that Sir EDMUND ANTROBUS has done nothing which was not advised by his counsel. But the public, or rather a section of them, naturally wish to be assured whether so remarkable a monument, which was for so long a period visited without any restriction, can be considered as if it were an ordinary farm building of which the owner of the land had come into possession on the expiration of a lease. No one doubts the motives of Sir E. ANTROBUS in protecting the monument by a wire fence. But Stonehenge would be as well guarded if it were registered under the Ancient Monuments Act of 1883, when the Office of Works would have to take charge of it, while leaving the owner's rights intact. As there are eminent lawyers among the subscribers we may assume that a reasonable case can be made out on behalf of the Commons and Footpaths Preservation Society as representing the public, and the case will therefore excite wide attention. But we hope Sir EDMUND ANTROBUS will agree either to the registration of Stonehenge or the acceptance of a smaller sum for its purchase than was demanded.

It does not come with good grace on the part of water companies, who claim large sums on account of sinking funds and the like from the Water Board, to demur to a charge for "supervision" in connection with making good a roadway. The Westminster Borough Council claimed 89*l.* 9*s.* 8*d.* for expenses incurred in filling in, making good and maintaining in streets the pavement which had been broken open to lay or repair pipes. The Council had added 10 per cent. for supervision. The Company maintained that the Council could not in law make a charge for superintendence, but only for out-of-pocket expenses. The claim was to some extent made as compensation for the expenses incurred in keeping up repairs. Mr. BROS, the magistrate, decided that the Council were only entitled to charge for expenditure actually incurred, and could not add a charge based on averages. That could only be done by agreement. But it was to the interest of both parties that the work should be properly done, and therefore 10 per cent. had been added as in the nature of surveyor's expenses. Whether 10 per cent. was the right figure he could not say, but certainly something should be charged for this superintendence or "supervision." The Council are willing to accept the decision, but the Company are likely to appeal.

THE city of Berlin is now raising a loan of 228,000,000 marks, which will be mainly devoted to works of construction. Among the purposes already arranged are the enlargement of the gasworks and waterworks, improvements in market halls and abattoirs, electric tramways, bridges, orphanages, hospitals, lunatic asylum, penitentiaries, high schools, parks, &c. The rate of interest is to be 3½ per cent. Berlin must be considered as a city which is well administered, and at a low cost to the inhabitants. The co-operation of officials who are connected with the army and elected councillors brings more unanimity in the arrangements than would be expected. Although the country around is flat, the water supply owing to the elaborate filtering is adequate for all domestic purposes. The drainage, with the sewage farms in connection, are successful, and are often referred to as models for imitation. The annual expenditure is about 125 millions of marks, including education, police, aid to the poor, &c.

THE AMERICAN INSTITUTE OF ARCHITECTS.

A recent convention of the American Institute of Architects it would appear to be understood by the members that one subject is to be paramount. In the convention at Cleveland, held a few weeks ago, the importance of Rome as a place of study was uppermost. In the preceding convention at Washington the improvement of that city received most consideration. The offices of the Institute are in the old Octagon House, which was the residence and executive office of President MADISON when the White House was destroyed by British troops in 1814. It is, moreover, considered by some to be the best example of city residential architecture of the period existing in the United States. The property, which has 22,252 square feet in area, was acquired for 30,000 dollars, and a third of that sum has been already guaranteed by some of the members. It is wise to suggest the advantage arising from the presence of the American Institute of Architects by an endeavour to improve the political capital of the United States. But the effort has not been confined to log-rolling in lobbies. Lecturers provided with lantern slides illustrating the schemes of the Commission have been sent to the Institute Chapters in a great many cities. The result has been the creation of a national interest in the improvement of the capital, and we hope there is also a sense of indebtedness to architects for their public services. One of the consequences would seem to be that in Washington architects from other States have been called in to design buildings. A Philadelphian planned the municipal hospital, a Baltimore the pumping station, a Chicago architect the very important Union station, and a New York architect the bridge over Rock Creek.

There were subjects which although they might be regarded as subsidiary had a closer interest for architects. One was competition. Hitherto the Institute was not as a body favourable to competitions, for it is believed that the best results are to be attained without having recourse to such contests, and the standing committee on the subject adopt that view. But it is insisted there is one supremely important condition needed in every fair competition, which is the employment of professional assistance for the programme and the award. The assessor's task in America is more difficult than commonly happens in England. "Cuteness" is still rampant. One case is mentioned where a committee pledged themselves to leave the envelopes containing the names sealed up until a final selection was made. The resolve was not adhered to; an envelope was opened and the whole business settled without any consultation of the professional adviser. The Institute committee refer to the arrangement adopted to secure selected competitors for the Liverpool Cathedral by seeking photographs and drawings of work which the applicants had executed. They say, "From this position it is but a step to select an architect in the same way; in other words, to let the competitors submit for judgment not studies for the proposed building, but drawings or photographs of similar work which they have done, with such evidence as they wish, or the committee desire, as to their ability, and have competitions decided on the ground of past performance, which is, after all, a better guarantee to the client than a clever plan or a happy solution of a problem." The committee do not appear to realise that one of the advantages of the competition system is the opportunity afforded to young and able men who from the length of their studies or other causes may not have erected buildings of the class desired. A competition based on "past performance" would be restricted, and some of the finest of modern buildings in Europe would not exist if that practice had been observed.

Another report related to the schools of architecture which are found in different parts of the country. At the Massachusetts Institute of Technology there are between ninety-five and a hundred students. The standard is rising, but it attracts rather than repels. In the Illinois College of Engineering and Architecture there are forty-four students in the latter subject and eighteen in architectural engineering. The number seems small compared with the 497 students in the College of Engineering. That form of construction is known to be more prosperous than building, and it is supposed "that the average graduate of an engineering college prefers employment by a corporation

to establishing himself in a profession." The school of architecture at Columbia University has eighty-four students. Fine art has gained the upper hand, for the school was lately separated from the department of applied science and is now entirely independent. The principal of the architectural school at Pennsylvania has invited a group of practising architects to assist the regular staff in the subject of design, each member to give, during certain stages of a given period of work, his personal criticism to a student on a problem whose programme he has had to prepare. Eighty-six students attend the department of architecture at Harvard University. The number of students in Syracuse University was thirty-one. The Institute committee remark:—"A noticeable and very gratifying tendency in all schools of architecture is the development of post-graduate courses, and the increasing number of students who prolong their period of study to five or even six years." The Pennsylvania Academy of the Fine Arts have also established advanced courses of architecture which are carried on in the evening, and a open to candidates over twenty years of age who have sent at least three years in an office or in one of the specified schools of architecture. There are some scholarships enabling students to study art in Europe.

A subject which has given rise to much irritation among American practitioners is the designing of Government buildings. Successive administrations are eager to have a special department of architects, superintendents or other assistants as part of the civil service. The buildings obtained in that way are not always successful. Sometimes architects in private practice are called in to prepare designs, but the execution of the work is conducted by salaried officials. It is alleged that on those occasions much is done to discredit the practicability of the architects' drawings. A paper was read by Major SEVILL, of the corps of Engineers, who has had experience in the erection of public buildings. He is in favour of the arrangement we have just mentioned, viz. that the architect who prepares a design for a Government building should be in private practice, but that the erection of the building should be undertaken by Government engineer. The selection of the designs he would confide to three eminent private architects. The usual percentage would be paid, but the amount would be more liberal in reality, because many of the plans relating to engineering and structural design would be prepared by the constructive bureau, and fewer drawings would be required from the architects, and much shorter specifications.

In connection with this question, the latest arrangement for obtaining plans for school buildings in Boston was described. There is a school committee in the city having charge of the educational system, and they entrust all matters relating to design and construction to a school-house commission of three members, who possess absolute control of the buildings, of the architects elected to erect them, and of all the details relating to plans, specifications, &c. The head of the Commission is Mr. R. CIPSTON STURGIS, whose authority as an architect is recognised. Whenever a new building has to be erected or of the Boston architects is invited to prepare plans. The architect goes to the school commission, and the requirements are explained to him. Mr. STURGIS has already considered the subject, and he knows the opinions not only of architects, but of the school committee and other authorities about the work to be done. The area of the rooms, the size of the windows, the positions of doors, wardrobes and bookcases are all predetermined, and the aim is to attain as much efficiency as possible at the least cost. Mr. STURGIS has prepared a normal specification which is as brief as possible. Engineers are called in for heating and plumbing. The members not only advise the school committee, but, we are told, "go into the architects' offices where the drawings are in progress, and go over the details there, so that the architect making the plans for a school-house has the advantage of the best experts that they can employ, sent to his office by the city, to instruct and guide him; and the architect in adopting the suggestions of these experts knows that they will be accepted by the school-house commission." The same system, it is suggested, could be employed elsewhere, and it is claimed that no more rational or suitable way to obtain the best results can be devised.

England the belief in equality of skill among all classes of architects is so general and deep-rooted, it is doubtful whether any competition of the kind would be allowed to exert its influence.

There was another subject which was incidentally introduced before the convention, and which on another occasion is likely to be debated. An important competition was arranged, and one of the conditions was that the architects should express their willingness to give a bond not only for the faithful fulfilment of their work, but for completing the building in question for the sum assigned in the outlay. The New York Chapter came to the conclusion that the entering into such a bond was not professional conduct. But the matter was too important to be treated locally, and therefore it was brought under the notice of the congress.

It is not necessary for us to describe the efforts of the American Institute for the improvement of Washington; it is a question which, to be understood, would require knowledge of the district. In 1791, while the land was a forest, L'ENFANT, an engineer, under the direction of WASHINGTON and JEFFERSON, laid out a city with straight streets placed at right angles. The positions of public buildings were first marked, as well as squares and open spaces. The city has extended far beyond the original limits, and the intentions of the projectors were not respected. Washington is no longer a city of magnificent vistas. It is now proposed by a Commission to make arrangements by which great monuments can be erected and other works, which will be manifestations of Washington's importance as the capital of the United States. They would form objects which would determine the directions of new streets. A vast scheme which will take a long time to execute has been prepared. The convention came to the following resolution:—"That the American Institute of Architects respectfully urges upon the Senate and House of Representatives the importance of the adoption of the plans of the Commission for the improvement of the city of Washington as a whole." What is to be desired is that the American Legislature will endorse the views of the Commission and of the Institute of Architects.

THE USHER HALL GRIEVANCE.

It may be said to be a cheering sign to find that for once an architectural topic can bulk so largely in the public mind as actually to become a plank upon electioneering platforms, which happens to be the case in Edinburgh at the time of writing. Several aspirants for municipal honours have lately come before the electors, pledged in the event of their return to do their best to upset a decree of the Town Council to the effect that the Usher Hall, which, at last, is about to become a reality, shall be designed by the city works department in place of being opened for open competition. Naturally, the decision has created a great deal of feeling in both professional and lay circles, and certainly it is not a novelty that commends itself to general adoption as likely to make for efficiency. Whether it is the right course to adopt in the case of the Usher Hall is another matter, and a point upon which there is room for difference of opinion.

The whole question of the Usher Hall has been a thorny one in Edinburgh from the very outset. It is now seven years since Mr. ANDREW USHER, a prominent citizen, out of his public spirit and his love for music presented the city with a sum of 100,000*l.*, in order to provide a much-needed auditorium adequate to the musical wants of the people; and it is also seven years since the battle of the sites began, which has long outlasted the life of the "pious donor," and which was not even at an end when the Town Council took upon themselves powers to acquire a site in Atholl Crescent, for they subsequently ran away from their own decision in favour of yet another site, at present occupied by the Synod Hall.

For the Castle Terrace site, as it is called, they paid down 35,000*l.* of the bequest, leaving a balance of 65,000*l.* to depend upon the new building, a sum which represents the limit, for there is a strong feeling among the ratepayers, in spite of a general cry for economy, that the total outlay upon the scheme, the site included, must not exceed the

amount of Mr. USHER's gift. Accordingly it has been decided to practise thrift by utilising the present framework of the Synod Hall, but on the understanding that its façade, a cumbrous structure topped by cypolepean cannon balls of stone, shall be improved away.

The site and its treatment being fixed upon, the next step was to appoint an architect, and the Town Council were originally in favour of following the usual method by setting an open competition afoot. But after investigation they concluded that it would be wiser to entrust the designing a hall to the city architect's office, not only because an outsider might pooh-pooh the foundations and side walls of the old building, but chiefly because they could thus hope to keep a closer grip upon the expenditure.

Needless to say the decision has come as a surprise and a disappointment to the architects in the city; and the President of the Edinburgh Architectural Association has expressed the feelings of his professional brethren when he said that many Edinburgh architects, and doubtless others also, have been long looking forward to the unique opportunity of striving for the Usher Hall in the usual way. He pleads that such a competition, well carried out, would do more for architectural education among the entrants, whether successful or not, than years of academic teaching; and he claims that something is due to a profession which has done so much for the beauty of Edinburgh in the past—a view which did not fail to find an echo, be it said, in the Town Council itself. In other quarters it is being asked whether one of the finest sites in Edinburgh, a site in full view, in the centre of a noble terrace of buildings, without an equal in the city for picturesque situation, balance and skyline, whether this site ought to be handed over to the discretion of a department? Assuming the exterior beauty of the building to be a secondary consideration, it is also urged that in planning the interior all regard must be had to the decorative effect, and in the highest degree to the acoustics, of this house of music—the most difficult of problems, as appears from the fact that one of Edinburgh's finest halls is an acoustic failure, and a problem that demands special skill and science hardly to be expected with justice from a municipal department. In short, the consensus of opinion in professional circles is strongly in favour of allowing the work to become a subject of competition to be held under conditions like those which have succeeded in England.

From the æsthetic point of view, nothing could well be fairer; but there are other and weighty considerations beside. The ex-Lord Provost of the city, who is himself closely connected with the building trade, has said that an open competition would involve more delay than should be faced in view of the seven years during which the scheme has already been in abeyance; and he believes that there is "power and genius" enough in the city architect's office "to provide an elevation second to none in the kingdom." Further, the Usher Hall is apparently not to be the splendid pile of the visions of some who call for a contest open to the architectural talent of Edinburgh, of Scotland, of the world. There is not sufficient money for that; the Usher bequest is not to be exceeded by the fraction of a farthing; and for this reason alone the authorities are supposed to be well-advised in tightening the purse-strings by allotting the work to the officials of a department in which, it is only fair to say, there is no lack of ability.

Again, it is pointed out that the city of Edinburgh has been somewhat unfortunate in its past experience of architectural competitions. Thus, in 1887 fifty-six designs were obtained in a competition to erect new municipal buildings, a scheme which came to nothing. Since then and of late the civic premises have been largely and successfully remodelled; but in this case it was not the successful competitors who were appointed to do the actual work. In 1896 another competition was held in connection with the great "North Bridge buildings" undertaking, and two "promising juniors" were placed first in the award; but here again the work was deputed to other hands, a repetition of which policy has been seen in the instance of the county buildings lately completed. These precedents were costly to the city and not encouraging to architects, as those who are most eager to make the Usher Hall a subject of open competition must even admit; though they may plead on the other hand that when Mr. CARNEGIE gave

Edinburgh 50,000*l.* to provide a public library, a fine plan was secured in open contest, Mr. WATERHOUSE, R.A., being assessor, and the building was carried out, too, at a price within the sum assigned.

Of course, there are two sides and a grievance for every question, nor have we yet heard the last of the Usher Hall and its architect; but though the authorities are likely to cling to their idea of getting a home-made plan for the building, there are signs that something in the nature of a compromise between the parties will be effected by appointing a consulting architect who will act in conjunction with the local department.

PATTERN DESIGN.*

IN order to appreciate Mr. DAY's latest book, a reader would do well to compare it with "The Anatomy of Pattern," which was the first of what is now a rather numerous series of text-books. The older work is to the new what a geometrical basis is to an elaborate piece of ornament, for although there is a connection it is not to be traced without difficulty. It is creditable on Mr. DAY's part to endeavour to render his book as complete as possible, regardless of the trouble to himself. But in the change we have also a suggestion of modern practice. It was not entirely an advantage to reveal the mechanism which at all times and at all places was adopted by ornamentists. The Gothic artists made little mystery about their diapering or other surface decoration. In the majority of cases a worshipper in a church need not be distracted by endeavouring to discover the relationship between the elements of the ornament. The Moors, on the contrary, created mysteries. But we doubt whether any but the craftsmen were able to realise, like the ordinary visitor to the Sydenham Court after reading OWEN JONES's exposition, that by means of a diagonal and circular arrangement for basis it was possible to have very intricate ornament, which became more elaborate and astounding by making the lines grow out of a parent stem. By adopting straight lines only the abominable checks and plaids which, according to OWEN JONES, disfigured the human form became the result. But by correcting the straight or rectangular by the angular, and the angular by the curved, very subtle combinations could be arrived at.

Everybody may not be competent to design simple patterns, but all are in a position to criticise them. Women are now as able to pass severe judgments on the papering of the walls of a drawing-room as on the dresses of those who receive them in it. In this neurotic age it becomes almost impossible to avoid a sort of dissection of the pattern of wall-paper, and one often hears people complain of insomnia because they could not resist the temptation to discover the elements of the ornament in their bedroom. "Who has not suffered in his time," asks Mr. DAY, "from wall-paper or other patterns in which certain ill-defined but awkward stripes would thrust themselves upon his attention? A design which appears to be quite evenly distributed will run, when hung, into lines which slant in such a way as to give the impression that the walls are not true, or that the paper has been hung askew." That is a very common experience. There is, we fear, no remedy for it. Wisdom brings woe and knowledge care in room-papers, as in more important things. One consequence is that many people prefer to cover their walls with coloured papers that are patternless, or to employ the excellent distempers which are now available. Keepers of hotels and lodging-houses would do well to act in that way, especially in bedrooms. In the textiles employed for dresses or for curtains repetitions are not so injurious. But planes when covered with elaborate patterns often seem to mock the eyes which regard them. The lining paper introduced of late by Mr. DAY in his books is a flagrant example of useless perplexity, and is far less pleasing than the simple Japanese pattern which at one time was used.

Adopting the old principle that geometry is the basis of

all pattern, Mr. DAY treats in succession of the square, triangle, the octagon and the circle, and he concludes part of his book by saying "the limited variety of shapes upon which pattern is built is nowhere more plainly obvious than in the way in which, in the maze of design, we find ourselves, no matter on what path we set out, arriving and over again at precisely the same point." This describes such aids as dropping, turning and manipulation of elements. A very important chapter is devoted to pattern planning in relation to technique, and another to proving patterns. There are others on colour, but the expedients and invention. From the last we take the following passage:—

Inspiration comes to a man from without as well as from within; every competent designer, you may be sure, has an infinite number of studies both from nature and old work. But he does not work from them nor often refer to them except, perhaps, to refresh his memory by way of prelude to design. The sight of them before his eyes would be a hindrance to him. Spontaneity of design is only then possible when the idea, whencesoever derived, is, so to speak, fluid in a man's mind—so that what his eyes took in as a fact flows out from his finger-tips in the form of fancy. Neither is it possible to design straightaway from nature. A designer acquaints himself with natural form, natural colour, natural growth and so forth, especially with everything suggestive to him of ornament. In designing he uses not so much these as memories of them. Just so much of nature as comes to him at the moment, just that in nature which comes unbidden is to the pattern. The rest is overmuch. Ornament can digest no more, just as nature can digest no more. It is not so with suggestions from old work. A man has become so much a part of a man that he is no longer conscious whence he had it, does not realise that it is not of his own, that he may make use of. More than that, it is dangerous to borrow if he would keep alive in him the spark of design.

Inspiration, spontaneity, derivative suggestions, and so on, do not necessarily produce the most perfect result offhand. Mr. DAY shows by a number of examples how a motive which might be considered for the moment good of its kind can be modified in several ways with advantage. We see, too, in one case that a form which originally possessed piquancy, if nothing else, becomes after consideration and change "no more than a false start in design." BEAU BRUMMELL's laundress derived a good deal of her inspiration from the vast number of cravats which had to be employed before one could be tied in a way which would enable a great man to appear in Bond Street without any loss of reputation. Designers, like dandies, must not be allowed to spoil the good in seeking after the better. Indeed, it might be considered as the test of a genuinely happy thought if it can be converted into one that is happier. Mr. DAY does not pose as one of those artists whose pictures are guided by an angel. He reveals some of the secrets of his studio as if he did not mind people being told that he owed his success simply to his capacity for taking pains. One remarkable design of his own was particularly adapted for an embossed paper, showing great leaves and spirals growing into the forms of animals, is alleged to be only a freak of invention. Mr. DAY says, "creatures thrusting themselves upon the attention would be unpardonable in ornament. As giving a point and piquancy to a tangle of scrollery, they thrust themselves now and again." In this case the animals seem apposite enough. No one who studies nature is surprised when, on walking through rank grass in one of the English southern counties, a snake occasionally appears. It emphatically expresses the power of the soil and the Vegetable forms are living organisms, but when they become allied to animalism.

The designs express one characteristic of our age, and denote that the days of symbolism, like those of classicism, are gone. In that way we have broken with the traditions which went back to a remote age. With the exception of the Royal Arms of England, forming a panel, the designs, of which there are nearly 300, are mainly adaptations of leaves and flowers. We cannot therefore apply to modern ornamental forms what WILLIAM MORRIS said of the Egyptian diapers—that they are "symbols of the mysteries of nature and religion." The ambition of the time does not reach that height, and it is not clear how a figure of a beetle or a snake could elevate men's thoughts.

* *Pattern Design*: A Book for Students, Treating in a Practical Way of the Anatomy, Planning and Evolution of repeated Ornament. By Lewis F. Day. (London: B. T. Batsford.)

time. Pleasing forms must now be presented, and there is no longer protection for defects, because they are exposed to possess interest of some other kind and be suggestive of higher truths. The designer has therefore a harder task than his ancient predecessors. To be successful must captivate the attention of spectators, while simultaneously he knows that the interest in his work is only momentary. He must make his piece appear to have unity and avoid spottiness, while the details have to sustain unity. As he has to depend on repetition it is almost impossible to avoid monotony. Even the placid Dutchman found it necessary to make an effort to overcome monotony by applying colour in a freakish manner in their tapestries. The Japanese also seemingly applied a covering of gold as skilfully and as wildly.

It does not always happen that the rewriting of a book is successful. The motive force of the intellect appears to be unequal to such attempts. There can be no question of Mr. DAY's "Pattern Design" being superior in every way to his "Anatomy of Pattern." The latter can still be called a masterpiece, but in "Pattern Design" we have the results of a matured experience and of a longer and more varied practice in design. Mr. DAY makes no secret of his methods, and in the pages of the new book the student will find profitable instruction which is out of proportion with the small sum that has to be paid for it.

THE KING EDWARD VII'S SANATORIUM.

On Tuesday His Majesty King Edward VII. laid the foundation-stone of the Sanatorium for Tuberculosis at Henley Common, about four miles from Midhurst. When soon after the King's accession Sir Ernest Cassel presented 200,000*l.* he employed for some public or philanthropic purpose, His Majesty decided to devote the money to a sanatorium for sufferers from tuberculosis. An advisory committee was appointed to consider the arrangements. It consisted of Sir John Lubbock, Bart. (chairman), Sir Richard Douglas White, Bart., Sir Francis Laking, Bart., Sir Felix Semon, Sir Hann Weber, Dr. C. Theodore Williams, Lord Sandhurst, Colonel H. A. Lascelles and Sir Frederick Treves, Bart.; and Mr. Horton Smith and Dr. John F. H. Broadbent were appointed secretaries.

Invitations were issued for essays and plans. About one hundred and eighty were submitted. The first prize of 500*l.* was awarded to Dr. Arthur Latham, with whom was associated, the architect, Mr. William West. Dr. F. J. Wethered and Dr. C. Morland were the other prize winners. The proposals of successful essayists were described in *The Architect*. The next steps are described in the following address, which was read by Sir William Broadbent before the ceremony took place on Tuesday.

May it please your Majesty,—The advisory committee appointed by your Majesty to carry out your Majesty's gracious decision of providing for the open-air and sanatorium treatment of consumption occurring in the classes above the very poor but unable to meet the expense of prolonged residence in a sanatorium, desire humbly to express their satisfaction that the project has reached the stage which offers the occasion for your Majesty's presence here to-day.

The site, which after examination of many parts of the country they were able to secure, fulfils in their judgment every requirement for such an institution, and they trust that its advantages will be apparent to your Majesty even at this early stage of the year. The extent of land acquired is 151 acres, which was purchased from Lord Egmont. To the south it is level and covered by heather and bracken, while the northern higher part is well timbered by fine fir trees. The ground slopes gently to the south, affording a maximum of exposure to the sun; the soil is the lower greensand and the climate is particularly suitable.

The building will stand at the elevation of nearly 500 feet, and will command a view over the valley of the Rother to the Downs. It will be sheltered from the north and east by a gradual rise of the ground to a height of 630 feet, and by a belt of pine-woods, which will be laid out in walks suitable for graduated exercise which forms part of the treatment. To the west is an open common with fine views, which will be available to patients who are convalescent and capable of vigorous exercise. The plans and elevations of the sanatorium, designed by Mr. Percy Adams, the architect, have been submitted to your Majesty. In order that the best principles of construction and management as approved by the experience of existing sanatoria, and new suggestions in advance of these,

might be brought to bear upon the institution, your Majesty offered prizes of the value of 500*l.*, 200*l.* and 100*l.* respectively for the best essays and plans, and, with the same object, members of the committee and the architect visited sanatoria on the Continent and in this country. The part of the building to be occupied by the patients will be a long two-storey building. Each patient will have a separate room, and there will be a balcony upon which the patients can sit out, or upon which the bed, in case of need, can be wheeled. For the further enjoyment of open air there will be Liegehallen and shelters in the grounds. The total number of beds will be 100, and at your Majesty's suggestion accommodation has been provided for twelve well-to-do patients, so as not to shut out entirely the more wealthy classes from the special advantages which it is hoped will be afforded by the institution. Some delay has been occasioned by difficulties with regard to the water supply. According to the Geological Survey, water of excellent quality was to be found in the greensand underlying the site. This proved to be the case on boring, but the water was laden with extremely fine sand, which would have interfered with pumping and rendered the supply uncertain. It was, therefore, necessary to go elsewhere, and springs issuing from the same stratum of greensand to the north and capable of supplying 60,000 gallons a day have been secured by purchase from Lord Egmont. The water, collected as it emerges from the ground, is conveyed to a collecting reservoir near Henley Common and pumped up to a cistern holding 160,000 gallons at the highest point of the site, about 100 feet above the roof of the building. It will thus be available in case of fire as well as for the daily demand of the sanatorium, which is estimated at 20,000 gallons as a maximum. The committee desire to tender their humble thanks to your Majesty for the encouragement afforded them in their task, and for the interest manifested in the beneficent work placed under their supervision, a striking instance of which is given in your Majesty's presence here to-day. It is their earnest hope that the erection of which your Majesty now lays the foundation-stone may be worthy of the name it will, by your gracious permission, be honoured in bearing—The King Edward VII. Sanatorium.

The King, in his reply, said:—My lords and gentlemen,—It gives me great pleasure to come here to-day to lay the foundation-stone of my sanatorium for tuberculosis. When a generous donor, whom I regret I am not allowed publicly to thank, placed at my disposal a large sum of money for any philanthropic object which I might have in view, I at once decided to devote it to the erection of an open-air sanatorium, having been so greatly impressed with the immense benefit which institutions of this nature conferred on those suffering from pulmonary diseases. It is my hope that by these means the malady may be arrested in the case of not a few of those who will be treated in the institution; while I further trust that on their return home, by diffusing among their relatives and friends a knowledge of the infinite importance of fresh air and sunshine in maintaining health, the conditions under which in so many homes tuberculosis flourished will be sensibly diminished. I note with satisfaction that the site which my committee have secured fulfils all the essential requirements of a sanatorium; and I trust that the sandy soil, the southern aspect and the pine trees, which give protection from the north and the east, will assist in restoring health to the inmates of the institution. I am aware that this site has not been chosen without investigating many others, and I thank my committee, and especially among them Dr. Theodore Williams, for the many visits which they have paid to other possible sites in various parts of England. You have alluded to the difficulty experienced in obtaining a satisfactory supply of water and to the delay which has in consequence been caused in commencing the building of the institution. This was unavoidable, for without a proper supply of water an otherwise excellent site becomes valueless. I am glad now to know that through the ingenuity and skill of Mr. Brough Taylor all difficulties have been overcome, and that an ample supply of absolutely pure water has been obtained. I observed with satisfaction in driving here the condition of the road leading to the institution which has recently been constructed. The great rapidity with which this has been completed under the supervision of Messrs. John Aird & Sons is, I hope, an earnest of the way in which the building of the sanatorium itself will be pushed forward now that all preliminary difficulties have been overcome. You have alluded in general terms to the character of the building which will be erected. As you have rightly stated, it will be for the accommodation not of the very poor (they are already being provided for), but of those of slender means who are unable to meet the expenses of prolonged residence in private sanatoria. A certain number of beds will also be reserved for more wealthy patients. I am glad to know that, while no unnecessary comforts which will add to the well-being of the patients will be omitted, there will be a total absence of all luxury and of expenditure of money on superfluous appointments.

After the foundation-stone was laid, Mr. Percy Adams explained the plans to the King. The erection of the building will probably cost 60,000*l*. The contract for the foundations is in the hands of Messrs. Longley, of Crawley.

BRITISH SCHOOL AT ROME.

THE annual meeting of subscribers to the British School at Rome was held on Tuesday. Sir Archibald Geikie, F.R.S., was chairman. In the report for the session 1902-03 the committee expressed their great regret that Mr. Rushforth had, in consequence of ill-health, not found it possible to retain the directorship of the school. It was largely owing to Mr. Rushforth's scholarship, tact and ready courtesy that the school had won the position it held in Rome, and especially in the estimation of the other foreign schools. The committee had appointed in his place Mr. H. Stuart Jones, Fellow and tutor of Trinity College, Oxford, and considered themselves fortunate in having obtained the services of a director whose reputation both as scholar and teacher stood so high. Trinity College had elected Mr. Stuart Jones to a research Fellowship, a very welcome addition to the somewhat meagre stipend which the director at present received. The liberality of a friend of the school had enabled the committee to appoint, as assistant director for two years, Mr. Thomas Ashby, who had been a student at the school for the last two years, and for some time had discharged the duties of director. There had been four students during the past session. Mr. Ashby had continued his researches in the Campagna, and at the International Historical Congress he opened the first meeting of the archaeological section with a paper on an unpublished collection of drawings of monuments along the Via Appia, which would be published by the kindness of Mgr. Duchesne in the *Mélanges* of the French school. Mr. Cuthbert Blakiston continued his study of the fourth century A.D. He visited Dalmatia, and also examined Roman remains in Austria and Germany, but unfortunately ill-health had prevented him from getting the results of his work into form for publication. Mr. McIntyre came out for the first time with a bursary from the University of St. Andrews. His main work was the collation of the eleventh century M.S. of Plato in the Vatican, with the object of defining its relationship to the Vienna MS. known as "W." His collation had already been used in the new Oxford text of Plato now in course of publication. The fourth student was Mr. Webb, gold medallist and travelling student in architecture of the Royal Academy. Mr. Webb had for more than a year been resident in Italy, and had devoted special attention to the Palazzo Linotte, the Cancelleria and the Renaissance tombs in the churches. The second volume of the "Papers of the British School at Rome" was now in preparation, and would contain photographic reproductions of a volume of Roman studies by Andreas Coner, an artist of the beginning of the sixteenth century. Since the last report the library had steadily increased. Thanks to the liberality of Mr. Thompson-Yates, a complete copy of the "Corpus Inscriptionum Latinarum" had been secured. Dr. Steele had again presented a valuable collection of books, about one hundred volumes in all. The committee had also to acknowledge a second grant from the Oxford University Press and gifts of books from Dr. Hodgkin, Professor Pelham and others. Mr. Ashby, senior, presented to the library a valuable copy of Vasi's "Panorama of Rome." The most important purchases had been those of complete sets of the "Bullettino Comunale," and the "Notizie degli Scavi." The committee had accepted with great regret the resignation, rendered inevitable by his appointment as director of education in the West Riding of Yorkshire, of their hon. secretary, Mr. W. Loring. Mr. John ff. Baker-Penoyre, the librarian of the Hellenic Society, had been appointed secretary of both the schools. The receipts from subscriptions during the year amounted to 546*l*., as compared with 477*l* in the previous year. The total income for the year was 591*l*. The expenditure in England and at Rome amounted to 455*l*., leaving a surplus of 136*l*. The donations during the same period amounted to 362*l*., of which 200*l*., received from an anonymous donor, was specially earmarked for the stipend of an assistant director. The total result was an increase of 248*l* in the balance in hand. But the expenses still to be met were very heavy, and the future development of the school was likely to be seriously hampered unless a considerable addition was made to its resources.

Sir A. Geikie bore testimony to the value of the school, even at its present state of development, to the Englishman desirous of making researches in Rome or the Campagna. He also stated that he had found the topographical work in the first volume of the papers of the school to be indispensable for explorations round Rome, and touched briefly on the geology of the Alban Hills, as bearing on the early history of Rome.

Professor Pelham (president of Trinity College, Oxford) moved a vote of condolence with the Imperial German Archaeological Institute in Rome, the oldest of the archæo-

logical schools in Rome, upon the death of Professor Mommsen. Touching briefly on the career of Mommsen, he said that he knew no finer incident in the history of scholars than the arrival of Mommsen in Italy. He came as a young man, with a slender bursary, and tramped through all the provinces of Southern Italy, copying whatever Latin inscriptions he could find. When he had made a collection he succeeded in putting it through the press as the "Inscriptiones Regni Neapolitani Latine," that work became the model of the great "Corpus Inscriptionum Latinarum," now nearly completed. In late years his relations with this country had been strained, but that was now forgotten. It was pleasant to think that his last published letter he had held out a hand of friendship towards this country. Mommsen had always had a high regard for English scholarship. When a fund was established some 20 years back for the exploration of Asia Minor, Mommsen wrote a letter expressing appreciation of many "learned rovers," such as Leake, that England had sent out.

LONDON UNIVERSITY AND TECHNOLOGY.

ON Monday a lecture on "The Work and Aims of the London University" was delivered by Sir Arthur Rucker (the principal) at the London Institution. He began by stating that a modern university had to concern itself with teaching, with research and with technology. No one of these could be omitted, and he believed that they mutually supported and aided each other. The London University was bound by its statutes to organise, improve and extend higher education within a radius of 30 miles of the University buildings, the spirit in which this work was to be carried on was shown by the fact that it was authorised to give degrees for research and to establish new faculties of engineering, economics, political science, which was specifically stated to include commerce and industry. It started on this great task very sparsely equipped with funds. The Government gave them a dignified centre in the Imperial Institute buildings and 8,000*l*. a year which was carefully calculated to supply the actual needs of the University for the central staff and for carrying on the examinations, leaving the magnificent sum of 1,500*l*. yearly with which to improve, organise and extend higher education in London and 30 miles around. He did not grumble at this. No one was specially to blame. The fault did not lie with the Government officials, but with the English people, who in all matters connected with education, except elementary education, were ever asking that bricks should be made without supplying straw. However, the London County Council put aside an annual grant of 10,000*l*. for the University, and that had enabled it to start from the first as a teaching University. All that could be done with that sum, and without further expenditure, to provide ordinate teaching in the various faculties had been done. The results of the efforts which had been made were already telling upon the number of students in the University. Since 1870 the number of persons who had entered the University in a year had risen from 1,890 to 2,900, while in the intermediate examination the numbers had increased from 703 to 1,400. But, though much had been done, much remained to be done. It was essential, in carrying on the work, that the efforts of the University should at particular times be concentrated on particular objects, and at present three schemes had been proposed. For two of them larger resources had been accumulated, but not one of the schemes could be carried out until its resources had been augmented. The first of these was the incorporation of University College, which had offered to place its whole property at the disposal of the University and under its control. The University would thus be made at a stroke the greatest teaching body in London, and its position as a teaching University, and not as a mere agent between competing colleges, would be secured. In order to carry out this scheme 200,000*l*. was needed to make the college ready for incorporation. The Drapers' Company had given 30,000*l*. for the object, and altogether about 100,000*l*. had been raised. The scheme was delayed for the want of another 100,000*l*. amount. The second scheme was connected with the general medical schools of London. They were at present hampered by the necessity of providing education in subjects such as physics and chemistry, which could be equally well taught at a distance from a hospital, and they were anxious that the University should undertake the whole of that work. The proposal would co-ordinate teaching in London, and its beginning could be made if 100,000*l*. were provided. The third scheme was proposed by Lord Rosebery, who, as a member of the University were pleased to know, was still to remain their Chancellor. There was at present a unique opportunity for obtaining 4½ acres of land at South Kensington on the site consecrated by the late Prince Consort to science and art. Two colleges, the Royal College of Science and the Central Technical College were near at hand, and, if it were

able to secure the land, sufficient endowment and the creation of those institutions, a magnificent college of technology could be formed. Large sums had been promised by private donors for this purpose, and the County Council had voted 20,000*l.* a year as an endowment if certain reasonable conditions were fulfilled. It was understood that about 10*l.* more was needed to carry out this plan also. There had to have been some misconception as to the aims and objects of the promoters. It was intended that the new College of Technology should be in no way hostile to existing agencies for supplying education in science or technology. On the contrary, it was hoped that there would be the closest and mutual co-operation between them. It was also intended that the great technical societies, such as the Institutions of Civil, Mechanical and Electrical Engineers and others, should be called into counsel, and when the money was provided would help in deciding how it might be spent. It would probably be impossible to concentrate the whole of the technical teaching in technology on any one site, but it was impossible, and was in every way desirable, that there should be a centre round which other agencies could be grouped. The existing institutions at South Kensington, the neighbourhood of the scientific and technical museums of the Government and of the University itself made South Kensington the most appropriate site, and it might surely be hoped that the comparatively small sum now wanted to bring all existing agencies together would before long be found. Upon the carrying out of these schemes depended, among other things, whether the University should be in reality a great teaching body or not. The London University wanted the London University to take a considerable share in directing the allied forces of education against the common foe of ignorance. The action of the University College made it possible to accomplish this object in a very short period in the history of the University. He viewed with anxiety the events of the next few months. Should the scheme for incorporation fall through, which he did not think would be the case, the scheme for a teaching university in London would be thrown back half a century. It had not been wise to put forward schemes which, perhaps, could not be realised for a century, but the Senate had approved certain schemes, and these, he trusted, London would do all it could to help. Slowly but surely the colleges and teachers were drawing nearer together and nearer to the University. The great supporters of higher education in London had agreed to assist—the London County Council, Technical Education Board, the City companies and charities, private colleges, Trinity College and the Government itself. But the question still remained whether this great movement was to be a mere impulse frittered away by the various obstacles and difficulties which must necessarily be met with in carrying out the great scheme, or whether it should be something more than an impulse—a steady stream moving in the direction of making the London University one of the greatest universities of the Empire.

TESSERÆ.

Doorways.

WITH the Classical architects the doorway was always square-headed, either furnished with mere bordering mouldings or architrave mouldings as they are called, or else it was arranged as to give an appearance of construction, its being treated as pilasters with capitals and bases supporting the lintel, which is in this case often crowned with an entablature. To relieve the lintel from the weight of the mass above the Romans commonly turned an arch of construction, which is, of course, the effective head of the aperture, but they were ashamed of the artifice, and always concealed it under plaster or marble decoration of the wall. In the Middle Ages doorways, on the contrary, where this construction is used, it is always ostentatiously displayed, as in the usual doorways of Pisan churches, in which the mouldings and style decoration exhibit a very slight departure from the Classical. When the lintel is freed from the wall above it it is no longer called the transom, a term implying a stone, free above and below, is sustained only by its extremities and serves as a horizontal bond. Instead of the pilaster supporting the transom may be supported at each end by corbels, or may be left without any apparent support. The transom sometimes formed into a segmental arch; this is a favourite device at Siena, where a great number of doors may be seen decorated, and also occurs in the west door of the Eremitani at Padua. In the Gothic of our own side of the Alps the doorways are often divided by a pier which sustains arches and some- times, and in the Flamboyant style the transom is a very flat arch. The bisection of the doorway is not common in Italy, but occurs at S. Anastasia and S. Fermo Maggiore at Verona. Lastly, the transom is rarely found in England; perhaps the impulse it carried have led to its destruction.

Celling Paintings in England.

Verrio and La Guerre introduced the fashion of ceiling painting into England. They were well calculated for it; but Thornhill and Kneller wasted their time and talents upon such performances. Thornhill painted at Oxford the Ascension on the ceiling of Queen's College Chapel, and the "Resurrection vestita" of Archbishop Chicheley in pontificalibus. Verrio set the example in England, as Michel Angelo in Italy, of introducing real portraits under allegorical semblance, in which his absurdity was only exceeded by his malevolence. Of this circumstance there is a memorable instance at Windsor. Verrio has introduced a portrait of Lord Shaftesbury as the demon of sedition, and the housekeeper as a fury. Sebastian Ricci's brother dressed as a gentleman in the style of Charles II. is made a spectator of one of our Saviour's miracles, at Bulstrode. At Greenwich, Sir James Thornhill has habited King William in armour, with silk stockings and a flowing wig. He received 6,685*l.* for the whole work, at 3*l.* the square yard for the ceiling and 1*l.* for the side walls, which price was adjudged to him by a committee of artists in 1717. It was stated in his "Memorial" that Rubens had received 10*l.* a yard at Whitehall, and that Verrio at Windsor and Hampton Court had been paid 3*l.* 12*s.* a yard, besides many presents from the king. The Duke of Portland agreed to give Sebastian Ricci 1,000*l.* for three rooms only. Verrio was the only artist to whom Charles II. was liberal, and towards him he was profuse—but Verrio had impudence and wit.

George Clarke, LL.D.

One of the amateurs of architecture produced by Oxford was George Clarke of All Souls College, where the great luminary of architecture, Sir Christopher Wren, had likewise studied. Dr. Clarke was associated with Hawksmoor in the plan of the new quadrangle and Codrington's library for that society. The style is original, more like Gothic than Grecian, and though capricious and irregular in the extreme, the whole effect is far from displeasing. Hawksmoor universally mistook whim for genius, and a love of ornament for taste. But Dr. Clarke planned the library which completes the square of Peckwater at Christ Church, and which became the superb repository of Archbishop Wake's and Lord Orrery's books and of General Guise's pictures. It consists of one order of rich Corinthian columns of three-quarters, and considerable height and diameter. The idea of this manner was supplied by Bernini, who filled up with apartments the grand colonnade which remained of the Basilica of Antoninus at Rome, which is now the Dogana or custom-house. In Dr. Clarke's first plan he had placed a turret like that at Queen's College in the centre, the omission of which no one will regret. One great character was intended by the architect, which is that of magnificence; it was beyond his talents, and heaviness prevails. In the library, hall and chapel at Worcester College, which are due both to his munificence and his skill, there is a greater simplicity and more success. Yet the hall and chapel would have been more happily connected by a portico. As a private gentleman well versed in architecture he must yield, in all points, to Dr. Aldrich, but he had more science if less taste than his contemporary Lord Burlington. Dr. Clarke represented his university during fifteen sessions in Parliament. He was appointed one of the Lords of the Admiralty. He bequeathed his valuable collections of architecture to Worcester College, including his copy of Palladio with Inigo Jones's notes in Italian. Dr. Clarke died in 1736 in his seventy sixth year.

A Lecture will be delivered by Mr. Hugh Stannus, F.R.I.B.A., before the Society of Designers on Tuesday evening, the 17th inst., entitled "Ancient Architecture in Egypt," illustrated by lantern slides from photographs taken by Mr. Stannus.

The Corporation of London have given public notice that the by-laws dealing with the demolition of buildings will be submitted to the Local Government Board for confirmation on December 3. A copy of the proposed by-laws can be inspected at the Guildhall.

The Committee of the memorial to the late Archdeacon of Chichester (the Ven. F. J. Mount) resolved that "It is desirable that the screen removed in 1866 be, as far as possible, restored to its original state, omitting the gallery, and set up again behind the altar in the cathedral as a memorial to Archdeacon Mount." Mr. Somers Clarke will prepare the plan.

Mr. W. D. Jenkins, of Birmingham, at the recent examination to qualify for membership in the Society of Architects, obtained a special certificate of honours and the gold medal of the Society. He is the first to have attained this distinction, to obtain which it is necessary for the candidate to have passed in every subject of each section at one examination, and to have secured at least 80 per cent. of the obligatory marks.

NOTES AND COMMENTS.

PROBABLY there is no man living who would be able to say with any certainty how many rooms are to be found in the Palace of the Vatican. Attempts have been made to count them, but they all seem to have failed before coming to a conclusion. When it is remembered that there are over 200 staircases, the rooms they lead to must be puzzling from their variety. The outbreak of a fire on last Sunday evening must, therefore, have excited much commotion, for it was easy to imagine that if the fire spread there might be many people in out-of-the-way chambers who would have no hope of escape. The POPE evidently realised that the Vatican and its contents were property which he held in trust for the world and for posterity. Regardless of etiquette and personal considerations, he promptly applied to the secular authorities for firemen. The message was received in a corresponding spirit. Men and engines were at once despatched, and the operations continued until the conflagration was suppressed. Some documents are believed to have been destroyed, but so far as can be discovered at present, no work of art has suffered.

ONE body of men must have felt anxiety during the fire, viz. the Commission appointed by the late POPE to make arrangements for preserving the paintings by MICHEL ANGELO in the Sistine Chapel. LEO XIII. said at one time that there was no man living who was competent to touch a line of MICHEL ANGELO'S without injuring it. The POPE therefore wished to overcome if possible any necessity for restoring the figures. There is no doubt they have already suffered, but restoration in the ordinary sense of the word would be sacrilege. The late POPE accordingly appointed a Commission consisting of Professor SEITZ, who has charge of the wall-paintings of the Vatican, with MM. MANNUCCI, NOGARA, GALLI, GAI, BONI and others, to investigate all the causes likely to lead to injury to the figures. It was discovered that the timbers of the roof of the chapel were decayed and it will be necessary to remove them. Iron or steel beams will be substituted, and precautions adopted to render the roof as little liable to danger from fire as possible. The large photographs which have been taken of the paintings reveal that the surface has been injured in several places. Indeed, from the number of years which have elapsed, by which the figures are darkened, not even photographs can always show all the injuries to the surface. MICHEL ANGELO is generally supposed to have been one of the most serious of men; but, as became an Italian, he was fond of a practical joke. In order to cause alarm to BACCIO PINTELLI, the architect to the chapel, who considered his building to be enduring, the great artist painted a couple of cracks on the ceiling. The paintings have lasted for nearly four hundred years, and it would be a calamity if their destruction could not be resisted.

ILLUSTRATIONS.

CATHEDRAL STRIPS.—EXETER: ST. GABRIEL'S CHAPEL AND
END OF BISHOP OLDHAM'S CHANTRY.

ST. GABRIEL'S CHAPEL, with St. Mary Magdalene's, may be said to flank the lady chapel at Exeter on the north and south sides respectively. Bishop BRONSCOMBE, who held the see for twenty-three years (1257-80), selected St. Gabriel's Chapel as his burial place. It was therefore altered in character, and it is believed the chapel of St. Mary Magdalene was simultaneously restored. In 1301 it would appear that the two chapels were included in the painting "of the vaulting with gold, silver, azure and other colours." In the course of the restoration under Sir GILBERT SCOTT, the two chapels received much attention, and the vaulted roofs were coloured in accordance with the arrangement adopted in 1301. Some monuments which were innovations were removed, and two early piscinas were discovered. The south window in St. Gabriel's Chapel is a restoration; the east window, in which angels are introduced, may be considered as new.

NEW ESTATE OFFICE FOR THE EYRE ESTATE, 125 PARK
ROAD, N.W.

THIS building has been recently erected for the trustees of the Eyre estate, to take the place of an old building which had been used for the purpose, and which was

about to be pulled down. It contains on the ground floor a clerk's office and private room for the agent, with a room opening out of it, a waiting room and lavatory and w.c. In the basement are stores for books and papers, coals, &c., and on the upper floor caretaker's apartment. The materials used are, for the walls bright stock brick with red brick quoins, and dressings, and Portland cement cornice and strings, with sashes and frames painted and green slate roofs. The first design for the building was prepared by the late Mr. ELEY WHITE shortly before his death, but this was subsequently modified, and the design was finally carried out under the superintendence of Mr. H. O. CRESSWELL. The builder was Mr. B. E. NICHOLSON, of Lambeth.

BROADWAY BUILDINGS, READING.

THIS building is situated in the Station Road, Reading, in the best business position in the town and close to the railway stations. It was erected by Messrs. J. MORRIS & SON, architects, of Reading, in order to provide themselves with a suite of offices on the ground floor, sufficiently large for their requirements. Offices and rooms are also provided for several professional and business firms. The building contains 122 rooms. The upper storeys are divided into eleven residential flats. The front of the building is faced with majolica tiles and bricks, supplied by Mr. J. C. EDWARDS, of Reading, relieved with buff terra-cotta from CARTER & CO., of Dorset. The chimneys are faced with Mr. J. C. EDWARDS' buff bricks. The roofs are covered with local red tiles. The glazing of the skylights to the studios and drawing offices is by Messrs. W. E. RENDLE & CO., of London. The hot-water heating is by Messrs. RENTON, GIBSON & CO., of Liverpool and Reading. Messrs. CALLAS, SMITH & MAY, of Reading, have carried out the whole of the electrical wiring and fittings. Messrs. J. E. LUCAS & SONS, of Brockley, S.E., have supplied the electric passenger lift, which runs to all the floors in the building. Their lift is worthy of notice, as it is a recent invention, and combines the maximum of safety with a minimum of personal attention. An unskilled person, by pressing a button, can take the lift to any floor of the building, then, having entered the lift, he can, by pressing another button, travel to any floor. Mr. GEO. PILGRIM, of Reading, was the contractor and has satisfactorily carried out the whole of the work, including the fireproof floors and staircase.

The perspective drawing from which this illustration reproduced was made by Mr. H. F. WARING.

HAMBRO' SYNAGOGUE.

THE Hambro' Synagogue, which is one of the most important buildings this week, was erected by Messrs. COLEMAN & BROS., builders, of Bonwell Works, Morpeth Street, Ipswich, from drawings prepared by the architect, Mr. J. SOLOMON, F.R.I.B.A., of 55 New Broad Street, E.C.4. The cost of about 3,700/. There was formerly a synagogue of the same name in Church Court, Fenchurch Street, when this was removed it was arranged that a portion of the money which it realised should be devoted to building another synagogue where it was wanted, and accordingly the small building in our illustration was erected in a neighbourhood largely inhabited by Jews. The fittings of the building are of the simplest description, as all the rest of the building are of the simplest description. There is a gallery for ladies' accommodation, the sexes being apart, as is still usual in Jewish places of worship as it was in early Christian times. The main entrance, facing Union Street, Commercial Road East, is of red brick with red brick dressings and artificial stone carvings and ornaments. The heating work was done by Messrs. WONTNER, SMITH & GRAY, and is effective.

HOUSE AT ESHER.

THIS house is built of red brick walls, and sandstone dressings. The red tiles were used for the roofs. The half-timbered work and woodwork to porch is in oak, white rough-cast being used between the former timbers. The windows are all casements and are lead glazed. The floor of the house is covered with 12-inch by 12-inch red quarry tiles. The builder was Mr. E. D. HOBBS, of Thames Ditton, and Mr. A. JESSOP HARDWICK was the architect.

INSTITUTE OF BRITISH ARCHITECTS.

ing meeting for the session 1903-4 of the Institute of Architects was held on Monday evening last at 11, Great Street, W., Mr. Aston Webb, A.R.A., president, in

the presence of Mr. C. F. McKim (hon. secretary), in referring to the late Mr. H. W. Brewer, said the architectural profession in the country in general had sustained a great loss. He was a man of great research, who possessed high powers. His drawings were better known to the members of the profession, but they afforded enjoyment to his knowledge of Mediæval work in England, and Germany gave an interpretation of the works of the great masters, and showed the spirit which they all admired. A vote of condolence and sympathy was passed in the name of Mr. Brewer.

A list of the following members was also read:—Professor W. H. Corfield, M.D., elected honorary member in 1883, who died on August 26; Herbert Ford, elected member in 1870; A. J. Barlow, elected Associate 1880, and Brooks, elected Associate 1881.

The Secretary announced that at the statutory examination of the Institute on October 22 and 23 there were 12 candidates, of whom five passed. The successful candidates were Messrs. W. Godfrey Green, E. W. Lees, Arthur G. Perkins Stokes. These gentlemen were awarded official certificates of competency to act as district surveyors under the London Building Act.

Mr. David Jenkins, of Sparkhill, Birmingham, was awarded a certificate of competency to act as building surveyor for the authorities.

The President then delivered his

Opening Address.

On this second time it is my privilege as President to address you on matters of interest and importance in connection with the Institute. But first permit me to express my regret that all present have been able to take, since we last met, a change of air and scene so necessary for the due discharge of our work.

In the last twelve months there has not perhaps been much to chronicle. Our work is of a character that twelve months is but a short period. Changes have occurred which may have far-reaching effects both as regards our art and this Institute, and it is my duty to refer to some of them in my address this

year. As regards our membership, 97 new members have been elected during the year, and we have lost 55 by death or resignation. Of our new members, 26 are Fellows and 71 Associates. Of our old members, 13 Associates have been elected to the rank of Fellow. This is satisfactory as far as it goes, but you will know me that it does not go nearly far enough; and we must be content until this Institute includes among its members a number of reputable practising architects or, at any rate, until we are satisfied that we have thoroughly investigated and as far as is possible all reasons for this not being so. Matters concerning the affairs of this Institute, which have not yet been shortly be dealt with, is the question of the election of Fellows, which, under existing rules, can hardly be said to be the business of anybody. It is not very satisfactory to the members on account of its indefiniteness and uncertainty; and as so, I have reason to believe, to Associates, who, naturally, object to find admission to Fellowship less than entrance to Associateship. And yet it is by no means easy to devise a remedy for this state of things. It is my duty that everyone wishing to join the Institute must do so as an Associate, but under our charter everyone desirous of becoming an Associate must first pass an examination; but admittedly, many whom we should like to join us, on account of their age or standing, or want of leisure, could not be asked to submit themselves to the examination for Associateship.

Is this difficulty to be overcome? The only way that I see is to do as was done in the case of Associates, to require, say four or five years hence, after which, except in exceptional circumstances, entrance to Fellowship shall be through the Associateship is absolutely closed. At this would make the Fellowship somewhat more valuable, and would, in my opinion, rather than discourage membership. It was distinctly so in the case of the Associateship, and I believe would prove to be so in the higher grade.

If this were done, it would be necessary during the next period to open the doors to the Fellowship wider than at present, so that no reputable practising architect who joins us should be debarred from doing so. It is a question for the members of the Institute to settle, and the Council, I am sure, would be glad to

hear a full expression of opinion on a subject that must affect the future welfare of the Institute. I hope that an evening may be found during the session when this matter may be fully discussed.

One event of last session, that I hope may lead to good results, was the meeting of the presidents of the allied societies on the day after our annual dinner, when, together with our vice-presidents, past presidents, and myself, we informally discussed matters of interest, amongst these being the facilities for architectural education at present available in the various centres (especially in regard to the establishment of day schools), the question of the compulsory registration of architects, the admission to fellowship of presidents of allied societies and of members unanimously proposed by an allied society. No resolutions were moved, but valuable information was exchanged.

Another interesting event was the visit of Mr. C. F. McKim, of New York, to receive the royal gold medal. Mr. McKim brought with him a large number of illustrations of the work of himself and his colleagues, and has left behind him, I am sure, an enhanced opinion of the progress of architecture in America at its best, and a pleasant reminder of the public spirit which is alive in that great country to insure the beautifying and ennoblement of her cities. May I also add that Mr. McKim has left amongst those he met a very high appreciation of the man himself, his personality and a desire to see him some day again amongst us?

I have to thank you for the encouragement you gave, by your presence in goodly numbers, to my experiment of informal "At Homes." They afforded us an opportunity of seeing for the first time a large number of the working drawings, sketches and designs of two very distinguished architects, John Francis Bentley and William Eden Nesfield (which could only be shown in an informal way), and at the same time of bringing many professional friends together for a short time in friendly intercourse; and they have not, therefore, I hope, ended altogether in smoke. I propose to continue the experiment this session, and trust you will again contribute to their success by your presence. One evening I hope to have the drawings of another eminent architect, the late John Loughborough Pearson; and it has occurred to me that the exhibition, on another evening, of the water-colour sketches made by ourselves during our holidays might be of interest—painters of course being excluded on that occasion.

Another event in which this Institute has taken a keen interest is the acquisition of a permanent home by the Architectural Association.

It is a striking testimony to the high appreciation in which the work done by the Architectural Association is held that the Architectural Museum buildings and their contents should have been handed over to the Association as a free gift by the unanimous wish of the subscribers to the Museum, accompanied, I believe, by the full approval of all members of the profession.

But the Association have a serious work in hand to adapt the premises to their present and future requirements, involving them in an outlay far beyond the means at present at their disposal. Your Council felt sure they were interpreting your desire to show the interest of the Institute in the work and have voted a sum of 500*l.* towards the building fund.

The day-school so successfully started by the Association seems destined in its new premises to work almost a revolution in our architectural education (or want of it); but as I went through the spacious courts of the Ecole des Beaux-Arts the other day, with their full-size models of columns and entablatures, together with examples of Renaissance and Mediæval work, I said to myself the Architectural Association are only at the commencement of their work; they cannot stop, but must go on, and when they have completed their schools must complete and extend their museum, and we older architects must take care to see them through with it. It has been a pleasure to the Institute for many years to lend this room to the Association for their meetings, and we shall miss them when they go; but we hope often to have their presence amongst us, for we need the energy and initiative of the younger men.

In this connection I may briefly refer to the question of our own premises, mentioned in my last address. I then ventured to express my own opinion that this question of premises, though very important, could hardly be considered an immediately pressing one; and the question of a joint building has now been solved by the gift of premises to the Association. At the same time, your Council and officers have not lost sight of the matter, and it is possible they may have some proposals to lay before you in connection with this subject later in the session.

Another event must be noted, *i.e.* the adoption and issue of a form of conditions of contract, which has been accepted both by the Institute of Builders and ourselves. (It is some indication of the importance of this document, and the complicated nature of some of an architect's work outside his art, that this

result has taken some eight years to arrive at.) This contract, while recognising the absolute authority of the architect over the workmanship and materials used on the works, has defined, as far as is possible, the relative responsibilities and duties of the client, the architect and the contractor; and though it is, of course, too much to expect that any document could be drawn that would meet every case that may arise, we believe it will be found of great use to all engaged in building operations.

The last Council election was made the occasion of bringing before us again very prominently the question of the compulsory registration of architects, a subject which also made its appearance in the columns of the *Times*, and in the list of Bills which were presented to Parliament during last session.

As stated in a circular sent round to members of the profession, it is some sixteen years since this matter was first formally brought forward and a Bill prepared; but in reality the subject was mooted by members of the Institute as long ago as 1854, and brought up in subsequent years, without, however, any action being taken. I mention these dates to show that inaction on the part of this Institute has been deliberate and intentional, and does not arise from any want of due consideration of so important a matter.

For myself, I was honorary secretary of this Institute from 1889 to 1892, when the question of registration was brought most prominently forward, and thus became well acquainted with the details of the proposals and the arguments for and against them.

Those arguments appear to me to remain much the same to-day on both sides as they were then. Then, as now, there was a considerable body of opinion in favour of the proposal, and I certainly do not wish in any way to minimise the amount of it. Then, as now, there was a considerable body of opinion strongly against it, and under these circumstances I venture to say, gentlemen, the thing for the moment is outside the realm of practical politics, for any experienced politician will tell you that Parliament would never grant compulsory powers of the sort proposed except at the general request of the members of the profession interested, and at present there can be no doubt that the profession is sharply divided on the point.

I think I ought to say to you quite frankly, as your President, that personally I am not a supporter of the proposal at the present time, though I agree that the large body of opinion in favour of it cannot and must not be ignored. Evils there undoubtedly are which should be removed; but, personally, I would try every possible alternative before applying such drastic remedies as those proposed by this compulsory registration, which I believe must be repugnant to every artist, whether a supporter of the proposal or not.

I am well aware that there are a large number of architects, especially amongst those practising outside the metropolitan area, who are in favour of compulsory registration; but I find, amongst the leaders of our profession, those whose work we admire and on whose judgment we rely, that they are, as far as I know, almost to a man strongly against the proposal; and I say again therefore to myself, we should hopelessly divide the profession by pressing the proposal at the present time. Consideration it is bound to have, but acceptance is hardly likely to be obtained by putting a pistol at the head of the Institute and demanding registration or our life.

Remember, this proposal would not only register certain architects, but would decline to register others. A registration which gives one man a right to call himself an architect and refuses it to another is a very difficult and serious matter; and I must say I should be sorry myself to have to pronounce judgment, for while "A" may think "X" a good architect, "B" may not consider him an architect at all. Who then is to decide?

I think I clearly understand the grievance against which registration is proposed as a remedy. Put quite shortly it is this: an architect, let us say, in a country town is endeavouring to carry out artistic work and to uphold the honour of the profession; but he finds much of the work he considers should go to him taken up by others whom he knows are not artists in any sense of the word, and are untrammelled by any notions of honourable professional conduct, and have no right to be called architects at all. So he says let a law be passed that every man must pass a prescribed examination before he can call himself an architect, and then will the public be able to separate the sheep from the goats. I admit the grievance and sympathise most sincerely with my friend, but I doubt the wisdom or efficacy of the proposed remedy.

I would ask this question of those who favour registration. Is it proposed for the benefit of architecture or architects? I know they will say and believe it is for both.

Well, then, take the benefit to architecture first, as it should be taken. It will be admitted, I think, that good architects will do just as good architecture whether they are registered or not; it will therefore make no difference whatever to our best architecture. Our friend replies that may be so; still, it will prevent an enormous amount of bad architecture being

perpetrated throughout the country by incompetent men. I take leave to doubt this; I fear that when registration is compulsory, though you would register much ability, you would also register much inability. That is the danger. Our friend would find himself worse off than before. Our building (it cannot be called architecture) is now in the hands of speculating builders, auctioneers, &c., who very rarely are not now call themselves architects, and registration will affect them as far as I understand it. It is not now possible for them to be able to recover their charges as architects, but builders are not paid by fees, and they are not themselves architects. They will continue their work, perhaps even helped, for probably some of the men who are now speculating would work up and pass the examination, and their poor buildings under the full authority of a Government diploma, and we shall see on the "Estate Agent and Government Architect," and a host of other combinations. Will this improve our architecture, my friend?

Then, again, we have generally thought a man who has the right to call himself an architect acquires the right to build the buildings he has designed and whose erection he has intended. This is the test we ask of our own Fellowship. Compulsory registration would require that he should pass the "architect" by Government examination, probably after he has designed or superintended a single building. Is it putting the cart before the horse, and cheapening the value of the architect. We admit Associates by examination after seven years to elapse and evidence of actual building. Suppose a man becomes a Fellow. Suppose a man obtains the diploma and his buildings turn out unsatisfactory. What happens then? In fact, is it possible to decide on a man is an architect, or on the same evidence that honourable name?

Another difficulty is, What standard of architecture is to be fixed for the right of this Government diploma? It must apparently be the same for the practitioner in a country district as for our larger cities. Is that desirable?

Again, I would ask, sympathising as I do all the while with this grievance, is all this ticketing and docketing with our art? Protection is in the air, I know, and it is rash enough to express any opinion upon it. But I think that art has always been free. Let us not build a shackle it. An artist is born, not made; no one can answer him into the fold, only his work. He is constantly being told that doctors and lawyers have Government diplomas, and so ought we, and if we venture that painters, sculptors and engineers have none, we are told that has nothing to do with it; and if we are not painting, sculpture and engineering more than architecture, we are told that has nothing to do with it. Are not painting, sculpture and engineering more important to architecture than law or medicine? I have thought so.

Then, as regards its benefit to architects, we must say this diploma is essential in order to make the law. At the Institute examination, they say, is not sufficient, and we must therefore compel them to come. I only say again I do not think so. The lazy man who admits for this reason had far better remain outside. As regards the benefit to architects, I would ask you to consider that if this proposal were legalised to-morrow, the borough surveyor and surveyor, if members of the Institution of Civil Engineers or the Surveyors' Institution, would be exempted from all restrictions, and would continue to practice architecture precisely as they do at present; the architect would come to be looked upon more as a consultant, to be called in on very important work, and so a large part of the work, which is already being encroached upon, would finally slip away from him altogether. It would also be necessary that all those who call themselves architects at the time of the passing of the law, whatever their qualifications, would receive the Government diploma; so I am afraid our friend in the country will receive no relief in his lifetime.

The words of the memorial addressed to the Council in 1891 appear to me as true now as then:—"That the distinction between the architect and the builder, which is a fallacious distinction, even as a guide to the public and misleading as an example to the student." And further, that "no less than the public from bad design."

While saying this, I would like those who are in favour of the compulsory registration of architects to believe entirely in sympathy with every effort to raise the standard of architecture and the architect in this country, and to be very account that I have ventured to discuss this subject to some length this evening.

It seems to me we must first come to some agreement amongst ourselves as to the standard to be set up, and then it is to be tested, and until this is defined registration is useless and fallacious.

I am reminded of a story, you will probably have

Bishop of London at one of our dinners, of an evening over a wall and watching two underlings induce a tortoise to put his head out of his shell out some tempting bait, but without result; I don't quietly saying to those undergraduates, "Well, gentlemen, you had better try the other end," would venture to say to you, gentlemen, don't you had better try the other end? If, as I think, the probability of getting what we all want—a higher architecture by legislation at the present time—will be better to redouble our efforts to gain the raising the standard of architecture amongst us, encouraging the higher education of our young men, the superior attainments may make membership of the Institute a recognised qualification in the eyes of the public, I believe is the case already, to a great extent, but in the Colonies also?

Mr. R. in a very interesting address on registration, to question whether, when this Institute started its committees on art, literature, practice and science, it had added a fifth on education, and I think he was

everywhere the cry, and if this Institute is to be a prominent part in architectural education, it will have to depart, to some extent, from the position it has hitherto taken up to the present time.

At present we have been satisfied, and I think rightly so, in trying to arrive at and suggest a standard of education by means of our examinations, leaving the education of students to others. During the year your Council had laid before them for their consideration certain draft proposals on architectural education, by a body of well-known architects interested in this matter, not at present members of this Institute, but well-known names as Mr. Reginald Blomfield, Mr. Mervyn Macartney and Mr. Halsey. These proposals set forth the proposition that the system of articulated pupilage nor the training in art schools had proved satisfactory, and that of the two systems was desirable; that architecture at present suffers from want of organisation, taken up by a representative body of architects to constitute an Institute—which shall be accepted by the public as authoritative.

It has suggested a preliminary course of training in workshops, and a subsequent course in the office of an architect, an endeavour being made to co-ordinate into line existing institutions by the adoption, with these institutions, of a uniform system with such as this Institute at the head.

Regarding all details, which are, of course, important, the majority of the proposals, and, I believe, commended by the Council as not only a desirable proposal, but also a practicable one.

After having ascertained that the authors of these proposals are willing to assist the Institute in working out and appointing some of their number to act on a committee.

The Council have appointed an education committee amongst those outside the Institute who have been invited to join our deliberations are Sir Arthur Cooper of London University; Mr. T. G. Jackson, of the Royal Academy; Mr. Sidney Webb, L.C.C.; Mr. E. L. Rieu, of the Board of Education; and Mr. Basil Lubbock. While the authors of the draft proposals nominated Mr. Blomfield, Professor Lethaby, Mr. Halsey and Mr. Macartney.

The committee has met and discussed the matter, and, as a sub-committee, has drawn up and adopted a report, which is now under the consideration of the Council, and is therefore in a position to bring it before you, to be able to do so early in the course of the year.

We are encouraged to hope that we may be able to obtain the co-operation of the various teaching institutions in the scheme, and in course of time to have representatives to the chief cities of the kingdom.

We propose to constitute a Board of Architectural Education, upon which distinguished men interested in the subject, members of the Institute or not, its main duties being to act as an advisory board on the courses of architectural education in various schools and their examinations.

Some developments we hope to have the assistance of the various societies, and to offer facilities to their members to the advantages of these improved methods of education. The first and foremost we hope to unite in one great improvement of the education of our younger architects, to give them advantages we sorely miss ourselves.

It is just apologise for having detained you so long on these points on such an occasion as this, leaving me but little time to deal with architectural matters of interest.

It has seen some notable events in architectural

history—the opening of Truro Cathedral, completed in the course of fifteen years, with the exception of its western towers; the selection of a design for the new cathedral of Liverpool; the opening up of a large portion of the Strand improvement by the London County Council, and the erection of an important building on a portion of its site; the adoption of a design by the same body for the new Vauxhall Bridge; and the selection of a design for the great University at Cardiff. Further progress has been made with the great Government buildings in Whitehall and elsewhere, including, it is understood, the purchase of the remainder of the Great George Street site; while the Government have completed their great Post Office building at West Kensington.

The widening of London Bridge is in full progress, and the temporary covered footways on either side suggest what picturesque and welcome adjuncts they would be to our bridges. These, the most exposed portions of our roadways, cannot be crossed in wet and windy weather without great discomfort, which those covered ways would entirely obviate.

A note of warning greatly affecting London has been sounded during the last few days by the advertising for sale, for building purposes, three of the principal squares in Kensington, which, if carried out, would greatly interfere with the amenities and healthfulness of the royal borough; and if the same process were carried through London it is almost impossible to realise the havoc that would be wrought. Fancy Berkeley Square, Belgrave and Eaton Squares, Bloomsbury and Gordon Squares, and many others, all covered with huge blocks of flats. This, of course, is not likely to happen at present; but as long as they are in private hands it might happen at any time.

Gardens with the backs of houses looking upon them are not so vulnerable, as they are difficult of access and the houses themselves have considerable rights over them. I was myself offered the freehold of one of these gardens as a free gift some years ago, the owner being anxious to be free of its management and maintenance. But these gardens, as I pointed out last year, do not give to London what the squares do—a sight of grass, trees and sometimes flowers. True, they might be kept much better than they are and be made much brighter than they are, but as they are we are grateful for them. It has been suggested that Parliament should obtain some control over these open spaces, which would not interfere with landlords and frontagers' rights, beyond the disability of covering them with buildings; and we must earnestly hope that Parliament and the County Council will lay their heads together to this end.

It has been my good fortune to see Truro Cathedral since it was completed, and all who have done so will, I am sure, agree with me that the new nave is a noble addition to the building, and that, accepting the literal use of a previous style in which its designer was so thorough a master, the result is impressive and worthy of the great effort made by Cornishmen for its erection. The deflection of the main axis of the nave, some 6 feet, I believe, in a length of 300 feet, and mainly caused by the necessities of the site, lends, I cannot doubt, advantage to the general effect, both internally and externally. Externally one could wish the material had been entirely granite, but probably the cost of this would have been practically prohibitory.

Since last we met Liverpool has also decided upon a cathedral, designed on Mediaeval lines by a young man bearing an honoured name in the architectural world, whose success must be a matter of encouragement to young men, and demonstrates once again the immense opportunities opened to young architects of ability by the competition system. It does not come within my province at this stage to refer critically to the design, but I am sure you will join with me in wishing Mr. Gilbert Scott success in his great and responsible undertaking. The appointment of Mr. Bodley, one of the assessors, as joint architect with Mr. Scott to carry out the work is contrary to our "Suggestions," and must not be looked upon as a precedent. The circumstances were very exceptional. I understand it was done with the complete concurrence of Mr. Scott, and was only agreed to by Mr. Bodley after great pressure had been put upon him, and when it became evident that the award would otherwise be put aside.

While on the subject of our streets, we may be permitted to wonder what is to be the end of the forest trees planted on the verge of so many of our footways, delightful when young, but now they are up to the tops of our houses rather darkening and obstructing to the view of handsome buildings. The huge electric standards, also, now being planted down the centre of our streets, seem to require immediate attention, both as regards position, design, and the curious colour they are painted.

The visit of Mr. McKim last summer naturally brought into prominence American practice in matters connected with our art, and especially with the control exercised in America over public improvements, and he left in our library a book containing a report which deals with the improvement of Washington by laying it out on a large and comprehensive

scale. I commend a study of this book to all interested—and what architect is not?—in the laying out and improvement of our great cities.

This book recounts how a small body of experts were appointed to prepare and submit a general plan for the development of the entire park system of the district. This committee, I understand, virtually put aside their large and profitable private work for nearly a year and devoted their time and experience to the service of the nation, a sacrifice made without any pecuniary reward.

The committee consisted of two architects, Mr. Burnham and Mr. McKim, a leading sculptor, Mr. St. Gaudens, and Mr. Olmsted, whose name is identified with what is best in garden architecture in America.

For the proceedings of this committee I must refer you to their report, merely stating here that a short tour to the principal capitals of Europe was made, and then a comprehensive plan for the laying out of Washington was produced and laid down on the noblest and grandest lines fully illustrated by drawings and models.

The committee describe the realisation of the scheme as a stupendous task, much greater than any one generation can hope to accomplish, but they add that the hearty and intelligent co-operation with which the plans have been received by the officers of the Government, the committees of Congress and the public generally makes it practically certain that the development of the national capital will be prosecuted on the lines proposed.

Since this was written I understand a large sum has been voted, which will enable a substantial start to be made.

Again, at our annual dinner I ventured to give some particulars of a commission appointed under the charter of New York, composed of experts, who also act without fee or advice in all art matters in connection with New York.

This is carrying out to some extent the more complete system in existence in France, where the care of all public buildings in Paris is entrusted to (1) the Minister of Public Instruction and Fine Arts; (2) the Minister of Justice and Public Worship; (3) the Prefect of the Seine; and (4) the Prefect of Police. Each of these Ministers is advised by a council mainly formed of architects of distinction. The duties and constitution of these councils are very fully set out in a book by our late secretary, William H. White, entitled "Architecture and Public Buildings," published in 1884, which contains a great deal of most interesting information on this subject. It is under this direction that Paris as we see it to-day has been produced, and the same system is followed all over France. As the author says:—"None having an understanding of these matters can traverse Paris without feeling that the authority which initiates and controls the great works of architecture in that capital is a real and competent authority, to which the State turns for guidance and on whose judgment the Parisians rely."

Every public building throughout France, great or small, has an architect attached to it, and, where necessary, an assistant architect, who, commencing in some humble capacity at the Council of Civil Buildings, in due time is admitted as assistant to this board or council, which gives him right of presentation to a public building in course of construction, as subordinate to the architect who is carrying it out, spends his days on the works, and may rise, if he conducts himself well, to be assistant architect or joint architect to a building, and ultimately architect-in-chief. In course of time he is summoned to take the place of councillor on one of the various boards, and ultimately the Academy of Fine Arts, who educated him, will hear of him again, and finally elect him to their body.

Thus the State not only assists in providing an efficient system of architectural education, but also provides itself with an efficient body of trained architects to undertake its public buildings, all working on a well-defined tradition, and producing works of great excellence which we cannot but admire. I do not propose to compare these systems with the course adopted in this country, partly because you are all well aware what that is, and also because I am afraid the comparison could hardly be in favour of this country. Not that I mean for a moment that the French system in its entirety would be suitable here. It tends, no doubt, to a loss of individuality, which would hardly be tolerated here, for though we talk a good deal of working on traditional lines, I am not sure whether we have yet learnt the lesson of sinking our own individuality sufficiently to do so.

I have mentioned these systems in force in France and America to draw attention one more, as I ventured to do last year, to the pressing need there seems to be in Great Britain, and which I think most of us feel, for some authority to whom schemes of public improvements should be submitted, not necessarily for sanction, but for consultation and advice. The work could hardly be entrusted to any single individual, but there would surely be no difficulty in finding men of skill, taste and authority enough, and with patriotism enough, to form such a commission as that established in New York, and

on the same terms, if asked to do so by His Majesty's Government.

And how enormously such a body would strengthen the hands of the authorities carrying out great works; architects designing them; public confidence would be increased, and schemes would be executed which are either dropped altogether or carried through in a half-way as a compromise—a method desirable in all matters of concerns of life, but absolutely fatal where art is concerned. The essence of a work of art is its completeness; a compromise can find no place. I do not mean a high finish or elaboration, but the expression of a complete idea; take something away from it or add something to it and it is destroyed as a work of art, and the result is understood as regards painting and sculpture (few venture either to add to or take away from a finished work) is in no way understood or recognised as regards architecture. A house is designed to stand on a broad terrace, and is cut out and surprise expressed that the house does not was expected. A building is arranged with certain details which are entirely omitted, or in matters of detail are divided with bars giving scale to a building, and cut out.

But I have wandered from my subject, viz., to give some authority to whom to refer our public improvements and schemes. A case in point has lately arisen on the first raised by Mr. Hamo Thornycroft, on the eastern end of the Strand Improvement scheme. Those who have taken part in that controversy will acknowledge the consideration shown by the London County Council, first, by putting up boards to show the proposals; and, secondly, by inviting representatives of the Council to meet their committee and discuss the proposals, which we did with great advantage I believe. But now who is to decide on the merits of the plans? Would not the deliberate opinion of an independent body carry great weight with the public, who are willing enough to pay if assured they will thereby get something? Since these words were in print the Council has decided, and we have been officially informed of the opinion of the Council not one of the proposals is being carried out. I presume of their own adviser offers sufficient to justify the Council in incurring the great expense would be involved in increasing the already inadequate width of the portion of the thoroughfare in question; it appeared to many brought up to consider such a matter, opportunity is lost to London. Public bodies appear to consider that the point on which all matters of public improvement is finally to be settled is the one of cost. No good the suggestion, if it can be shown to cost too much, is doomed. In other countries, where land is generally equally costly, it is recognised that spaciousness and beauty bear interest to a city higher than gold, by increasing the dignity of its life, the pride of its citizens and the beauty that cannot fade. The decision may be right or wrong. My point is, and I speak with all respect, that we are not satisfied with the competency of the tribunal to decide on an important matter?

Then again the solution of the Vauxhall Bridge question, which dragged on for so long, and was so happily solved by the collaboration between engineer and architect, would have been still further greatly accelerated if there had been some such commission to which the matter had been referred.

Again, there is that most thorny question of the great new street from Holborn to the Strand. The committee of the London County Council paid us the honor of consulting us in the early stages, while the laying out of the street was under consideration, and also with regard to the designs, with every intention, we fully believe, of accepting the one through; but nothing has been done, and this, as we firmly believe, not from want of willingness of the committee and officials, but from want of public opinion of a generally recognised competency would have supplied.

Gentlemen, I venture to think the formation of such an authority should be advocated by this Institute, in connection with the public bodies concerned, and that finally it might be done to place this matter on a more permanent basis. The interest that architects naturally take in it, and London in particular, is my reason for bringing it forward.

The public are singularly apathetic in the matter. I have so long preached to them the beauty of old works, and have apparently taken our view and regard modern works with comparative indifference. They resent, and no doubt cases rightly, the least interference with ancient buildings, but treat with unconcern the vast modern changes which are taking place in our cities. The study of the past, invaluable for the student, essential for instruction, and refreshment for the mind, must not take the place—for us, at least—of the study of the present and future. Last century was spent by us

tion; let us now show the result of our studies and
ne in action and progress. Let us see that our
beautiful, as beautiful as we can make them, and
that tells of our time; not original, perhaps, but
ctive; let us see that they meet the present com-
irements, that they are well placed for sun and
wholesome, gladdening; that we put something
into them, in order that they may give out
o others, and let us remember how great
lity rests upon us architects in our work.
essing the Architectural Association, once said:—
ular importance and responsibility are attached
when you consider its permanence and the multi-
m it is addressed. We frequently are led by wise
sider what responsibility may sometimes attach
ch yet, the chance is, will be heard by few and
soon as heard. But none of your words will be
and none will be forgotten for five or six hundred
build well. You will talk to all who pass by . . .
e sympathies, those freaks of fancy, those jests in
copy mind after mind of utterly countless multi-
ter you are gone; you have not, like authors, to
hearing or to fear oblivion. Do but build large
carve boldly enough, and all the world will hear
not choose but look.”
en, resolve that we will go straight forward, adding
othing to the great story of our noble art.

ests of the ages at to-morrow's door,
hy shrink we? The long track behind us lies,
e lamps gleam, and the music throbs before
dding us enter; and I count him wise
ho loves so well man's noble memories;
e needs must love man's nobler hopes yet more.

INDSOR, who had been elected an honorary Asso-
posing a vote of thanks to the President for his
anked the Institute for the honour they had
on him in electing him a member. He said he
hesitated to address them further had the President
subject from a more technical point of view.
as made in the early part of the address to certain
h dealt with the administration of the Institute and
istration of architects, matters on which he (the
ld not express an opinion. Towards the end the
ferred to much which did not affect the Institute of
ilone, but which affected very deeply indeed the
ation of the kingdom, who had their own share in
atural work of the great towns and cities. The
of having some recognised body of competent
could be referred to, and who could advise those
ponsible for obtaining designs for the buildings in
was most important to the world in general. In-
been given of the proceedings in other countries, and
that the example of the United States was one of
cal importance. The Americans had proved that
ey need not apply to their Treasury for the
of any money in obtaining the advice which they
foremost architects and artists of America gladly
ir time and abilities freely to help the State in this
.. He did not doubt for one moment that the
tists in all branches in this country would not
give their services to the State in such honourable
don had suffered terribly in the past from the want
view of what the designs should be which should
chief architectural works and make the great city
.. He referred to a part of London which perhaps
under the jurisdiction of the Government, namely,
Surely they felt now that if the designs and the
ealing with Whitehall had from the very commence-
erection of the public offices been laid out on
s with really a fine scheme, a most magni-
roach to the Houses of Parliament would
made. The blame was surely not in any way
to the architects, but to those who had
them. He was in absolute sympathy with the
e President when he hoped that some such body of
persons should have a voice in laying-out on a large
treets and the buildings of London. He had no
ay anything beyond expressing his personal con-
ut if the views which the President had expressed
opinions of the Council and the Institute, as he
ey were, he would gladly undertake to lay them
Government. Reference had been made to the
the new University College at Cardiff, and it was a
portunity for him to say how deeply grateful he was to
chitects who had assisted them in South Wales to
igns for so important a structure. The pity was they
money enough as yet to erect one portion of the
out they hoped South Wales would soon provide
for the fulfilment of the whole scheme. With
the trees which had been planted in London

along the streets, a most important question was raised. What
was to be the future of forest trees when their growing in
streets tended to so much pruning out? The trees should be
subservient to the architecture, but it was impossible to grow
forest trees with branches as they listed; they were suitable in
open spaces and parks, but not generally as surroundings to
architectural buildings. Trees in London suffered from the
smoke; the hardest was the plane, and this made it the most
suitable for their streets. He had seen an anxious letter in the
newspapers that there was an idea that the Office of Works
and the Government were going to make a new road across
the Green Park which would sadly destroy the whole beauty
of the park. There was no intention whatever, so far as he
knew, to construct such a road. That would be a very im-
portant new work, which surely could not be carried out until
it was sufficiently considered by Parliament and by all London
people. There was no intention whatever, in connection with
the late Queen's memorial, to cut a new road across the park.

Mr. H. T. HARE, who seconded the vote of thanks, said it
was highly gratifying to hear the very sympathetic way in
which the President had referred to the work of the Archi-
tectural Association. The relations between the Institute and
the Association were becoming more and more intimate, and
now that they had the opportunity of removing to a new home
in Tufon Street, Westminster, they valued the more the
counsel and advice of the Institute. The educational work of
the Association appealed to all architects. They were
endeavouring to remedy by teaching in an architectural day-
school the training of young architects under the pupilage
system, and the new work promised to benefit the profession.

Mr. REGINALD BLOMFIELD supported the motion.

STREET ENGINEERING IN LIVERPOOL.

THE following evidence was given by Mr. J. A. Brodie,
city engineer of Liverpool, before the departmental com-
mittee on highways:—

How many miles of streets have you in Liverpool?—There
is at present within the city of Liverpool a length of 456 miles
of streets.

Under your direct control?—Yes.

Does the fact of your being city engineer mean that you are
road surveyor as well?—I am chief road surveyor as well. I
have an assistant who is also a road surveyor and does nothing
else. The city is divided into six divisions, each of which has
a competent road surveyor responsible to me for the road
surfaces in his district.

You employ your own labour for the work?—Yes. We
have a great number of workmen, probably about a thousand,
engaged in repairs and new street work.

The width of your streets is regulated by by-laws, is it
not?—Yes, that is so—the new streets.

And you have power by private Act to apportion the width
between roadway and footways?—Yes, so long as the combined
width is not less than the 36 feet which is the minimum width
of streets required by our by-laws.

Have you laid down any rule as to how the apportionment
should be done?—In the older portions there was 24 feet of
roadway and 6 feet on each side of footway. We have modified
that since we got our new powers, and have reduced the width
of roadway whilst increasing correspondingly the width of the
footways.

Do you think that 36 feet width sufficient?—I should very
much prefer to see it increased. With regard to new residential
streets of the poorest class, which are now required to be
36 feet in width, I consider it would be a distinct advantage if
the houses were required to be kept back to a distance of
24 feet from the central line of the streets; and if the street
works were reduced to 27 feet in width, the cost to the owner
of the abutting land would be about the same as if he were
required to provide a 36 feet wide street and execute the street
works over the whole width of 36 feet between buildings.

You would keep in the hands of the Corporation the power
to acquire the small gardens in front of the houses?—We are
usually able to arrange that mutually; where extra width is
required for traffic we pay for it. I am the more convinced of
the advantage of adopting the course now suggested, as I find
that under the by-laws at present regulating these matters in
Liverpool an area of land is more valuable, and can be sold at
a better price for the erection thereon of the smallest and
cheapest class of property than for the erection of a somewhat
better class of house, and it would be an advantage to the
public health if the by-laws were so modified that the population
per area would be approximately the same.

I don't quite understand that point. How is it that your
present by-laws bring about the result of the land being more
valuable for the erection of cheaper houses?—At present a
builder may build up to a street of 36 feet width, and the effect
is that he can get a very large number of houses on an acre.
In better class property the houses are usually set back from

the limit of the 36 feet street, and, therefore, you get a smaller number of houses on the acre. The net result in Liverpool is that land is more valuable for the small houses, which are built right up to the street line, than for the better class of houses set back.

They can put more houses in a given area?—Yes.

More rent is charged for semi-detached houses, or for a terrace row of houses, than for a commoner class of tenements, of course. People like to have little gardens in front of their houses?—From the point of view of the man selling land for building purposes, he is able at the present time to get a larger price for the building of the poorer class of houses, because he can get upon a given area a larger number of them.

Your suggestion, as I understand, only applies to new streets. You would not propose to set back the houses in the older part of the roads?—Oh, no; there would be no hope of that, but we can do that under a local Act where widening is necessary for street traffic purposes.

What you were speaking of refers, perhaps, more to public health than to highway law?—It does; but at the same time it has a bearing on highway law.

Do you suggest that in laying out new estates for building purposes care should be taken to see that the lines of all streets fit in with the general plan of roads likely to be required in the future?—Yes; I am of opinion that in connection with the laying-out of new estates for building purposes within the limits of a town greater general powers are required, so that the lines of all streets may be laid out with the object of accommodating the probable lines of traffic in the future, as against the present practice of laying out an area so as to obtain the greatest possible number of houses. In our local Act of last year we got powers enabling us to deal with that matter to some extent.

Had you not got that power already?—I mean, if a man presents you with a plan showing how he proposes to lay out his building estate, can you not prescribe how the roads ought to run?—No; he can make his roads as he likes, and he did so in Liverpool until we got our new powers. He might, and did, bring in an end of one street so that it overlapped the end of another street, on a cross-road, and there was practically no possibility of getting through traffic along the new streets when formed.

That can be settled by arrangement?—Yes, we have done it by arrangement sometimes, but my point is that such powers as we have now in Liverpool should become general.

With regard to the main road and main approaches to Liverpool, you are gradually widening them?—Yes, the main arterial roads and the main approaches to the city are gradually being widened to a minimum width of 60 feet under the powers of the Liverpool Improvement Act, 1867, section 34, which gives power to the Corporation to prescribe lines as follows:—"The Corporation from time to time may prescribe the line in which any house, building, or erection or any addition thereto respectively to be hereafter erected, fronting on or towards any street shall be erected, and the same shall be erected only in accordance with the lines so prescribed, and where the Corporation so require all or any part of the land between the lines so prescribed and the streets shall be added to the streets, and if the owner or any other person interested in the house, building, erection or addition sustain any damage, loss, or by reason of the house, building or erection being erected in accordance with the lines so prescribed, or by any of his land being so added to the street, the Corporation shall make compensation in that behalf. And failing agreement the compensation shall be ascertained, apportioned and recovered under the Lands Clauses Consolidation Act, 1845, as in cases of disputed compensation for lands." We have a fund out of which this can be done continuously without a separate formal inquiry in each case. We were authorised by our Act to borrow money, which is not yet exhausted.

Is it not a slow process?—Yes, it is an exceedingly slow and expensive process. I consider that in all main approach roads in the neighbourhood of Liverpool it should not be possible under the law for any houses to be erected in the future nearer to the centre line of the street than from 35 feet to 40 feet.

So as to give a street of 70 feet or 80 feet in width?—Yes, for the main approaches to Liverpool.

I understand you would like also to have some control outside your municipal area?—Yes. From experience gained in connection with the districts which have been added to Liverpool since the year 1895, I consider that a municipality such as Liverpool should have some control over the main approaches to the city for a distance of, say, from five to ten miles outside the city boundary, unless some general legislation is passed to regulate the building lines in main trunk thoroughfares. As an example I may quote the Aigburth Road, which passes through a district until lately governed by an Urban District Council. Though this road is a main approach to Liverpool without any break, the local Council just outside the city thought a widening to 54 feet quite sufficient, and the road was

widened accordingly over a portion of its length. The widening having last year been included in the city of Liverpool Corporation are of opinion that the road is not sufficient and are at present taking steps afresh to carry out widening at considerable expense.

That road is now under your own jurisdiction?—

But I understand your suggestion was that with main entrances and approaches outside your jurisdiction the city should have power to compel the Urban or Rural Sanitary Council to widen such roads?—If there had been so much of that sort we might have called the attention of the Corporation to the fact that in such a case as I have mentioned the width they proposed was not sufficient. I think it should be some sort of control or power of reference.

Up to the point where the road is 54 feet wide it is now to a width of 60 feet by the city, but the local authority would not make up the width there to 60 feet?—Yes.

Is it not about two miles long with a tramway?—Yes, the whole length there is a single line of tramway with two tracks.

Which must be doubled?—Yes, it will be absolutely necessary to convert it into a double line in the near future to meet the requirements of the traffic.

How much space do two lines of tramway take?—They must be 32 feet 6 inches between the kerbs. The footways must be narrowed correspondingly, but we think that in this sort the total width should be at least 60 feet. I think, however, that you would be able to get a double line of tramways in a street 54 feet wide between the houses.

You get them sometimes with much narrower roads by agreement with the frontagers.

Then this road that you have mentioned is really enough for a double line?—Yes, where widened.

But it is not all 54 feet in width?—No, only the narrow portion. The narrower portions are at present from 40 to 44 feet. It is only a small portion near the Liverpool end that is 54 feet in width, and we are now proposing to widen it to 60 feet throughout.

Does it not come to this, that up to the city boundary 60 feet, then for a short length of about half a mile it afterwards narrowing down to about 37 feet?—Yes.

As regards the roads connecting one large area with another, I understand you have a suggestion to make how they should be controlled?—I am of opinion that municipalities should have an important voice in the settlement of questions relating to roads which form near approaches to the city, and that, failing agreement between the municipalities, the authorities of the smaller districts or with the County Council there should be a power of appeal to a central authority with expert knowledge and special experience of roads or inter-communication. With regard to the main roads leading from Liverpool, these, generally speaking, are of a good character, though generally too narrow and having sharp corners.

Take the case of the road from Liverpool to Widnes. That is not a county main road, but it is one of the main approaches to Liverpool. The portion of it outside the city boundary is in very poor condition; I do not think it is a highway; at any rate, it is in bad condition, and the inconvenience between Widnes and Liverpool is undoubtedly put in a great measure by the inconvenience through the condition of that road.

How far is that from Liverpool?—I think it is about 17 or 18 miles.

How many authorities' jurisdiction does it pass through?—I think it passes through three altogether.

You say it is not a main road?—I do not think it is a main road for the purposes of the county; it is a main approach to Liverpool, parallel to the river.

Do you think such a matter might be dealt with by a committee consisting of representatives of Widnes, Liverpool, and the Lancashire County Council?—I am not sure, but I think it would be in favour of a joint committee.

Do you think there would be a difficulty about contribution?—Yes. I would prefer that the matter be referred to a central authority.

A central authority having power to levy upon Widnes and Liverpool a large part of the expense?—Yes, or other authorities, to take into account the question of the contribution.

It would not be right, would it, to ask the ratepayers of the rural districts between Widnes and Liverpool to pay a contribution for the through traffic?—No. It appears to me to be a national matter.

Is it not a matter between Liverpool and Widnes, and also the through traffic beyond these towns?

Have you much difficulty in the Liverpool district with the tramways blocking up the roads?—In Liverpool the tramway authority is also the tramway authority, and within the district a very serious difficulty has arisen.

Have you a suggestion to make as to how the line should be arranged so as to take other forms of traffic?—Yes, with regard to the question of main trunk roads.

consider that the tramway track on such a road constructed as to be available not only for cycles, but also for railway and motor vehicles; embody the advantages of the so-called plate-way projecting flanges.

Q—Yes, there was a proposition locally to divert traffic from Liverpool to the manufacturing districts by a by-pass road. Personally, I believe we will come to some agreement in that district ultimately.

Q—Can that the tramway lines should be laid in such a manner as to be able to carry railway traffic?—Yes. If I was a tramway authority between Liverpool and the manufacturing districts, I should advise them to put down their tramway in such a manner that it would take all three tracks; but meantime the tramways are in existence, and no question does not arise.

Q—As to constructing a highway which would go round the city and so divert traffic from the central part by a by-pass road, I understand you have a scheme?—I have a scheme which has been approved by the Corporation for roads in Liverpool. This scheme is based on the outskirts of Liverpool embodies my view that main roads should be in the future. In the case of the outskirts of Liverpool, it became necessary for the owner to lay out a certain portion of the estate so as to be practically parallel to the main road in the city. The owner was approached to see whether he would lay out more than the minimum required under the bye-law, and ultimately he decided to give the road a width of 24 feet, bringing it to a total, on condition that the city of Liverpool should give 24 feet from him and threw that into the street, making a total width 84 feet. That has been agreed to. The idea has developed still further, and the Corporation will be willing to pay interest and sinking fund on another 24 feet of road on certain conditions, viz. that the tramway line between the road and the city should be fenced off from the general slow traffic, and the trams could run the trams at a considerable speed on the road and cross-road. That scheme has been approved. I now produce plans of the scheme to the Corporation.

Q—Would you say that if you had proper powers this scheme could have been carried all round Liverpool. What do you mean by "proper powers"?—In this case we have done a certain arrangement. If we had powers by which such a scheme could be continued, apart from the question of happening to arrange with a particular landowner, I have no doubt it could be continued round the city.

Q—You should have power to acquire land from the owner?—I think a municipality such as Liverpool has power to construct main roads whilst the land is in agricultural, and at or about agricultural value. It is, of course, understood that where such roads approach built-up areas, the roads should be so arranged as to leave the urban district authorities the road necessary for distribution purposes. At present we have no powers which would take us up to the point I should like to see. None of our powers go beyond that.

Q—You had many actions against you for declaring land as being built upon?—We have not yet had a case.

Q—You got the Act last year?—Yes.

Q—Does Liverpool have exceptional powers. Your Act of 1902 gives you very elaborate powers?—Yes, the present Act has somewhat exceptional powers in the main thoroughfares and main approaches to the city under the Liverpool Corporation Act, 1902, as follows:—

Section 32.—Width of new streets in certain cases—

"In the opinion of the Corporation a new street will be a continuation of or means of communication with a main thoroughfare in the city, or a continuation of or means of communication with the city, the Corporation may, if they see fit, erect houses or other buildings intended to be erected in the street to be set back from the centre line thereof to a distance not exceeding 40 feet as they may see fit, and the Corporation shall thereupon make compensation to the owners of the land abutting upon the said new street in the amount which may be sustained by him or them if his or their being unable to build upon the land between the line of such new street and the line of the street erected or to be erected on either side thereof, and the amount of such compensation shall be determined by arbitration in the manner provided by the Lands Clauses Act, 1845."

"Provided always that the Corporation may, if they think fit, instead of paying the compensation under this section, agree with the owner or owners of the land referred to in the said section for the purchase of the said lands or any part or parts thereof."

Section 32.—Power of Corporation to convey portions of streets to adjoining owners—

"The Corporation may upon such terms as they think fit convey any portion of a public street to the owner of any land adjoining it for the purpose of obtaining a uniform line of frontage and of improving such street, and any moneys received by the Corporation from the owner under this section shall be applied in or towards repayment of moneys borrowed for street improvement purposes."

Section 34.—As to direction or position of new streets—

"If the Corporation disapprove of the proposed direction or position relatively to the nearest streets of any new street, as shown on the plan thereof deposited under any by-laws made, the Corporation, under the provisions of the Public Health Act 1875, and any Act amending or extending that Act, shall within thirty days after delivery or deposit of such plan to or at the offices of the city engineer, give notice to the person delivering or depositing such plan of the particulars of such disapproval, and of the requirements of the Corporation in respect of the direction or position as aforesaid of the proposed street, and in the event of such notice of disapproval being given, it shall not be lawful to begin to make or lay out the new street until an amended or new plan thereof has been delivered or deposited as aforesaid and approved by the Corporation."

"Provided that if within thirty days after receiving notice of the requirements of the Corporation, and before proceeding further in the matter, the person delivering or depositing such plan gives written notice to the Corporation, alleging that he will sustain loss or damage by the decision of the Corporation under this section and claiming compensation from the Corporation in respect thereof, the Corporation may either waive or insist on their requirements as they see fit, and in the latter event, any claim for compensation shall in default of agreement between such person and the Corporation be referred to and settled by arbitration in the manner provided by the Lands Clauses Consolidation Act, 1845. In any such reference the arbitrator or arbitrators and umpire shall have regard to any increased value which will in his or their opinion be given to any property of such owner by reason of the execution of the requirements of the Corporation, and any such reference may on application of either party to the reference be made a rule of His Majesty's High Court of Justice."

Section 35.—Buildings at corners of streets—

"The Corporation may require the corner of any new building at the corner of two streets to be rounded off or splayed off to the height of the first storey or to the full height of the building, and to such extent otherwise as they may determine, and for any loss which may be sustained through the exercise of the powers by this section conferred upon the Corporation they shall pay compensation in accordance with the provisions of the Lands Clauses Acts."

I see it is put in section 30 that "where in the opinion of the Corporation a new street will form a continuation of or means of communication with a main thoroughfare in the city, or approach to the city, the Corporation may," &c. Do not all streets communicate with the main thoroughfares in one way or another?—The expressions used are wide, but I think they were intended to be wide.

Q—How do you get more power under that clause than ordinary corporations have under their model building by-laws, which enable them to insist upon a road being as many feet wide as they like so long as they get the Local Government Board to assent?—It is generally not easy to get local authorities to assent to by-laws requiring very wide streets.

Q—The local authorities will not go in for such wide streets?—A by-law to authorise a street of 80 feet wide would probably not be passed by a local authority.

Q—The difference then is that you have powers of compensation under your private Act?—An authority with ordinary powers could not, except by agreement, have a street laid out wider than the maximum provided in their by-laws, whether they paid compensation or not. Our present by-laws provide for a minimum width of 36 feet, and there is no compensation paid up to that.

Q—You have powers under your Act to convey portions of the streets to adjoining owners?—Yes. That is valuable. Ordinarily speaking, when an improvement is a small one, we do not need to part with any of the land, but if we are cutting off corners, or dealing with a large improvement, a portion of the land is sometimes left which it is convenient to sell to the frontagers, and, of course, the money goes to the credit of the road improvement fund. That is on the give-and-take principle.

Q—There is no power in law ordinarily to give a title to bits of public road conveyed to private individuals?—That is so.

You have also taken powers to arrange the direction and position of new streets?—Yes, having regard to the general plan, and also to the traffic requirements of the district.

But you pay compensation under the clause if you damage anybody?—Yes.

I see you have also taken power in your Bill to round off corners. What is the point of that?—It is very important, at the corners of busy streets especially, that a man driving a vehicle should be able as he advances to see as far round the corner as possible; and also to provide in busy streets for people being able to turn the corner without having to do so exactly at right angles. We have power to splay the lower part of a corner building for such a purpose, and also to set it back as far as the first storey is concerned, the upper part of the building being allowed to project.

Have you something to say as to main roads forming the boundaries between districts?—Yes; where main roads form the boundaries between districts difficulties arise with regard to the question of proper maintenance of the roadway, and improvements of the separate lengths of roadway, and in some instances the authority of a small district cannot afford to pay the cost of its proportionate share of a street improvement, whilst the local authority of the larger district cannot see its way to spend money upon an improvement which possibly would be of very much greater advantage to the adjoining districts. In the Liverpool district this has in the past had the effect of leaving such boundary roads in an unsatisfactory condition. The creation of a joint or central authority, to whom appeal could be made, would tend to remedy this state of affairs.

Is it not better to take the boundary some distance beyond the possible buildings on one side of the road?—I would not like to make a general statement upon that subject, but it might be better for the maintenance of a good road surface if the road were under one authority.

How would you propose to deal with the maintenance of a road half of which belonged to a wealthy city and half to a rather poor rural district?—That is a case which might be referred to a central authority to say what should be done under the circumstances. Three separate authorities would seldom be able to come to an agreement.

Would you give one of the authorities power to construct and repair the whole of the road?—I think it could be arranged so far as repairs are concerned. In a case which I have in view it was arranged that each of the authorities should be responsible for a certain length of the road without reference to the actual boundary.

Have you any power in general law to do that?—No; but these things are sometimes done as a matter of mutual convenience. As a matter of law, we would have to maintain the road up to our city boundary.

Going back to the question of maintenance of roads where there are tramways, is it not the fact that very often the tramway companies contract to repair the roads?—Yes, under the Tramways Act the tramway authority is bound to maintain the surface of the road up to 18 inches beyond the outer rails.

Do you think that a good plan?—I think not, from the user of the road point of view. Where tramways exist in public roads I am of opinion that the street authority should not be allowed to transfer its responsibility for the maintenance of any portion of the road between buildings to a tramway undertaking, but that the maintenance of the whole width of the roadway should be placed in the hands of the road authority; the tramway authority, of course, paying the road authority the cost of the construction and maintenance of the road between tramway limits.

The tramway authority might reasonably claim some share of control over the outlay?—As tramways take up a considerable portion of the main roads, I think they ought to be willing to maintain their part of the roads in the best possible form.

You would not object to give them a right of appeal to a central authority?—No.

That is what I meant.—Tramway authorities, who are not paving or road-surface authorities, should not be allowed to take portions of public control of roads out of the hands of the road authority.

That is sometimes done to-day by arrangement?—Yes, in some cases. I would not object to the road authorities making such arrangements as they liked with a tramway company, provided the roads were well maintained.

With regard to the maintenance of roads from an economical point of view, I believe you lay considerable stress upon being able to repair a long length of road at one time?—Yes. I do my work with large gangs, including properly trained foremen and gangers, with men, in the case of macadam roads, who do nothing else but macadam. They go into a road with a complete set of plant and a number of steam rollers, which may be used either as steam rollers or as traction engines or scarifiers. These men work clean through the length of the road instead of doing it in short lengths. We find this secures two benefits; it keeps the gang of men together, and gets

through the work quickly, as well as reducing the cost and the number of complaints.

What length of road do you work at a time?—About three-quarters of a mile at a time can be done economically.

You think that the most economical method of administration is for the administrator to have a long length of road to administer?—Yes, sufficient to provide proper plant and adequate staff for the work in an economical manner, as well as to see that all the time the work is going on.

Have you always worked long lengths at a time?—For about three years past; but we find it the best system.

Have you any figures to show the saving secured by this system?—I have not dealt with it in detail from a financial view, but we consider that the cost of dealing with the surface of the road should be about 11d. per superficial yard, not making it merely a question of economy, but well to improve our road surfaces.

Still, you give it as your opinion that both on the economy and of efficiency it is better that there should be a large number of miles under the same authority?—Considerable lengths of road can be repaired at a time, and would apply the same reasoning to any other work. A sufficient amount of work to justify expensive plant and staff and adequate supervision.

The last portion of your intended evidence in which I am not sure that we can properly regard as a reference to this committee the subject of the material used in making roads, or your experiments with the oiling of macadam roads.—I feared that rather beyond the scope of your inquiry. May I explain that there were two points in view. One was experimenting with the object of providing a road surface similar to macadam, but of a more lasting nature, and economical. Shortly put, it is this:—The cost of a concrete slab, the working surface including labour embedded in the concrete after the style of the work that has been in experimental use in Liverpool for some time, with satisfactory results.

Speaking generally, do you think we must find a new class of road material?—I see great necessity for it. I think we should all try to get it, but that is not easy.

Not only on account of the extra weights that are to be carried, but also on account of the inconvenience of dust and mud?—Yes, dust and mud are two serious evils.

Which of course cost you a great deal of money to scavenge, and are besides a great nuisance to the public?—Yes, particularly to frontagers in macadam roads. In connection with that I have been experimenting with concrete, and have got satisfactory results from mixing a little of the water used for street watering purposes.

GENERAL.

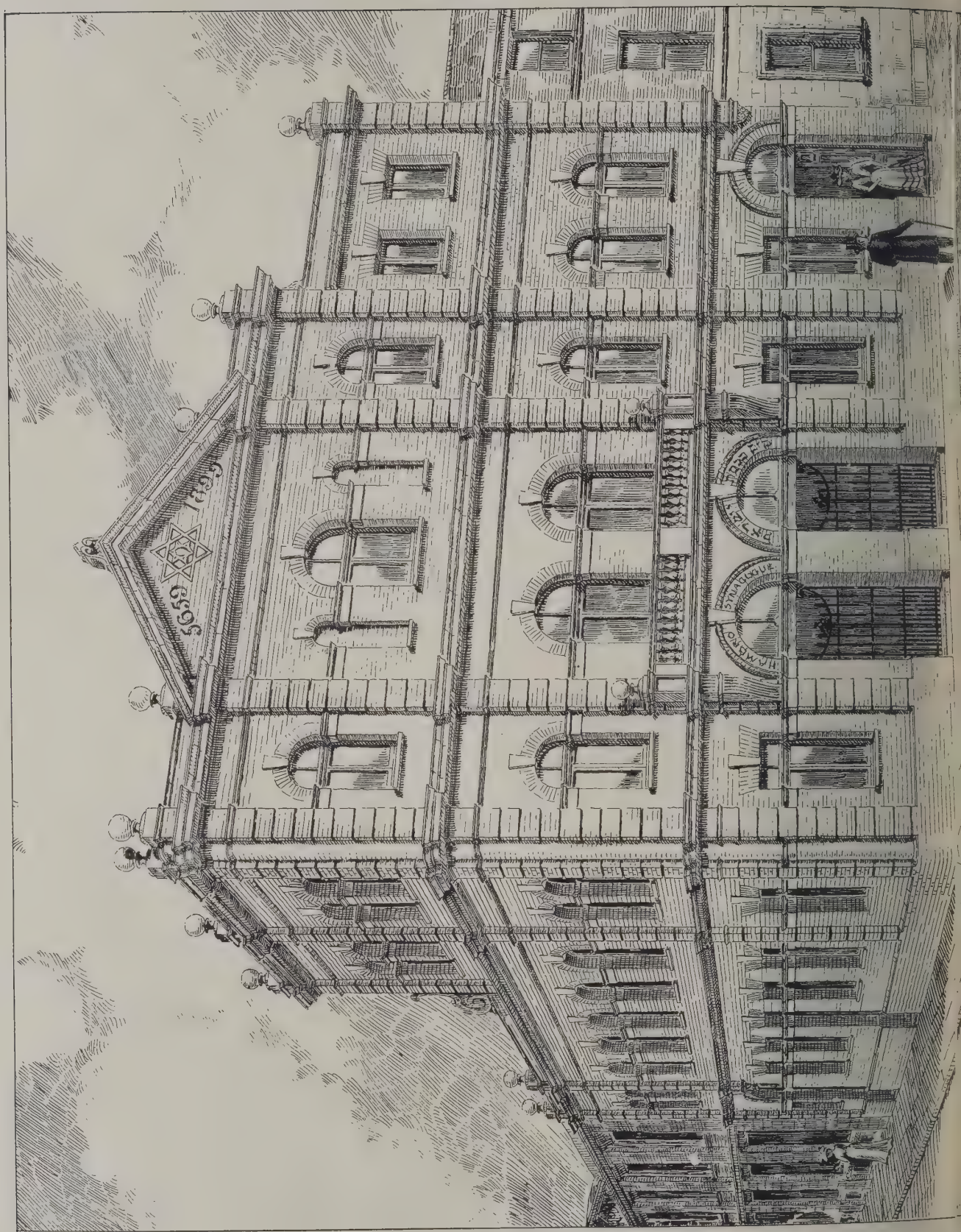
The King has been giving sittings at St. James's Palace to an artist who is painting a portrait of His Majesty. It is understood that the scene of the picture is laid in the State apartments, which have recently been undergoing renovation.

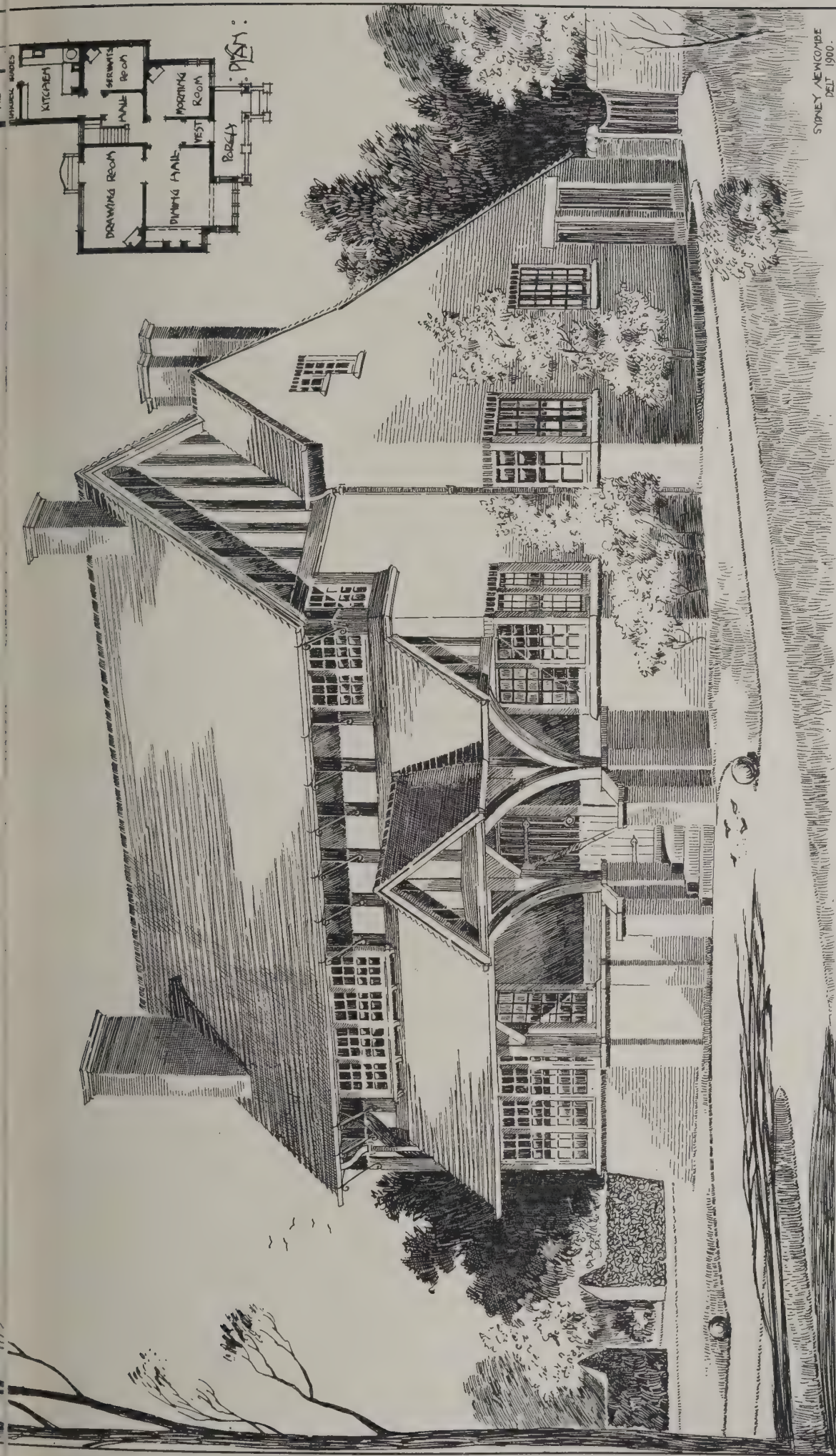
The Competition for the memorial of the United States at Berne attracted 120 designs and models, of which 10 have been retained, and the authors are to take part in a competition. The first four designs were sent in by H. H. H. of Charlottenbourg, G. Morin of Berlin, Dubois & René Patouillaud and René de Saint-Exupéry. Each have been awarded 3,000 francs. M. Giuseppe Lugano, MM. Ignatius Taschner of Breslau and Munich, have received premiums of 1,500 francs.

M. Chartran's painting of the signing of the peace between the United States and Spain is destined to be hung in the White House, Washington. Mr. C. Frick, who painted the work, has presented it to the Government.

The Exhibition of Mr. Mortimer Menpes's drawings, etchings, dry-points and lithographs, by J. McNeill, will open at the Leicester Galleries, Leicester Square, on Monday next. The collection contains nearly 300 works, among which is the unique dry-point of "Whistler's Mother."

Mr. Alexander Blaikley, artist, whose death took place recently, was born in Glasgow in 1816. He was settled in London, where he was a frequent exhibitor of his portraits at the Royal Academy. The Grand Duchess of Russia, the Tsar Alexander II. of Russia, was one of his pupils. Amongst his oil portraits, one of Professor F. C. M. purchased by the late Mr. Gassiot for presentation to the Society.

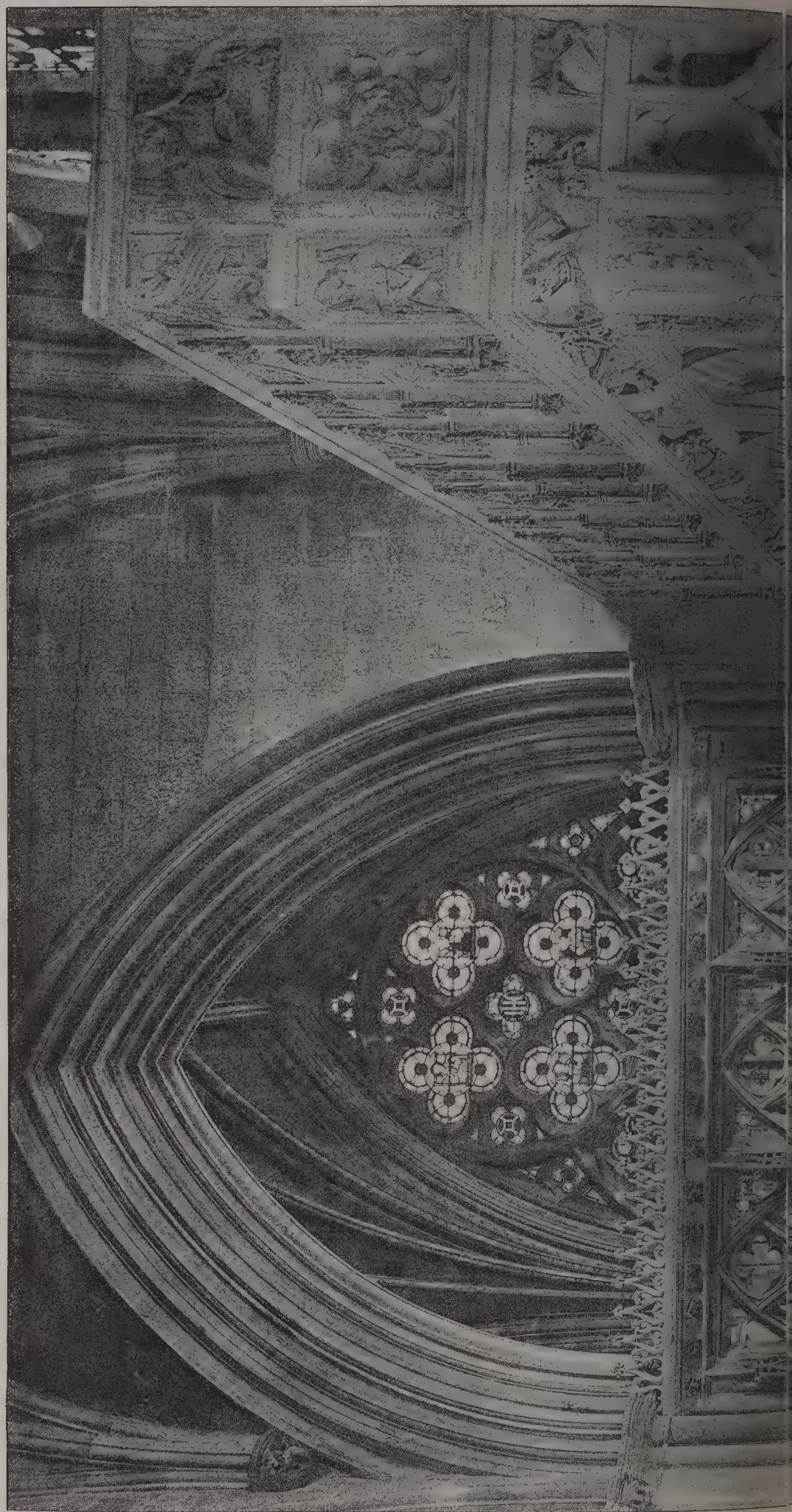


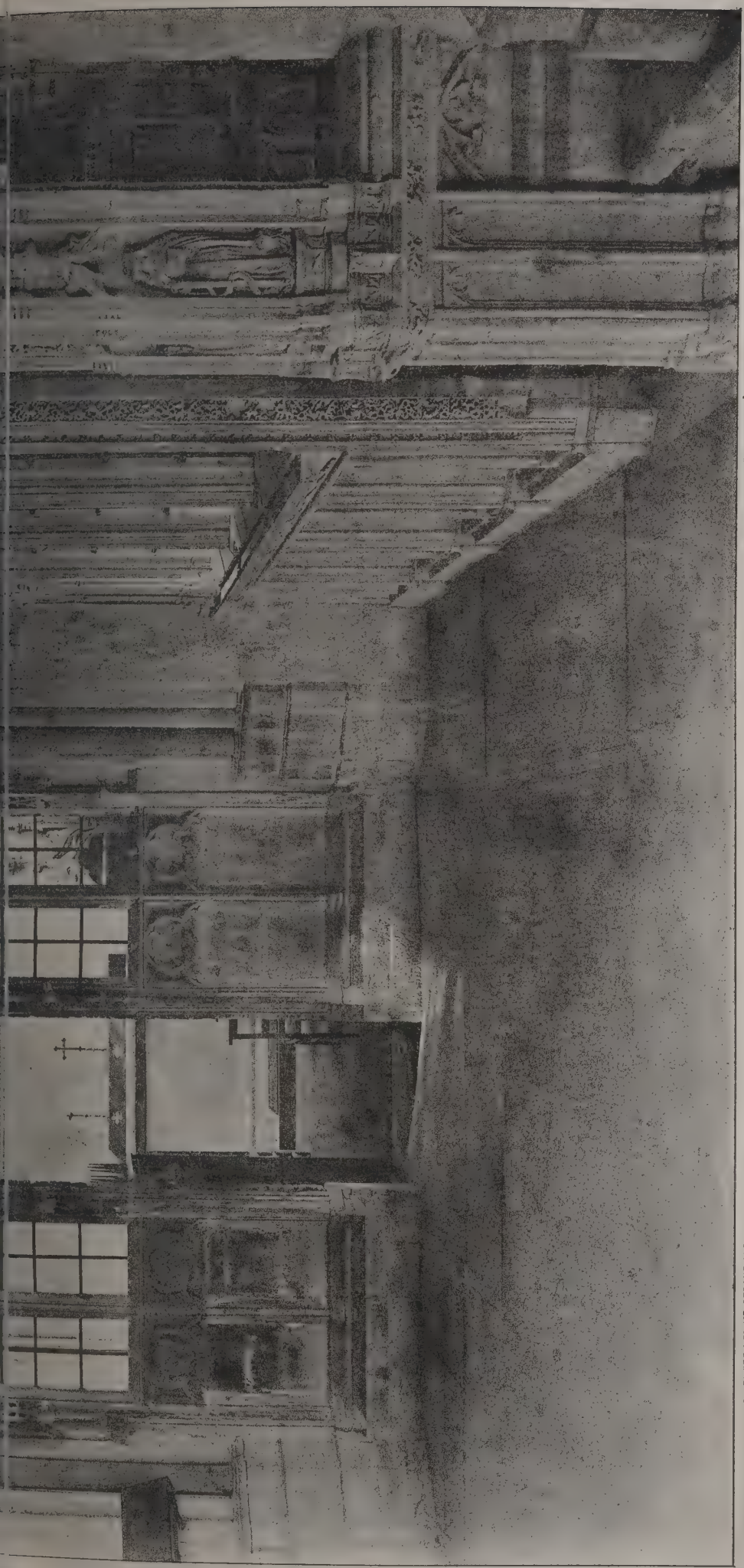


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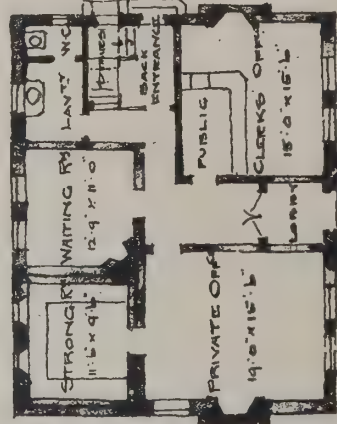
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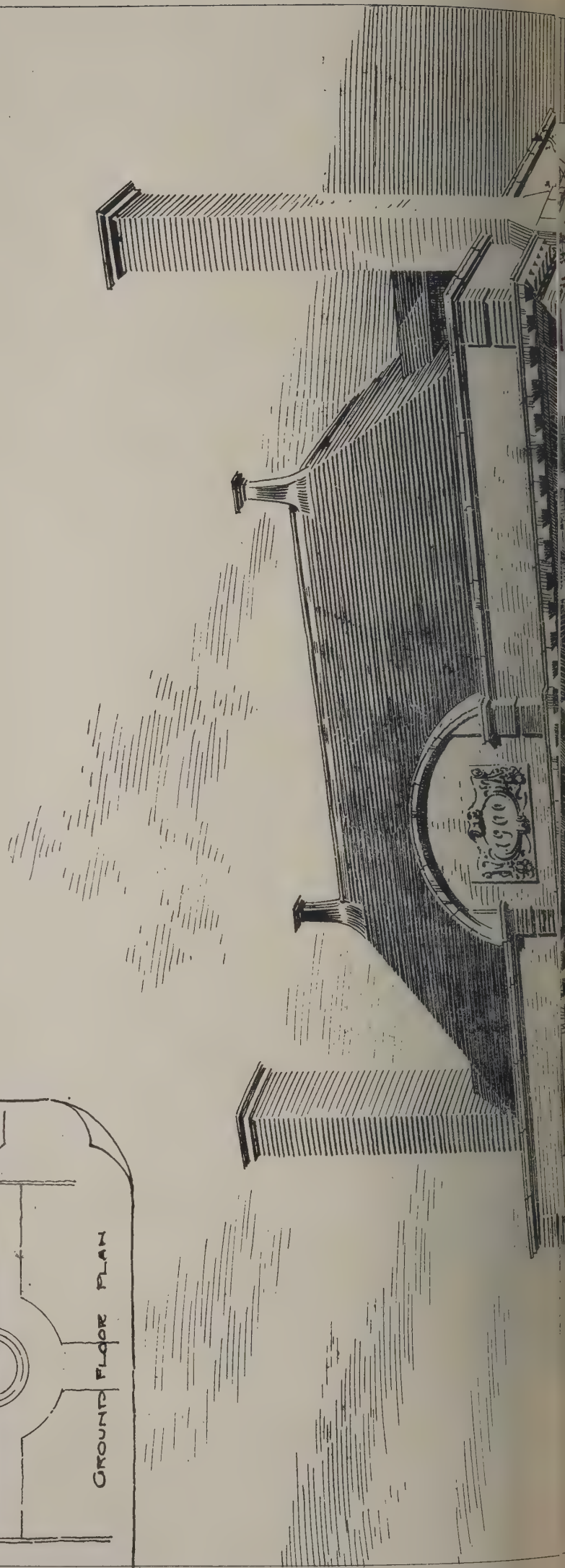




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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our **VERY EMINENT BARRISTER**, who has undertaken a special study, and will be glad to answer queries in the columns of this paper any questions relating to the legal matters arising from the provisions of this Act. Our **LEGAL ADVISER** will further answer any legal question that may be of interest to our readers. All letters must be addressed "**LEGAL ADVISER**," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

We will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and particulars of Works in progress in which they are interested.

of signed articles and papers read in public must not be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Contributors are requested to make their communications as concise as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

disappointment is frequently expressed at the non-fulfilment of Contracts Open, Tenders, &c., it is particularly requested that information of this description be sent to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

Nov. 30.—The committee of Bray Pavilion and Gardens invite plans for proposed pavilion and winter garden. First prize, 30*l*; second prize, 15*l*; third prize, 10*l*; with three prizes of 5*l* 5*s* each. Messrs. Frank Lee and P. Macdonnell, hon. secretaries, Town Hall, Bray.

Nov. 9.—Designs are invited for a new public library, with residence for librarian, in the third ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for a public library, with residence for librarian, in the third ward of the borough to Mr. H. J. Smith, town clerk, Town Hall, Kennington Green, by 12 noon on Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Hove Hospital for Women, 76 West Hill, Brighton.

Dec. 16.—The Lambeth Borough Council are invited to send in designs for a public library, with residence for librarian, in the third ward of the borough to Mr. H. J. Smith, town clerk, Town Hall, Kennington Green, by 12 noon on Sept. 29 on receipt of 1 guinea, which will be returned on receipt of design. Mr. Leonard Holmes, hon. secretary, Hove Hospital for Women, 76 West Hill, Brighton.

SCOTLAND.—Nov. 9.—Competitive plans for the erection of a tenement of shops and workmen's dwelling-houses on ground belonging to the Kilmarnock Corporation in Fore Street are invited. Premiums of £15 15*s*, £10 10*s*. and £5 5*s*. will be given for the sets of plans and certificate which may be adjudged first, second and third respectively. Mr. W. Middlemas, town clerk, Kilmarnock.

SCOTLAND.—Dec. 7.—The Elgin Landward School Board invite competitive plans and estimates for the erection of school buildings at New Elgin capable of accommodating about 340 pupils. Mr. Hugh Stewart, clerk to the Board, Elgin.

SEELY OAK.—Dec. 7.—Competitive plans and designs are invited for public baths at Seely Oak, near Birmingham. Full particulars of the site for the proposed baths, limit of maximum expenditure, &c., with copies of sketch plans showing the accommodation required, &c., may be obtained on application to the Urban District Council's surveyor, Mr. A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums of 10*l*., 5*l*. and 25*l*. will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

TAMWORTH.—Nov. 14.—Designs are invited for a free public library. Premiums of 20*l*., 10*l*. and 5*l*. will be paid to those designs placed first, second and third respectively. Full particulars from Mr. John Matthews, town clerk, Bolebridge Street, Tamworth.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WALES.—Competitive designs are invited for a pavilion to hold 10,000, to be erected at Rhyl for the purposes of the Royal National Eisteddfod of 1904. No prizes are offered. Messrs. Tilby & Jones, general secretaries, Town Hall, Rhyl.

WALES.—Nov. 9.—Competitive designs are invited for a public library to be erected in Evelyn Road, the total expenditure, including fixtures, not to exceed £2,000. A premium of £10 10*s*. will be paid for the approved design. Mr. Samuel Jones, clerk, Old Road, Skewen, Neath.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l*. returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

ALNWICK.—Nov. 9.—For the erection of a wooden foot-bridge over the burn on the footpath between East Field and Low Buston. Mr. H. W. Walton, clerk to the Rural District Council, Alnwick.

BIRKDALE.—Dec. 4.—For the erection of a hospital, with the necessary isolation houses, administration block and other outbuildings at Birkdale, Lancs. Mr. J. F. Keeley, clerk to the Urban District Council, Town Hall, Birkdale.

BOOTLE.—Nov. 18.—For the erection of a dwarf brick wall, stone coping and gate piers, and the supplying and fixing of wrought-iron railings and gates to enclose the Stanley Garden.

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in Stanley Road. Mr. B. J. Wolfenden, borough engineer, Bootle, Lancs.

BRADFORD.—Nov. 16.—For additions to the central offices in Manor Row, Bradford, for the Guardians. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

DARFIELD.—Nov. 14.—For the erection of a cloak-room, &c., in connection with the National school, Darfield, Yorks. Mr. A. B. Linford, architect, Carlton Villa, Wombwell.

DODWORTH.—Nov. 28.—For the construction of a brick culvert through or under land near Keresforth Road, Dodworth, Yorks. Mr. George Strutt, surveyor, High Street, Dodworth.

DROXFORD.—Nov. 23.—For repairs in the master's office at the workhouse. Mr. Francis Clark, clerk to Guardians, Bishop's Waltham, Hants.

FELIXSTOWE.—Nov. 20.—For the erection of an additional house at Felixstowe Coastguard station, Suffolk. Particulars and bills of quantities will be supplied on application to the Director of Works Department, Admiralty.

FULHAM.—Nov. 9.—For the construction of dwarf boundary walls, with gate-piers and terra-cotta dressings and appurtenant works, at the South Park. Mr. R. M. Prescott, town clerk, Town Hall, Fulham.

HAVERSTOCK HILL.—Nov. 9.—For the erection of a new hospital on land adjoining St. Stephen's Church. Messrs. Young & Hall, architects, 17 Southampton Street, Bloomsbury, W.C.

HERNE BAY.—Nov. 12.—For alterations and additions to the town hall and the erection of an iron and glass verandah in front of town hall. Mr. F. W. J. Palmer, surveyor to the Urban District Council, Town Hall, Herne Bay.

HINDLEY.—Nov. 21.—For the erection of a palisade wall near the grammar school, Park Road, Hindley, Lancs. Mr. Alfred Holden, surveyor, Council Offices, Hindley.

HORDEN COLLIERY.—For the erection of house and shop at Horden Colliery, Durham. Mr. W. A. Noble, Castle Eden Colliery, Castle Eden, R.S.O.

HORWICH.—Nov. 25.—For the construction of a storage reservoir at Marklands, catchwater reservoir on Wildersmoor,

the laying of cast-iron pipes, also the construction of sewers with manholes, &c. Mr. Peter Taverner, clerk to Urban District Council, Council Offices, Horwich, Lancs.

HUMBERSTONE.—For the erection of a small farmhouse to be built on the Carrington estate at Humberstone, Leics. Messrs. J. Carter Jonas & Sons, estate agents, Cambridge.

ILFORD.—Nov. 9.—For street works in Coventry Lane between Granville and Bathurst Roads. Mr. H. Shaw, veyor, Town Hall, Ilford, Essex.

IRELAND.—Nov. 9.—For painting, repairing and alterations at certain dispensary stations of the union. Messrs. Young & Mackenzie, architects, 2 Wellington Place, Belfast.

IRELAND.—Nov. 10.—For the erection of kitchen, laundry, disinfecting chamber, chimney-shaft, trenches for pipes, &c. at Limerick workhouse. Mr. Joseph O'Malley, architect, Limerick.

IRELAND.—Nov. 11.—For the erection of a kitchen, laundry, disinfecting chamber, chimney shaft, trenches for pipes, &c. the Union Workhouse, Limerick. Mr. H. Guinane, clerk to Union, Limerick.

IRELAND.—Nov. 12.—For the erection of a dispensary and medical officer's residence at Antrim. Mr. N. Fitzsimon, architect, 82 Royal Avenue, Belfast.

IRELAND.—Nov. 16.—For alterations and additions to premises, Castletownbere, to convert same into a hotel. Mr. Samuel F. Hynes, architect, 71 South Mall, Cork.

KNARESBOROUGH.—Nov. 28.—For the construction of a purifier-house and lime shed. Mr. J. E. Walker, surveyor, Town Hall, Knareborough.

LAMBETH.—Nov. 11.—For repairs and redecorating of Norwood School infirmary. Mr. W. Thurnall, clerk to Lambeth Guardians, Brookfield Street, Kennington Road, S.E.

LANCASTER.—Nov. 14.—For the erection of a stone wall between Bowerham hotel and Bowerham school. Mr. Cann Hughes, town clerk, Town Hall, Lancaster.

LEEDS.—Nov. 9.—For the extensions and alterations to hospital block A and for erection of new receiving wards at the Leeds Union workhouse, Beckett Street. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LEEDS.—Nov. 9.—For the erection of house and shop at Long Row, Horsforth. Mr. Percy Robinson, architect, Yorkshire Post Chambers, 53 Albion Street, Leeds.

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Nov. 9.—For the erection of a factory, Hanover
Messrs. W. Carby Hall & Dalby, architects,
Buildings, Park Row, Leeds.

Nov. 18.—For the erection of a bridge over the
ck at Brown Lane. Particulars can be obtained at
Engineer's Office, Municipal Buildings, Leeds.

Nov. 10.—For the erection of Government
icester, for the Commissioners of H.M. Works and
Buildings. Bills of quantities and form of tender may
at H.M. Office of Works, &c., Storey's Gate, S.W.

Nov. 11.—For additions to the Council
Stockport Road, Levenshulme, Lancs. Mr. James
itect, Guardian Chambers, Tiviot Dale, Stockport.

Nov. 19.—For the erection of a
ary, The Green, Lindal-in-Furness. Mr. W.
surveyor, Council Offices, Dalton.

Nov. 14.—For the erection of a new school in
d, Liscard, to accommodate 1,000 scholars, for the
ducation committee. Mr. Edmund Kirby, 5 Cook
rpool.

Nov. 9.—For the erection of a new hospital on
ing St. Stephen's Church, Haverstock Hill. Messrs.
all, architects, 17 Southampton Street, Bloomsbury,

Nov. 10.—For the erection of a
ary. Mr. J. R. Vining, architect, 89 Chancery
(

Nov. 11.—For the erection of a telephone
and engineer's office and store at Quay Street,
for the Commissioners of H.M. Works and Public
Bills of quantities and forms of tender may be
H.M. Office of Works, &c., Storey's Gate, S.W.

Nov. 9.—For the erection of a
use, cattle lair, refrigerators, factory, &c., at North
oll Bar, Middlesbrough. Messrs. Moore &
rchitects, 27 Albert Road, Middlesbrough.

Nov. 16.—For the erection of ladies'
erection of a urinal; building of gable ends in
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eation ground, &c. Mr. W. Welburn, borough
wn Hall, Middleton.

MOSS SIDE.—Nov. 11.—For the erection of a fire station.
Mr. Henry B. Longley, surveyor, Council Offices, Moss Lane
East, Moss Side, Lancs.

NANTWICH.—Nov. 19.—For the erection of an infirmary
and nurses' home at the union workhouse, Nantwich. Mr.
C. E. Davenport, architect, 152 Hospital Street, Nantwich.

NEWCASTLE-UPON-TYNE.—Nov. 20.—For alterations and
extensions at Arthur's Hill Council school. Mr. Alfred God-
dard, secretary, Education Offices, Northumberland Road,
Newcastle-upon-Tyne.

NORMANTON.—Nov. 16.—For alterations and additions to
Normanton police station, for the West Riding County Council,
Yorks. Mr. J. Vickers Edwards, county architect, Wakefield.

NORWICH.—Nov. 9.—For alterations and additions to the
laundry at the workhouse. Mr. Henry Stone, clerk to the
Guardians, St. Andrew's Street, Norwich.

OLDHAM.—Nov. 16.—For the erection of a proposed
library in Middleton Road and Victoria Street, Chadderton.
Messrs. A. R. Groome & J. Lindsay Grant, architects, 2 St.
Peter's Square, Manchester.

PORTSMOUTH.—Nov. 20.—For the erection of a school in
Reginald Road, Eastney. Mr. G. E. Smith, architect, 145
Victoria Road, N., Southsea.

SCOTLAND.—Nov. 9.—For additions to the East End
school and additions to the West End school, Elgin. Mr.
John Wittet, architect, Elgin.

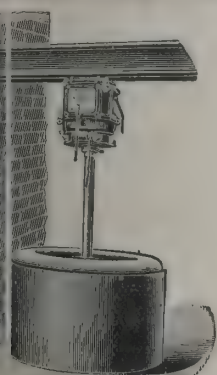
SHEFFIELD.—Nov. 23.—For the erection of sale-shops and
artisans' dwellings on surplus land in Snig Hill. Messrs. Gibbs
& Flockton, architects, 15 St. James's Row, Sheffield.

SOUTHAMPTON.—Nov. 10.—For additions to north-west
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ST. COLUMB (CORNWALL).—Nov. 11.—For reconstructing
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TOTTENHAM.—Nov. 23.—For the erection of an infant
department for 600, cookery-room and caretaker's residence,
and alterations to the existing departments at the Lancasterian
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WALES.—Nov. 11.—For the erection of an organ chamber and other alterations and additions to Pembroke Terrace chapel, Cardiff. Mr. Thomas Thomas, accountant, 29 Queen Street, Cardiff.

WALES.—Nov. 11.—For the erection of twelve houses at Pen-y-coedcae. Mr. Alfred Bryant, architect, Midland Bank Buildings, Pontypridd.

WALES.—Nov. 16.—For the erection of a caretaker's house, with boundary wall and outbuildings, near the Council's offices at Ebbw Vale, and for alteration of the building formerly used as a pattern stores on the drill-ground into a fire brigade station. Mr. T. J. Thomas, town surveyor, District Council Offices, Ebbw Vale.

WALES.—Nov. 17.—For the erection of a gallery in the Richmond Road Baptist chapel, Pontnewydd. Mr. L. D. Jones, Cromwell Place, Pontnewydd.

WALLINGFORD.—Nov. 10.—For the erection of No. 1 (administration) block and a drainage scheme, &c., in connection with the isolation hospital. Mr. S. Couch-Johns, architect, Laud Chambers, Reading.

THE new drill hall, which has been provided for the 1st Creswell Company of the Boys' Brigade by the Duke of Portland and the Bolsover Company, Ltd., was opened on the 27th ult. It is an attractive structure facing the road, quite close to the admirably laid out model village, and was erected from plans prepared by Mr. Percy B. Houghton, of Chesterfield, by Mr. A. F. Houghton, of Mansfield. The estimated cost is 1,505 $\frac{1}{2}$ l. The hall is a fine building of brick with stone dressings. On the right-hand side of the entrance is the armoury and opposite is the kitchen. The hall itself is 65 feet long by 35 feet wide, very lofty and capable of providing seating accommodation for 450 persons. At the opposite end to the entrance is a stage with convenient ante-rooms. The front of the building is carried up to two storeys, the large upper room being for recreation purposes. The hall is fitted with gymnastic apparatus, and is lighted by electricity supplied from the colliery. The building is surmounted by a turret on which is a clock.

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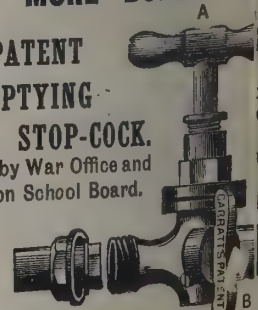
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ma & Sons	6,788	0	0
son & Sons	6,734	8	0
neton	6,563	17	8
enwick	6,510	9	0
oods	6,438	0	0
LACKBURN, Peel Street (accepted)	6,364	0	0

IRELAND.

ig-up new stores and office, Patrick's Quay, Cork.
AMUEL F. HYNES, architect, 21 South Mall, Cork.
A. DELANY & Co, Henry Street (accepted).

te erection of four cottages and (2) the conversion of
rooms into a dormitory at Armagh District lunatic
In. Mr. R. H. DORMAN, surveyor, Court House,
agh.

Accepted tenders.

l. P. Martin & Co., Armagh, £1,000; (2) £200.

PIDDLETON JUNCTION AND CASTLETON.

onstruction of bridges, &c., between Middleton Junc-
and Castleton, for the Lancashire and Yorkshire
ay Company.

TATE & GORDON, Manchester (accepted).

LONDON.

For the erection of a sorting office at Ealing Dean, for
H.M. Office of Works, &c.

W. Martin	£2,229	0	0
Richardson Bros.	2,220	0	0
Patman & Fotheringham, Ltd.*	2,063	0	0
C. Ansell	2,020	0	0
E. Plaistowe	1,995	0	0
J. Shelbourne & Co.	1,991	0	0
J. Dorey & Co., Ltd.	1,960	0	0
H. Willcock & Co.	1,950	0	0
Braid, Pater & Co., Ltd.	1,940	0	0
E. Hadley & Sons	1,916	18	2
Wisdom Bros.	1,930	0	0
B. E. Nightingale	1,884	0	0
J. Ferguson & Co.	1,881	10	0
Speechley & Smith	1,837	0	0
GENERAL BUILDERS, LTD. (accepted)	1,797	0	0
J. Cronk	1,760	10	7

* Credit old material, £10.

For pulling-down and rebuilding 5 Hoxton Square, N., to be
used as stores for the electricity department for the Shore-
ditch Borough Council. Mr. J. RUSH DIXON, borough
surveyor.

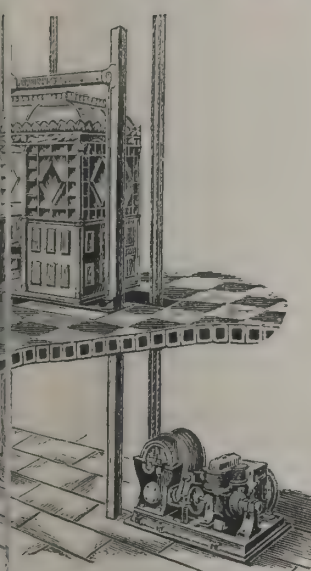
E. D. Pearcey	£2,304	0	0
J. Ivory	1,535	0	0
W. Homerson & Son	1,497	0	0
R. Schooley & Son	1,489	0	0
L. T. Lamplough	1,439	0	0
Gardner & Hazell	1,347	8	5
Kilby & Gayford	1,335	0	0
J. Ferguson & Co.	1,299	0	0
General Builders, Ltd.	1,279	0	0
Perry Bros.	1,219	0	0
F. WILLMOTT, Ilford (accepted)	1,120	0	0

PIDDLETOWN.

For the construction of an hotel to be called the Blue Vinny,
Piddletown, Dorset Mr. A. L. T. TILLEY, architect, 26
South Street, Dorchester.

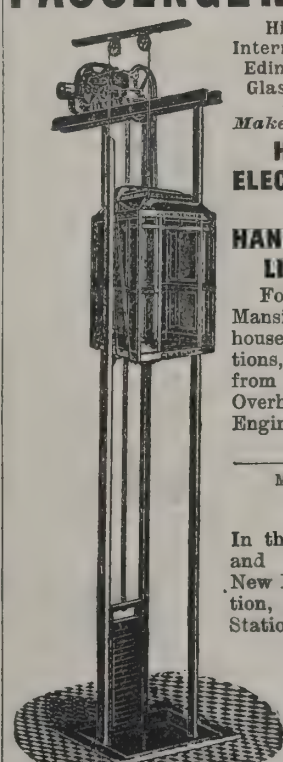
J. SELBY, Broadmayne, Dorset (accepted) £1,936 0 0

FTS



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sar Foundry, Leeds.
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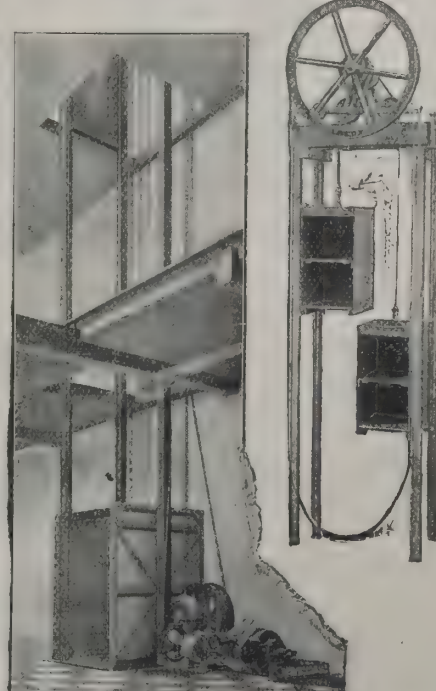
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Glasgow; Court
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Hoisting Engineers,
LEEDS.

POOLE.

For sewerage works in Edward Lane, Parkstone, and St. Aldhelm's, Parkstone. Mr. JOHN ELFORD, borough surveyor.

*Accepted tenders.**Edward Lane.*

Gates & Gulliver, Parkstone, Poole . . . £49 6 0

St. Aldhelm's Road.

G. Maidment, Newtown, Poole . . . 29 0 0

PORTSMOUTH.

For the erection of a school of three departments (boys, girls and infants) in place of the present Milton school building (mixed and infants). Messrs. RAKE & COGSWELL, architects, Prudential Buildings, Landport.

Cook & Son	£21,995	0	0
Smith & Sons	21,662	0	0
Stephens & Bastow	20,978	0	0
Haslemere	19,682	0	0
W. Evans	19,600	0	0
F. Privett	19,432	0	0
G. J. Davis	19,300	0	0
Sweetland	19,065	0	0
Clark & Sons	18,940	0	0
Coltherup	18,825	0	0
Perkins & Durant	18,793	0	0
Salter	18,764	0	0
F. Corke	18,760	0	0
J. CROCKERELL, Victoria Road, North South-sea (accepted)	18,436	0	0

STAINLAND.

For additions to residence at Glen View, Stainland, Yorks. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

J. R. Edwards, Stainland, mason.

W. Collins, joiner.

S. Hale, Huddersfield, plumber.

JJ. R. Crowther, Stainland, plasterer and painter.

W. E. Jowitt, Huddersfield, slater.

STANNINGLEY.

For the erection of a workshop at Stanningley. Mr. FOX, architect, 14 Manchester Road, Bradford.

Accepted tenders.

J. H. Knight, Farsley, mason	£512 0
R. Greenwood, Bingley, joiner	253 0
R. Hird, Ltd., Shipley, steelwork	245 0
Hallam Bros., Bradford, slater	144 0
E. Pearson, Farsley, plumber	103 0

ST. GEORGE'S-IN-THE-EAST.

For sundry works to infirmary at Raine Street, E.

J. R. DAVIS & CO., 11 The Crescent, St. James's Street, Walthamstow (accepted) . . . £128 2

STOCKPORT.

For street works in Greg Street, from the southern end to Messrs. Craven's works, and Whitehill Street, from Street to the north-west end. Mr. JOHN ATKINS, borough surveyor.

V. D. Hayes	£8,745 10
Gosling & Stafford	8,305 7
W. H. Eva	8,111 6
W. H. WORTHINGTON, Rusholme Road, Manchester (accepted)	8,072 0

SWINDON.

For the reconstruction of one lifting bridge and one bridge and the provision of a new footbridge over Wilts and Berks Canal.

E. WOOD & CO., 88 Cannon Street, London (accepted) . . . £500 0

For the erection of car depot stores, repair shops, &c. A. J. COLBORNE, Newport Street (accepted) . £3,233 0

WESTON-SUPER-MARE.

For construction of a cabmen's shelter. Mr. HUGH NORTON, surveyor.

L. Gibbs	£38 0
C. ADDICOTT, Weston-super-Mare (accepted)	27 0

C. B. N. SNEWIN & SONS, LTD. MAHOCANY, WAINSCOT, AND TIMBER MESE

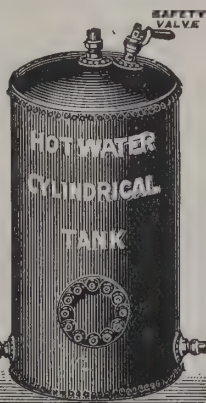
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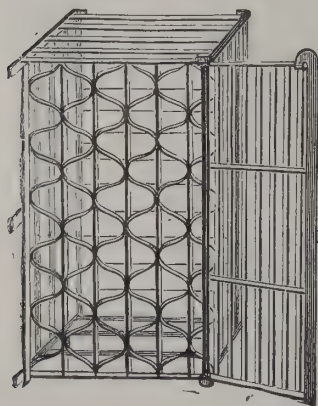
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For Index of Advertisers, see page x.

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WALES.

Construction of sewers, manholes, ventilators, flushing
pipes, &c., in connection with the sewerage of East-
ern and Dinas Powis, Glamorgan.
J. & Co. £12,630 4 10
" 12,590 10 10
" 12,580 0 0
" 12,279 12 3
IES, 35 Court Road, Cardiff (accepted) 11,490 3 2
" 9,491 5 4

Extension of water-mains of the town of Llanrwst and
village of Trefriw respectively from existing intakes on
the stream to Crafnant lake.

ERTS, West Bromwich (accepted) £1,690 0 0
erection of a chimney-shaft in connection with the
destroyer and electricity works, Holyhead.
SUS CUSTODIS CHIMNEY CONSTRUCTION
Sheffield (accepted) £617 0 0

verage works at Caegarw, Mountain Ash, with man-
holes, &c.
AB, Abercynon (accepted) £545 2 3

erection of mansion, Maesycrugiau, Carmarthenshire.
ARNOLD MITCHELL, architect, London.
EENS, BASTOW & CO., LTD., Bristol (accepted).

WELLINGBOROUGH.

ing the exterior of the council chamber, &c., Church
at, Wellingborough.
Gent £26 0 0
" 24 15 0
" & Sons 24 0 0
" 19 15 0
" 19 0 0
" 18 10 0
" 17 0 0
" 17 0 0
CURTIS, Wellingborough (accepted) 17 0 0

WEYMOUTH.

ang-up the main roadway, asphaltting certain pathways,
and enrolling same and executing certain builders' work in
Melcombe Regis burial-ground at Westham, Wey-
mouth. Mr. SAMUEL JACKSON, surveyor, Bridge Cham-
ber, Weymouth
" £471 0 0

Received too late for Classification.

GREENWICH.

For the supply of four 5,000 horse-power engines for the
electrical generating station at Greenwich.
J. MUSGRAVE & SONS, LTD., Bolton (ac-
cepted) £96,713 0 0

TRADE NOTE.

MESSRS. EMLEY & SONS, LTD., of Newcastle-on-Tyne,
write that they always have a large stock of Frosterley marble,
and that at the present moment they are supplying it to the
new Roman Catholic church at Norwich.

ELECTRIC NOTES.

THE Penrith Urban District Council are considering the
question of the installation of electric light throughout the
town at a cost of 7,500l.

THE Saffron Walden Town Council have applied to the
Board of Trade for an order sanctioning them to supply elec-
tricity for public and private use.

LINCOLN'S INN CHAPEL, which has hitherto been lighted
by means of candles only (gas never having been introduced
there), has now had the electric light installed.

At a meeting of the Yardley District Council on Tuesday,
the sanitary, highways and public works committee recom-
mended the Council to apply to the Board of Trade for a pro-
visional order to enable them to supply electricity for public
and private purposes within the area of the district of Yardley,
and that Parliamentary solicitors be employed to act for the
Council in the matter. The area proposed to light with elec-
tricity was from the borough boundary on the Stratford Road
to College Road, and from the borough boundary to Greet
Bridge.

THE progress of the Clyde Valley Electric Supply Company
in the Middle Ward of Lanarkshire will be considerably
delayed by an accident which occurred at their power station
at Motherwell on the evening of the 29th ult. The buildings,
which are to be of girder-work chiefly, are in course of

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CORNGRIT.
FARLEIGH DOWN.
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COMBE DOWN.
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PORTLAND.



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NEW CATALOGUE FREE ON APPLICATION

construction by the Brandon Bridge Building Company, and shortly after the contractor's men ceased work on Thursday the whole structure fell with a crash to the ground, ironwork, covering an area of about a hundred yards by fifty, lying in a confused mass on the site. Fortunately no one was about at the time, and no one was injured, but the loss through delay and the damage done will be considerable. There was a strong wind blowing at the time, and to that is ascribed the accident, but it is pointed out that the building is in the vicinity of the undermined area, and it is conjectured that surface disturbance may have had not a little to do with the disaster.

BUILDING AND BUILDERS.

ACCORDING to the monthly report of the borough surveyor the cost of the widening of the Blackpool promenade up to the present is 114,867 $\frac{1}{2}$., the largest item in the bill being 42,125 $\frac{1}{2}$. for labour and carting.

ON the 31st ult. at the site of the new Methodist church in Kingstown, Ireland, seven foundation-stones were laid. The building which has just been pulled down was erected in 1836, and was very simple in character, while the edifice about to be raised is of a more substantial and ornate design, indicative of the flourishing condition of Methodism at this day in the premier township. The new church was designed by Mr. George F. Beckett, architect, and will cost about 4,500 $\frac{1}{2}$.

A STRIKE of structural ironworkers began on Saturday, October 31, throughout the United States. Ten thousand men are directly affected, and probably over 100,000 in other trades will be thrown out of employment. The object of the strike is to compel the New York house-builders to recognise the local Union No. 2, of which Mr. S. J. Parks, now on trial on a charge of extortion, is the walking delegate. The strike affects the largest cities east of St. Louis wherever members of the Employers' Association have contracts. Mr. Sam Parks, was the day previous convicted of extortion and of having accepted money to call off a strike.

AT Burnley the end of a row of houses in course of construction on the Cleveland estate, off Manchester Road, recently collapsed, partially burying a foreman named John Jacques, Patrick M'Ginty and William Morris, bricklayers. They were extricated from the debris and found to be suffering from severe shock and bruises. After receiving medical attention

they were removed home in cabs. The builders, Messrs. Nightingale Bros., state that the accident occurred through wet weather, the mortar not having had time to set. The men had miraculous escapes.

AT a recent meeting of the Birmingham Master Builders' Association, which was held for the purpose of considering what notices, if any, should be given to the operatives in several branches of the trade for revision of working rules, it was resolved that, notwithstanding the continuance of a depressed condition of the trade, which might warrant notices being given for reductions in the rates of wages, no notices should be given this year upon this point. In the case of the plasterers, however, it was decided, in view of the attitude of the National Association of Operative Plasterers in relation to master builders and master plasterers throughout the country having recently been so unsatisfactory, that notice should be given to the local branch of the Association to abolish all notices until the questions between the employers and the operatives were placed on a more satisfactory basis.

A SUB-COMMITTEE of the Manchester parks committee has had under consideration the suggestion that the Corporation should sell to the War Office 30 acres of Heaton Park, which to build a barracks, and give them the use of a portion of the park for training in such manner and at such times as will not interfere with the convenience of the general public. Already some 50 acres of the park are to be taken as part of the site of a reservoir for the water from Thirlmere, and some of the members of the committee are opposed to the policy of chopping off another big slice of it. It is suggested that the barracks could be provided on the Blackley estate of the Corporation, a barracks built there, and the troops could at suitable times practice in Heaton Park, which is not far away. The War Office has, however, it is understood, made a definite offer for the 30 acres of Heaton Park.

GRANGE U.F. church, Grangemouth, which was opened on the 29th ult., is designed in a severe type of English Gothic; it has very simple detail and little ornament except such as naturally arises from the design. The principal or longest front, in which is the main entrance, faces Grange Bank Road, along which it extends 126 feet. A square tower, about 70 feet high, is placed at the north end of this front, and the principal entrance is at the base of the tower. The entrance doorway is deeply recessed and is reached by a finely moulded Pointed archway leading into the vestibule.

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ILLUSTRATIONS.

SERIES.—EXETER: ST. GABRIEL'S CHAPEL AND
END OF BISHOP OLDHAM'S CHANTRY.

TE OFFICE FOR THE EYRE ESTATE, 125 PARK
ROAD, N.W.

BROADWAY BUILDINGS, READING.

HAMBRO' SYNAGOGUE.

HOUSE AT ESHER.

church is divided into nave and side aisles by
nted arches on each side. At the pulpit end an
span divides the church from the organ chamber,
inued beyond the church. The ceiling is semi-
form, divided into bays by the main couples and
essed timber, which has been stained a dark oak
interior decoration is carried out in a simple
manner in subdued tones of soft green and
ed by bands of brighter colour. The seating and
stained myrtle green, with the woodwork of pulpit
ont in grey oak. The church will seat over 630
the hall in connection is seated for 400 people
o a large session-room, vestry, &c. The total cost
to be about 4,000*l*. The architect is Mr. John B.
asgow.

tion of providing a crematorium has for some time
he consideration of the sanitary committee of the
ration, who, however, left the matter to the
um-Burley burial board. This board proposes to
natorium in connection with their cemetery at
about four miles from the centre of the town, and
ernment Board inquiry has been held by Mr
h, of the Institute of Civil Engineers, at the
parochial institute. There was no opposition, and
was declared closed. The system that it is
adopt is a new one so far as this country is con-
sists of incineration by gas, the method chiefly
Great Britain being incineration by coke. The
e invention of M. E. A. Fradet, a member of a

Parisian firm of engineers, whose patent has been taken up at
Paris, Rheims, Rouen and other places. It is claimed for it
that it is both more cleanly and more economical than the coke
system, and that it does not necessitate the employment of
skilled labour. At Rouen a deputation from the Headingley
board witnessed a cremation which involved an outlay of only
3*s*. to 4*s*. in gas.

THE foundation-stone was laid on Saturday of the new
Church of the Ascension in Timbercroft Lane, on the borders
of Plumstead, a district which is being rapidly built upon. The
building, which will be put up in sections, is from the design
of Mr. A. E. Habershon, of Queen Street Place, E.C., Green's
End, Woolwich, and Erith, and will when finished be a welcome
ornament to the neighbourhood. The site of the new edifice
is a good one, with 40-foot roads on three sides of it. The
present portion includes three bays of the nave arcade and one
side aisle and a part of the chancel and vestry. When finished
the church will have one more bay to the nave arcade, a
second side aisle and two transepts, a narthex being under the
main west window. The exterior of the church is in stock
bricks with red brick and terra-cotta bands, the arches over
window and door openings being in alternate blocks of
Doulton's red and buff terra-cotta, while inside are red brick
arches to the nave resting on stone columns, and a red brick
chancel arch, the walling being in yellow brick with red brick
bands and ornamentation. The cost of the present portion
(with seating) will be about 2,500*l*. The builders are Messrs.
J. Dorey & Co., of Brentford.

DR. R. J. REECE attended the Education Offices at King's
Norton on Tuesday morning to hold an inquiry on behalf of
the Local Government Board into an application by the King's
Norton and Northfield Urban District Council, for sanction to
the borrowing of a sum of 5,000*l*. for the purpose of effecting
extensions to their hospital for the isolation of infectious
disease at West Heath. The Worcestershire County Council,
acting under the powers conferred upon them by the Infectious
Diseases Prevention Act, 1903, have required the district
authority to provide accommodation for the treatment of
diphtheria, scarlet fever so far being the only zymotic disease
treated there. The clerk to the Council (Mr. Edwin Docker)
explained that the Council had decided to erect a diphtheria
pavilion, containing twenty beds, at a cost of 1,249*l*, and
further, in view of the fact that there was no ward at the
hospital in which doubtful or suspected cases could be placed

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astle Street, Long Acre, W.C.

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under observation, the Council proposed to provide a special observation ward of twelve beds, at a cost of 1,240*l*. The County Council's suggestion that isolation accommodation for diphtheria should be provided arose in consequence of serious outbreaks of disease during the past two or three years. The balance of the amount was required for furnishing, heating and providing baths, the last-named item being one of 355*l*. There was no opposition to the application.

IMPORTANT additions are being made to the Post Office buildings at York, which will when completed give a building almost double the size of the present office. A larger public office providing a superficial area of 1,400 feet is to be formed, with a central entrance in Lendal, the new counter being 47 feet long, with new postmaster's and chief clerk's rooms adjoining. On the extension site overlooking the river an entirely new block of buildings is being erected, with a sorting hall on the ground floor having a superficial area of about 3,500 feet. In the basement of this block are arranged a large battery-room, truck shelter, linemen's-room and engineer's store, with heating chamber and lavatory accommodation. On the first floor, and immediately overlooking the river, retiring-rooms for postmen and sorting clerks have been provided. The elevation toward the river is executed in Weldon stone, and has been designed to harmonise with the adjoining city offices and Guildhall buildings. The building is erected on fireproof principles throughout, and the work is being carried out by Messrs. Williamson & Co., builders, of Nottingham, under Mr. W. T. Oldrieve, architect, of H.M. Office of Works, Westminster, the clerk of works representing him upon the building being Mr. J. Atkinson. It is anticipated that the work will be entirely completed early next year. The cost of the scheme will be considerably over 10,000*l*.

It has been found that King James's bridge across the Tweed at Berwick is in a condition demanding immediate attention. Regarding its safety, the Town Council have agreed to make certain temporary repairs, and to call in a competent bridge expert to make a thorough examination. The bridge took over twenty-four years to build, and was completed in 1634. It links England and Scotland. The Berwick Corporation receives an annual grant from the Crown for bridge maintenance.

VARIETIES.

EXTENSIVE alterations and improvements are to be carried out at the Earlswood Asylum, Redhill, Surrey.

THE Welsh slate trade is particularly brisk at the present time; a large number of additional men have been engaged at the Penrhyn quarries.

THE new hospital for women opened recently at Leeds upwards of 20,000*l*. The buildings are of brick with terra-cotta facings.

VERY considerable alterations and additions are shortly to be made at the Leeds General Infirmary, the estimated cost of which is about 100,000*l*.

THE North-Western Railway, through slackness of work at their works at Crewe, have reduced several hundred of their men to five days' work per week.

THE Local Government Board have given permission to the Gorton District Council to borrow 8,816*l*. for the purpose of erecting a dust-destructor.

THE Folkestone Town Council have received the sanction of the Local Government Board to borrow 14,950*l*. for the purchase of the land and the erection of a refuse-destructor.

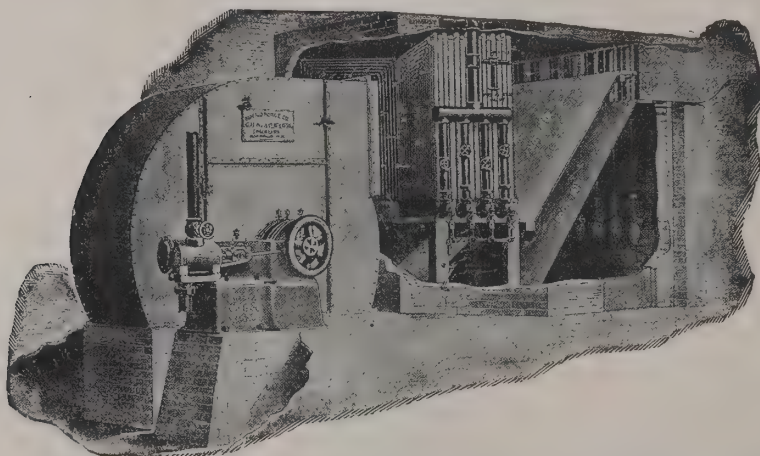
MR. THOMAS WALKER, the engineer to the Croydon Borough Council, has retired from his position after thirty years' service. Croydon loses by this one of its most competent servants.

THE Penge Urban District Council have decided to borrow from the Public Works Loans Board, at interest of 3½ per cent. the sum of 10,908*l*. for the purpose of laying wood pavement on the Croydon and Beckenham Roads.

THE Croydon Council have accepted the design for the new chimney at the electricity works, the shaft to be constructed of specially moulded perforated bricks by the Alphonse Croydon Chimney Construction Company.

A COLLECTION of water-colour drawings by Turner, derived from private collections will be exhibited in Berlin at the galleries of the Berliner Sezession, which will be open to-morrow.

WORK is being rapidly pushed forward in connection with the re-erection of the danger buildings at the Royal Arsenal at Woolwich. In the construction of the new buildings precaution is to be taken to prevent the possibility of future accidents.



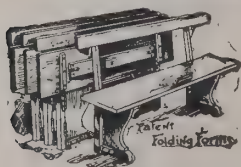
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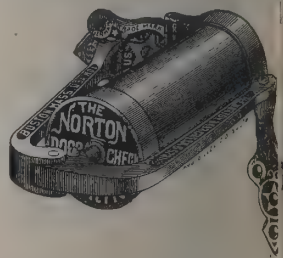
Prices, Particulars, and Samples of all above on Application.

For Index of Advertisers, see page x.

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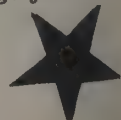
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al has been made for the 1,500*l.* required to com-
id now being raised with the object of restoring
ll of Cripplegate Church, and of acquiring a site
erect a promised statue of Milton.

y Rathaus or town hall of Charlottenburg, a
erlin, is now clear from scaffolding. The tower is
igh, while the tower of the Berlin town hall is only

ln's Inn Chapel a carved oak inlaid panel, in
h the surrounding woodwork, has been placed on
e back of the pulpit, and the old sounding-board,
moved in 1859, has now been replaced over the

CATHAN EDMUND BACKHOUSE, Bart., of Darling-
or of Barclay & Co, Ltd., bankers, London, has
ted a director of the National Provident Institu-
the vacancy caused by the death of Mr. Charles
n.

shop of Truro has informed the Diocesan Conference
es the Victoria Tower of the Cathedral will on
the day of the passing of the late Queen Victoria,
ed by a representative of the King, in the presence
of the tower, Mr. J. Dennes.

REW'S CHURCH, Alexandra Park, Muswell Hill,
separated by the Bishop of London. The church,
s in the midst of a fast-developing neighbourhood,
of which 4,000*l.* has already been received or
Seating accommodation is provided for 800. A
been prepared for seven memorial windows, two of
already been presented.

ban District Council of Acton have decided to
esign of Mr. W. G. Hunt, architect, 17A Vicarage
ngton, London, W, which had been awarded the
the competition by the assessor (Mr. J. Macvicar
R.I.B.A.) for the new public offices and town
Arrangements are being made for the designs
on exhibition for the inspection of ratepayers and
early date, of which due notice will be given.

ning ceremony in connection with the new school
d Free Methodist Connexion took place at Thurlby
ult. Hitherto the scholars have met in the Board
several years ago some property was purchased
e church, and upon a portion of this the new build-

ings have been erected. Provision has been made for two
classrooms, which on special occasions can be thrown into one
room. The building has cost 250*l.*

MAIDENHEAD BRIDGE has been freed from toll. The
bridge was re-erected in stone in 1772, an Act of Parliament
giving the Corporation power to raise by toll the cost, which
was 19,000*l.* Since then the tolls have yielded 120,000*l.*, and
in addition to the bridge possesses a valuable landed estate.
In the twelfth century the citizens of London raised a protest
against the levying of toll at Maidenhead both over and under
the bridge.

THE Perceval Memorial Church at Ealing, the foundation-
stone of which was laid on Saturday, commemorates Mr.
Spencer Perceval, who was shot in the House of Commons
when Prime Minister in 1812. The church will be in Early
Perpendicular style. The material externally will be of Stam-
ford stone, with rock-faced walling in dropped courses, and
internally the floor and chancel walls will be of marble, and
the stalls, pulpit and screen of fumed oak. The architect is
Mr. W. A. Pite.

ASTON'S branch free library at Aston Cross, near Birming-
ham, has been formally opened. The building, which is erected
with every consideration for convenience, provides a lending
department and reading-room, the latter department being at
the rear, in order to obviate the nuisance of the sound of street
traffic. The library has been erected without any cost to the
ratepayers, Messrs. E. & W. Ansell having presented the site
and Mr. Andrew Carnegie having given 2,000*l.* for the build-
ing, which has actually cost 1,900*l.*

THE Marylebone Borough Council will promote a Bill
next Session empowering the Council to borrow the necessary
money to purchase the Marylebone business of the Metro-
politan Electric Supply Company, Ltd., for the erection of
electricity works, to authorise an increase in the maximum
charge for the supply of electricity, and to alter the method of
charging. Power will also be taken to erect generating stations
in the district, to construct a short line of railway connecting
the generating station with the Great Central Railway and
carry out other necessary works.

THE Court of Common Council have been in com-
munication with the London County Council in reference
to proposed steps to be taken for the amendment of the
Building Acts. There has arisen some difference of opinion
between the two bodies, inasmuch as the streets committee had

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asked the Council to be supplied with a rough draft of their Bill for their consideration, but the Council seemed to think it would be better that the committee should send a rough draft. Both bodies are anxious to make what improvements they can in the Building Acts for the protection of human life.

At Priorslee, Salop, on Saturday, a new chancel, which has been recently added to St. Peter's Church, was formally dedicated. The new addition to the church was designed by Mr. Dalgleish, architect, of Wellington. It is lighted by two pointed lancet windows on each side, and the east window has been improved by the addition of a circular light at the top, with the sacred "I.H.S." in the centre. The ceiling is of pitch-pine varnished, supported by a strong principal in the centre, from which is suspended a 25-light chandelier. In front of the Tipton memorial reredos is a carved oak communion table, with triplet panelled front. On each side of the chancel are two rows of seats for the choir.

On the 4th inst. the new church of All Saints, Elland, was dedicated by the Bishop of Wakefield in the presence of a large assembly. The new edifice is in the Early English style, and is designed to accommodate 800 adults. The general scheme for the church shows a nave 111 feet long and 29 feet wide, with a broad circular narthex at the west end, and this is divided into six bays. A lofty arch divides the nave from the chancel. The transepts are thrown out at two eastern bays of the nave, both on the north and south sides. That on the north side forms a kind of nave to the side chapel. This chapel will be of very great convenience for daily and special services, as it is designed to accommodate at least 80 adults, besides giving space to a small choir, and it is so arranged that it can be lighted and heated independently of the church. The roof is of the barrel or waggon form, a style somewhat unusual in Yorkshire, but excellent for acoustic and musical purposes.

The famous sculpture in stone on the walls of the ancient palace at Mashita, in Moab, on the Damascus-Mecca Railroad, has just been acquired by the German Emperor for the Berlin Museum as a present from the Sultan of Turkey. Professor Julius Euting, the well-known Arabian traveller, who has visited Mashita several times, recently drew the attention of the Emperor William to that very beautiful and rare sculpture by methods of photographs and drawings taken by him. His Imperial Majesty is said to have so much admired the design of the carving that, on ascertaining the feasibility of cutting off

the sculpture and transporting it to Germany, he asked the Sultan's permission to take away from the desert the coveted relic of Byzantine art for better preservation in the capital Germany. The Sultan at once acceded to the demand.

THE Winchcombe Rural District Council recently had an interesting discussion about the semi-parish church at Southgate de-la-Bere, near Cheltenham, the mansion adjoining having been the residence of the celebrated Earl of Ellenborough. The church is situated in a farmyard, and the only way to it through the farmyard. Its surroundings, therefore, are not of an ecclesiastical character, and the outside of the building plain; it is said that it was originally nothing but an agricultural barn. Entering the church, however, a stranger is perfectly astonished, as the decorations are very profuse, and there are many pictures, statuettes and ornaments displayed upon its walls and upon brackets set up in every corner and crevice. The solicitors to the estate have made application for the repair of the short bit of road through the farmyard to the church, but the surveyor said the road is not to be found on the parish award or map, neither was the church even marked there. Mr. Griffiths, the local councillor, said the rectors of Bishop's Cleeve had always officiated there every Sunday, and he thought the road should be repaired for the benefit of the public. Without evidence of liability, however, the survey was instructed not to do anything.

ACCORDING to the report and balance sheet presented to the directors of Drake & Gorham, Ltd., at the second annual general meeting of the company, it appears that, after payment of all charges, including bonuses due to staff, there remained a net profit of 16,327l. 6s. 3d., which with the sum 3,245l. 18s. 4d. brought forward from the previous year, makes a total of 19,573l. 4s. 7d., which it is proposed to appropriate as follows:—

By payment of a dividend at the rate of 8 per cent. per annum	£10,000 0 0
By carrying forward	9,573 4 7

£19,573 4 7

During the past twelve months the turnover has been considerably larger than in the previous year, and the increase in the number of houses and factories fitted with the Drake & Gorham standardised system of electric lighting and power has been amply maintained.

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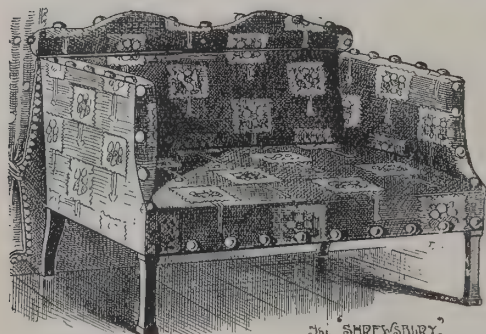
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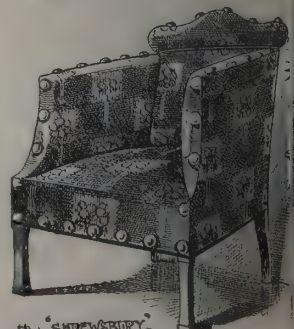


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THE "SHREWSBURY" EASY CHAIR, well upholstered, spring stuffed, and covered with artistic tapestry, finished with large oxidised copper nails, £1 15s.

CORRESPONDENCE.

The Push Button in Lifts.

our issue of October 9 you have an article "Houses." In the course of this you quote from "City Apartments in Paris," by M. Jean Schopfer, regard to the provision in apartment houses in attachment to the lifts (or elevators) of a device the push-button device. The author speaks of it as a novelty, and you therefore append a notice which you properly say "the author apparently is not as to the development by the Otis Elevator automatic elevator service in the United States." There are many readers of your Journal who will be that the device in question is in use in this writer's long connection with the Otis Elevator in this country has made him thoroughly acquainted with its practice, and we beg to say that we are quite satisfied with its merits, and are furnishing where required, the device having all the features of excellence and described in your article.—Yours faithfully,

WM. AUG'S GIBSON, Chairman.

Tr House, 28 Fleet Street,
London, E.C. : October 12, 1903.

our issue of the 30th ult. gives a notice of the goods of the Brilliant Sign Co., Ltd., of Gray's Inn Road, W.C. in the course of certain letters as being "imitation brilliant signs," a large manufacturer of brilliant letters and signs, and the pioneer of popular prices in the market, would call your attention to the following facts. These signs came here originally from Niagara, U.S.A., and were there supplying the goods for the British market through their sole agents, the B. S. Co., Ltd. These signs are of the shape known generally as "segment corner," (more recently called "Segment corner," the "T" probably being too descriptive of their foreign origin) but they were of a shape suitable for a foreign market. I determined to produce an article, equal in quality, but differing in shape, so as to conform to the recognised standard of the home trade. As a proof that such a letter was preferable, my line of goods alone have increased by eight per cent. (800 per cent.), each year's output of which has been made entirely on

my own premises by British labour, showing a decided increase on the preceding year. A certain amount of skilled labour being required to effectively fix the brilliant letters as originally made, I invented and patented a new form of the letter (patent No. 23,409 of 1900), which I introduced under the name of the "Perfect Brilliant" letter, so simplifying this process that skilled labour is unnecessary. My patent, by the way, is the only existing British patent for brilliant letters in any form. The American patent, previously communicated, was abandoned soon after I commenced manufacturing these goods. Those who have followed the course of the advertising letter trade will remember the introduction of the enamelled copper letters from America in the "Boston Block" shape. On a firm of standing here placing a similar article on sale in the British shape the former were entirely superseded, proving indisputably that the public show a just appreciation of a home-made article, and will have it when obtainable.—Yours faithfully,

WM. G. PETHER.

Pether's Sign and Letter Works,
(Proprietor).
58 and 60 Banner Street, London, E.C. : Nov. 4, 1903.

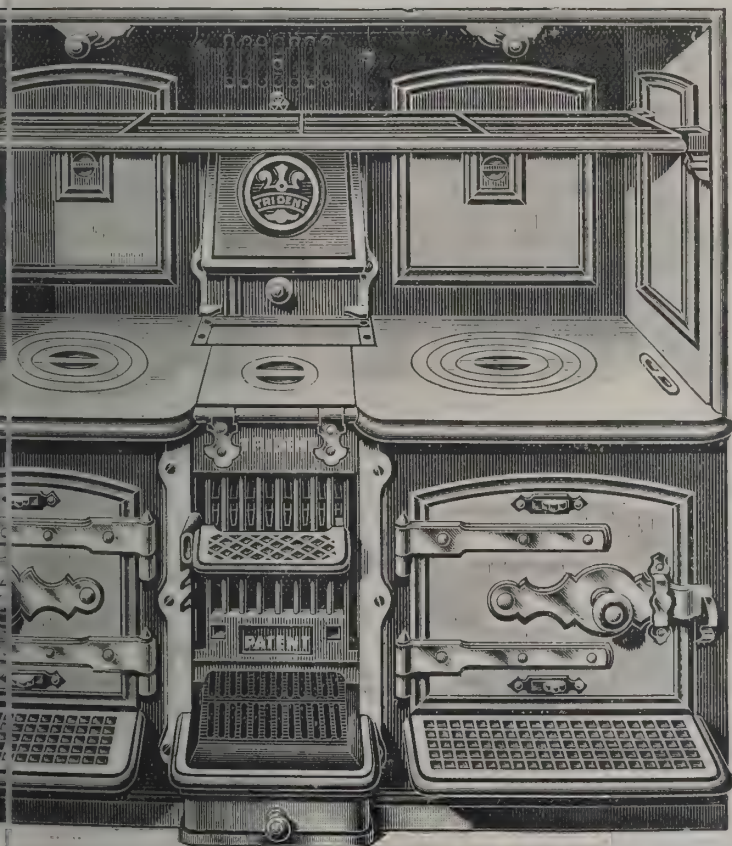
"CORRESPONDENT" asks if a neighbour can put up a lean-to under his building without permission; also what space for ladder room in the country an owner is entitled to

VACUUM AND AIR PUMPS.

IN *The Architect* of October 23 there was reference to the air-pump of Otto von Guericke, of whom a statue is to be erected in his native city Magdeburg. The old philosopher would be amazed if he could see the developments of his invention which are now manufactured by the Pulsometer Engineering Company. The Geryk vacuum-pump (Fleuss's patents), of which there are several varieties, has, since its introduction about ten years ago, found its way into all the civilised countries of the world for the laboratory and for industrial purposes. Previous to its introduction two methods only were in practical use:—(1) Mechanical pumps which could not be depended upon for producing a vacuum of less than one-tenth of an inch off perfect; (2) Mercury pumps of various descriptions, but from their nature slow in action.

The "Geryk" pump has the advantages of both types and the faults of neither. It produces a vacuum comparable with that obtained by the large Sprengel or other mercury pumps; and is infinitely more rapid in action.

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The power required to work it is exceedingly small. It is always ready for use, as the valves and pistons work in oil. It can be made in any size up to 100 or more cubic feet capacity per minute. The larger pumps give a vacuum in every respect equal to that obtained by the smaller sizes. It is not liable to be broken like a mercury pump. The saving of time by the use of the "Geryk" over a mercury pump is apparent when the relative capacities of each are considered. This enables scientific experiments to be carried out which would otherwise scarcely have been possible owing to their tediousness. The "Geryk" vacuum-pump has been exhibited by special request before the Royal Society and the Royal Institution of Great Britain. It is in universal use in incandescent-lamp factories for exhausting lamps, both alone and in conjunction with chemical processes; for flashing and for desiccating.

The laboratory pumps are being largely used for research work.

THE LATE PROFESSOR CORFIELD.

THE part of the "Journal of the Sanitary Institute" last issued contains a portrait and memoir of the late William Henry Corfield, M.D., who served as vice-president, chairman and treasurer of the Institute, besides rendering services in various other ways to sanitation. It is pointed out that he gave cordial support to the late Rogers Field in the reformation of house drainage and plumbing. The writer says:—

"Energetic as were the civil engineers, Rawlinson and Rogers Field, in demonstrating the evils of D-trap, cesspool and direct connection of waste pipes with foul drains, commonly found in dwellings of all classes from palace to cottage of former times, they might not have been able to move public opinion for the adoption of necessary but expensive remedies and to secure the education of those who had to carry out the work without the aid of a scholarly medical scientist of Dr. Corfield's weight and influence. That assistance fortunately was always ready at hand to press on the reform until the true principles of house drainage have become universally recognised, taught at the Parkes Museum and generally observed at the present time. The last occasion on

which he came to the Institute was on December 10, 1902, preside at a discussion on the testing of house drains."

The following interesting note of personal appreciation has been received from a member of Council of the Sanitary Institute who was frequently associated with Professor Corfield in his work:—

It was one of Dr. Corfield's notable characteristics that he was able with great promptitude to sift out of any matter before him the important issues from those which were only of secondary interest. He had an acutely logical mind, and deductions from the premises before him were nearly always acute and sound. It was this faculty which secured so much respect for his opinion, not only on professional matters but on the ordinary circumstances of everyday life, and which made his services to the Sanitary Institute, while serving on its Council and as chairman of its Council, of more than ordinary value. Corfield had in an eminent degree those business faculties which go to the making of a distinguished career in the commercial and many other walks of life, and his abilities were always placed freely at the disposal of those institutions with which he was associated.

Not less admirable were his powers of concentration and capacity for detail. It was always his great aim to be exact in his writings, his addresses and his lectures were characterised by a precision of statement, a clearness of style and the absence of anything in the nature of "padding," which rendered his literary productions of so much value to the student, and caused his speeches to be so highly appreciated by his audiences. He always made a point of verifying his references, and no trouble was spared in the effort to place before his readers or hearers that upon which they might absolutely rely as being correct, so far as human knowledge permitted.

Much of the pioneer work in any new science—and for the practical purposes of modern life hygiene may be regarded as a new science, and Corfield was undoubtedly a pioneer in some of its branches—is liable to be marred by statements which, accepted as correct at the time, have had their accuracy seriously impugned by later and more enlightened research. On a review of Corfield's work it may be said that it is notably free from this sort of blemish. He was always more content with the recording of facts than in the propounding of theories on insufficient foundations, and in consequence his teaching did not lead into by-paths where the right direction along the road of science so often becomes hopelessly involved and finally lost. He was essentially a teacher and a guide in his

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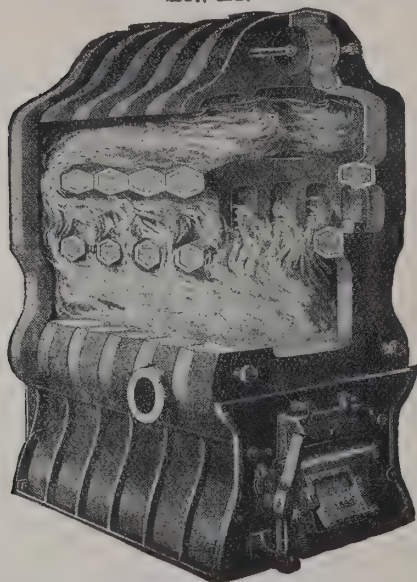


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See "Arch't's Compendium," ps. 262-3.

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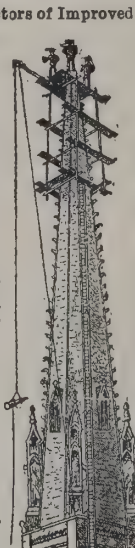
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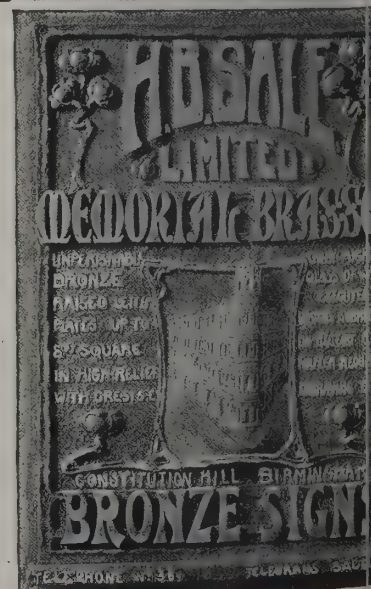
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principles; his common sense and his scientific training and men were his guides and his justification, and the result is his work has been eminently useful, and much of it is of lasting value.

Dr. Corfield was not, perhaps, a deep thinker, in the sense he ever made a profound study of the abstruse sociological problems connected with public health. It is not often that intellect which takes a delight in deep philosophical reasoning is combined with a mental attitude that recognises the importance of detail and a mental capacity for its practical application. The latter was Corfield's strong point. He was essentially a practical sanitarian, with little of the philosophic mer in his composition. It was the same in the studies of leisure time. What always interested him was the practical application of the laws of science, whether in the present or in the past. Roman aqueducts, ancient systems of sewerage, and most primitive forms of privy or water-closet, were to him more seductive studies to him than etiological speculations and theories. His researches into ancient sanitary methods have been published in various periodicals. They are interesting and fascinating studies, and exhibit the best qualities of the author in the subject of his predilection. The Council of the Sanitary Institute might very well consider the possibility of republishing these valuable brochures in a small form as a tribute to the memory of one of its founders. Their republication would undoubtedly give much pleasure to the Dr. Corfield's friends, associates and former pupils.

In his private life and amongst his friends and colleagues Dr. Corfield invariably exhibited that amiability of temper which is the essence of good-fellowship. He was a most interesting and entertaining companion, combining a wide knowledge of the world with a spirit of tolerance for the opinions of those who differed from him, and a frank and pleasant manner. He was always accessible and ready to give his advice and assistance, and he never set himself up on a pinnacle. To this he owed much of his popularity.

Dr. Corfield had been very much out of health for at least years before his death. His malady was at times of a very painful nature, but he always maintained his cheeriness and cheerful anticipations, and he showed but few signs of that depression which is so generally the accompaniment of a mortal illness. The Sanitary Institute, perhaps more than any other society with which Dr. Corfield was connected, has reason to mourn the death of one of its founders and most consistent workers.

COST OF LONDON SCHOOLS.

At last week's meeting of the London School Board, Sir Charles Elliot, speaking on a recommendation of the works committee that a tender amounting to 22,268*l.* for a school to accommodate 1,124 children, with drawing and science-rooms, be accepted, drew attention to the decrease of the cost of building during the past four years. If the cost of the school building were divided by the number of children for whom accommodation was provided the charge in 1901 amounted to 20*l.* per place. In 1902-03 it was 16*l.*, in 1903-04 16*l.*, while in two schools the figure per place had been as low as 13*l.* He desired to know whether the reduction in cost was on account of the building of the schools in three storeys, or whether it was due to the decrease in the cost of materials.

Mr. Lyulph Stanley promised that the matter should be investigated.

LONDON FIRE STATIONS.

The fire brigade committee of the London County Council recommend new stations in substitution of those at Watling Street, Knightsbridge and Shooter's Hill. The total cost is 115,500*l.*, comprising 63,500*l.* for Watling Street, 12,000*l.* at Shooter's Hill and 40,000*l.* for Knightsbridge.

The finance committee remark:—"The capital expenditure for fire brigade purposes has considerably increased during the last few years, the expenditure during each of the years 1900-01, 1901-02 and 1902-03 having been 86,958*l.*, 69,296*l.* and 77,258*l.* respectively, as compared with 20,671*l.*, 33,072*l.* and 22,458*l.* in the three years to March 31, 1892. On existing votes for fire brigade purposes there is at present an unspent balance of about 250,000*l.* (including 143,000*l.* out of the votes of 197,185*l.* and 25,000*l.* for provision of additional protection from fire passed by the Council on February 8, 1898 (page 133), and February 12, 1901 (page 183), respectively, and, in the event of the present proposals being adopted, the total commitments on capital account for fire brigade purposes will be increased to about 370,000*l.* The fire brigade committee inform us that they intend to spread this expenditure over several years, as in the ordinary course they provide for the building of about six stations in each year, those most urgently needed being taken up in turn. We are in communication with the fire brigade committee as to the desirability of equalising their expenditure

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as far as possible, and as to the means by which to effect this object during the years in which the heavy expenditure on the three fire stations now proposed (especially on the purchase of the sites) will fall. In conclusion, we would point out that it is for the Council to decide, after full consideration of the reasons set forth in the report of the fire brigade committee, whether the necessities of London with regard to protection from fire justify the proposed increase in the Council's capital commitments under this head."

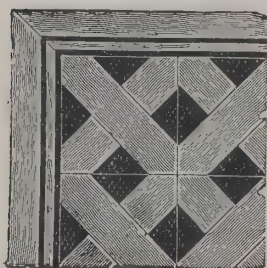
THE LATE MR. J. B. HARDMAN.

WE greatly regret to record the death of Mr. John Bernard Hardman, the head of the well-known firm of John Hardman & Co., stained glass manufacturers and ecclesiastical metalworkers, of Birmingham, which occurred on Sunday at his residence, 130 Hagley Road. The deceased gentleman, says the *Birmingham Daily Post*, who, in addition to his business connection, was the most distinguished Roman Catholic layman in Birmingham and a public-spirited citizen, was only sixty years of age, but his health had been failing for about two years, following on a bad attack of influenza. Latterly he had suffered from heart trouble and other complications, and for the last month or so he had been confined to his house.

Mr. Hardman was born on May 5, 1843, at St. John's, Hunters Lane, Handsworth. His father, Mr. John Hardman, was of a Roman Catholic family which originally belonged to Lytham-in-the-Fylde, Lancashire. James Hardman, of this family, removed to Birmingham in the middle of the eighteenth century, his son, the first John Hardman of local fame, entering into the manufacture of buttons and medals, and founding a highly successful business. The late Mr. J. B. Hardman's father forming an acquaintance with the elder Pugin, became enthusiastically interested in the Gothic revival connected with the accessories of religious worship, and in 1838 he founded the ecclesiastical metalworks, to which in 1845 he added the manufacture of stained glass. For many years he was in daily communication with Pugin, and was associated with him in the establishment of a studio of Christian art at Ramsgate, where were produced the cartoons for church windows which were carried out in Birmingham. John Bernard Hardman received his education at St. Mary's College, Oscott, at the Oratory, Edgbaston, and at the Catholic University of Dublin. He was at the latter

seat of learning in 1863, when the failing health of his father compelled him to give up his studies to return to Birmingham, where in a short time, upon his father's death, he became a partner in the ecclesiastical art business then carried on at Newhall Hill. Mr. Hardman brought to bear a cultivated taste and a high degree of commercial aptitude, and with partners, Mr. William Powell and Mr. J. H. Powell, the traditions of the establishment were maintained and its connections widely extended. In 1883 a separate manufactory metalwork was established in King Edward's Road, where the business was carried on under the title of Hardman, Powell & Co. The fame of Messrs. Hardman's productions became very widespread, and it may safely be affirmed that there are few of the principal churches in the country, either Roman Catholic or Anglican, which have not some piece of work—window, lectern, memorial brass, or altar vessels—from the establishments.

A man of singularly unassuming demeanour, Mr. Hardman nevertheless took his share in the public affairs of the city. In 1876 he became a member of the Board of Management of the General Hospital, and last year was appointed chairman of the body. He was also for four years a member of the committee of the General Dispensary. In 1874 Mr. Hardman was invited by the British Commissioners of the International Exhibition at Vienna to act as English juror for exhibits in art metalwork and jewellery, and for these services he with other jurors received the honour of being made a Chevalier of the Order of Franz Josef of Austria. Mr. Hardman was a Conservative politician, but never associated himself with the party organisation. A vacancy occurred in the municipal representation of St. Mary's Ward in February, 1879, through the resignation of Councillor Kneebone, and all parties were gratified when it was announced that Mr. Hardman had consented to allow himself to be put in nomination as a non-political candidate. He was returned without opposition, and was three times re-elected unopposed. In the Council he gave steady support to those progressive developments to which Birmingham owes so much, but which ultimately were attended with some measure of reaction. In November, 1895, Mr. N. M. Hennessy came on in opposition, and Mr. Hardman was unseated. He did not again seek to enter the Council. Mr. Hardman was a member of the estates committee throughout his association with the Council, and in 1883 and 1884 he was its chairman. For some years he was a member of the lunatic asylums committee and was chairman of the sub-committee which supervised the



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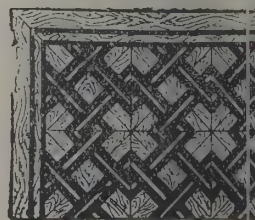
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gement of the Winson Green establishment. Having actively connected with the old School of Design, Mr. man was, upon the school being taken over by the Cor-on, made a member of the new museums and school of committee. He took very great and practical interest in work, and it may be recalled that about the time that his action with the Council ceased he gave an interesting ss to the students at the central school. Mr. Hardman also a member of the art gallery purchase committee, to scharge of whose trust he was able to render valuable ance. For a short period he was a member of the free ies committee, and he was also chosen as a member of 's Trust, upon which he served as bailiff in 1886. One 's last public services was as a member of the Lord 's committee for arranging the local celebration of the s Coronation.

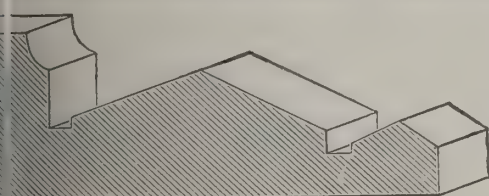
NEW CHURCH AT SANDIWAY.

new church of St. John the Evangelist at Sandiway was lly opened on the 26th ult. Completed save for the on of the spire on the tower, the edifice is alike orna-l and comfortable. The church consists in plan of nave, porch, chancel, organ chamber and vestry on the south. The whole is built of mottled red sandstone from the Crosses quarries, near Frodsham. The interior is of led stone; the roofs and ceiling and the chancel are of a solid character, and are executed in oak. The nave and el fittings are in brown ash; the organ case and fittings sacarium are of oak, the former richly carved, and on ont is embellished with sculptured angels holding a deep , with the words from the Benedicite, "O let the earth the Lord; yea, let it praise Him and magnify Him ver." The floor of the sacarium is of vari-coloured es, the sedilia and credence on the south side being carried ith architectural effect. The altar rails are of ornamental ight-iron capped with oak rail. The frontals of the altar and orsal are of richly ornamented needlework. The ornaments altar are the gift of Mrs. Park-Yates, to the memory of e late husband, Capt. Park-Yates (for many years Master e Cheshire Hounds, who formerly resided at Sandiway), est window of three lights is filled with painted glass, the ts being "Faith," "Hope" and "Charity." The window aced here by the ladies connected with the hunt. The

east window, and also two windows in the west end and one in the tower over the font, are filled with stained glass. The latter represents the baptism of Our Lord by St. John. The church is heated by hot water and the lighting by acetylene gas, by separate cell generator (the work of Messrs. Kerr & Stewart, Manchester), and the gift of Mr. E. L. Clarke. The brass eagle lectern is to be used also as pulpit until the latter is provided. The exterior roof is covered by small Westmor-land green slates, and on the north side of the chancel is a sculptured niche with the patron saint of the church, St. John the Evangelist, and also on the angle near it are the arms of the bishopric. The churchyard is enclosed on the side next the high road with a substantial wall and stone lych-gate, having gates of oak with appropriate ironwork. The work has been carried out by Messrs Beckett & Co. as general con-tractors, and the masonry by Mr. John Palmer, of Frodsham; the chancel and other fittings by Messrs. W. & F. Brown & Co., of Chester, and the organ case by Mr. H. F. Thomas, the architect being Mr. Douglas, of Chester.

TOTHILL STREET, WESTMINSTER.

THE historical records and buildings committee of the London County Council have received a petition from owners and occupiers of premises in Tothill Street and the Broadway, Westminster, asking that those two thoroughfares may be incorporated with and under the name of the Broad Sanctuary, and the houses and premises numbered consecutively between the Westminster Hospital and Queen Anne's Mansions. They have also had before them a letter from Mr. Perks, M.P., forwarding a petition from owners and lessees of property in Tothill Street in favour of the proposal. The reasons advanced by the petitioners are briefly:—(1) That during recent years the character of the thoroughfare has entirely changed: (2) that Tothill Street and Broadway form a natural continuation of Broad Sanctuary, and that it is inadvisable to have three names for a short length of thoroughfare where one would suffice; and (3) that the name Tothill is but imperfectly connected with the history of the locality. To assist them in their consideration of the matter the committee have had the advantage of a detailed report from Mr. Gomme, the clerk of the Council, upon the historical associations bound up with the names of Tothill Street and Broad Sanctuary. The main con-



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clusions of this report are as follows:—Tothill Street, although possibly outside the actual area of Tothill Fields, from which it derives its name, probably formed one of the boundaries of that area, and is thus legitimately entitled to the designation. It has, moreover, borne that name for about seven centuries. The name possesses associations of the highest antiquarian and historical interest, bearing witness, as it does, to the former existence in the locality of a toothill, or "look-out hill," the names of many of which are scattered over the country, the particular one in question having possibly been the site of the folk-moot at Westminster. Having regard to these considerations, the committee are of opinion that the name Tothill Street, which the thoroughfare has borne from very early times, is one that should not be altered for other than the very strongest reasons, and they cannot admit that such reasons have been adduced. There was, further, no evidence that the privilege of "sanctuary" attached to the Abbey precincts ever extended further west than the limits of the present "Broad Sanctuary." They accordingly recommend that the request of the petitioners be not acceded to.

THE HOUSING QUESTION IN LIVERPOOL.

THE Liverpool Corporation may be congratulated on their spirited action in relation to the housing of the labouring classes difficulty as exemplified in Hornby Street area scheme, which was inaugurated on Wednesday last by Her Royal Highness Princess Louise (Duchess of Argyll), who on that day laid the foundation-stone. The Hornby Street area, which comprises Hornby Street, Tatlock Street and Raymond Street, was acquired by the Corporation as an "unhealthy area" under the powers of the Housing of the Working Classes Act, 1890. The medical officer of health (Dr. Hope) reporting on Hornby Street and Upper Mann Street (which will subsequently be taken in hand by the Corporation), said that "both are unhealthy areas, are both characterised by unusual prevalence of sickness of all kinds, and their rates of sickness and mortality, as compared with those of the rest of the city, are excessive."

The Hornby Street area contains 26,025 square yards. The total number of insanitary houses acquired is 511, in addition to which there are 23 sanitary houses, making a total of 534. The population of the insanitary houses is 2,431, and by the terms of the Local Government Board's provisional

orders confirmation (Housing of the Working Classes Act, 1902) the Corporation are required to provide accommodation for the area for the number of persons dispossessed. The new dwellings comprise 23 blocks, or 445 dwellings, which it is estimated will accommodate 2,446 persons. There are 48 four-roomed dwellings, 270 three-roomed dwellings, 90 two-roomed dwellings and 36 one-roomed dwellings, a keeper's house, 7 shops and a recreation ground containing about 1,755 square yards. In Hornby Street the new dwellings are set back from the present line of street, so that for a considerable portion of the length of this street the width between the main line of new dwellings will be 70 feet. Each house is provided with a separate w.-c., and also with a separate scullery. The buildings as a whole are three storeys in height, each living-room containing at least 150 superficial feet, the principal bedroom 100 superficial feet, the second bedroom 100 superficial feet, and the third bedroom, where one is provided, between 80 and 100 superficial feet. The average height of the rooms is 9 feet clear. The materials used in the construction are local brick with red brick dressings, buff terra-cotta being sparingly used, and only in the entrances. All the staircases are lined with glazed bricks, the roofs slated, and the floors constructed with small iron joists with coke breeze concrete, the floor boards being nailed direct on to same. The ashes are discharged into bins by means of shoots at the back, and are collected daily by carts.

The first portion of the scheme has involved the demolition of 145 houses, and it is interesting to note that 71 per cent of those tenants have availed themselves of accommodation provided by the Corporation in the immediate neighbourhood. The new dwellings on the site of this demolished area will contain 138 houses, and it is proposed that when the first portion is completed another portion will be demolished and the dispossessed tenants from such portion will occupy the new houses now in course of erection. In this manner it is thought that the whole scheme can be carried out in three portions. The contractors for the first portion are Messrs. Joshua Henshaw & Sons, of Chatham Street, the amount of the contract being 23,382*l*. The estimated cost of carrying out the scheme in its entirety is 150,000*l*. The Local Government Board are now considering the terms upon which the Corporation shall be allowed to borrow the money, and it is hoped that, having regard to the increased period allowed by the Housing of the Working Classes Act, 1903, the Board will allow eight years for the repayment of the loan for the purchase of the



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and sixty years for the repayment of the loan for the erection of the buildings. With regard to the rent, it is stated that if the one-roomed dwellings are let at 2s. per week, the two-roomed at 3s. per week, the three-roomed at 4s., the four-roomed at 5s., and taking the estimated value of land for dwelling-house purposes, the scheme will return 10 per cent. net. When this (Hornby Street) scheme and other schemes in operation are completed it is estimated that the Corporation will have provided 1,697 tenements, which will be rented exclusively by those who have been dispossessed by the operation of the Corporation in demolishing insanitary premises.

SOCIETY OF ENGINEERS.

A meeting of the Society of Engineers held at the Royal Institute of Service Institution, Whitehall, on Monday evening, November 2, Mr. J. Patten Barber, president, in the chair, was read on "The Bacterial Treatment of Sewage," by George Thudichum, F.I.C., F.C.S., and of which the following is an extract:—

The author prefaced his remarks by stating that the extensive experiments which had been carried out during the seven or eight years by various authorities had yielded results very gratifying to those who had first introduced bacterial methods. The principle that sewage could, in the majority of cases, be purified by biological means alone is now found practically universal acceptance, that being endorsed by the interim report of the Royal Commission now pending. He pointed out that, that being so, there was no longer any need to argue as to principle, but the best methods of application might still be discussed with advantage. The two main points which were still being argued were (1) the relative merits of the anaerobic or septic, compared with the aerobic or coarse-grain contact system; (2) the various ways of applying the effluent from the preliminary treatment to the finishing filters.

The author then proceeded to discuss the first point, and in setting out the arguments pro and con at some length he fully gave it as his opinion that the anaerobic process was in accordance with the teachings of nature and, moreover, possessed certain specific advantages over its rival, such as the averaging of the sewage flow; the greater ease with which regular periodic working of the filters could be obtained;

the absence of trouble from loss of water capacity through deposition of solids; and the easier and cheaper cleansing if necessary.

The necessity for covering a septic tank was then dealt with, the author stating that he thought it desirable, since it prevented disturbance of the bacterially active scum, avoided risk of nuisance and enabled use to be made of the gases evolved during the putrefactive process, as was actually done at Exeter. As regarded the question of the best method of applying the primary effluent to the secondary beds, the author hesitated to express an opinion, since excellent results had been obtained by either method, and the evidence available was not yet sufficient to enable a definite verdict to be arrived at.

The author then discussed the question of sea outfalls, and the possibilities of pollution of shell fish by sewage or sewage effluent. He thought that in some cases the standard demanded was too high, and suggested that reasonable safety was all that should be asked for, since absolute safety was practically unattainable. The author concluded by pointing out how the present methods of sewage treatment had been gradually built up, tracing the growth of the so-called Sutton system from its early commencement to its maturity.

ENGINEERING AND SCIENTIFIC ASSOCIATION OF IRELAND.

An ordinary meeting of the Association was held on Monday, the 26th ult., at 9 Merrion Row, Stephen's Green, the chair being occupied by Mr. John Holliday, vice-president.

Letters of apology were read from Monsignor Molloy, Colonel Plunkett, Sir Horace Plunkett, and others.

The following were elected into the Association as members:—Messrs. Alder, H. C. Brett, Sir Charles A. Cameron, C.B.; A. Campbell, A. Dickson, H. T. Radley, A. Hamilton, George Hanlon, S. Hill, W. Hoult, W. Medcalf, H. Milling, F. G. Sheffield and A. R. Wayte. As Associates:—Messrs. D. Anderson, J. Merriman, A. Ponton.

Professor W. E. Lilly, M.A., M.I.C.E.I., member, read a paper on "The Relation of Engineering and Science," in the course of which, after a brief review of the engineering works of the ancients, and the mischievous effect of the fallacy of a double system of natural laws, he referred to the marvellous progress of the industrial arts and science during the last

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century, and emphasised the necessity for a liberal education, more especially for those engaged in engineering and science. He said the Universities had now established schools for training in engineering and science, and given facilities for research that were undreamt of in the past. The engineering laboratory of Trinity College, with which he had the honour of being connected, had now been in operation for nearly a year, and experiments on the strength of the materials of construction and other tests had been carried out. He illustrated his remarks by showing specimens of the materials used, and some of the results of the experiments which had been carried out. The practising engineer had not, as a rule, time or plant for carrying out such tests, and often had to rely upon the maker's test that the material was up to the required standard. The laboratory had been thrown open to the profession to allow of such tests being made, and many practical tests of various kinds were at present being carried out on the plant installed there. The relation of engineering and science was closely connected with the objects and aims of the Engineering and Scientific Association of Ireland. There were many kindred institutions, the membership being, as a rule, confined to those specialising in the various branches of engineering and science, but an Association such as that, whose members were of various professions and occupations, appealed to a larger circle, and had a more general interest. From the zeal shown by the members in promoting its welfare he augured well for its continued existence and its usefulness, and hoped it would develop into an Association of which all Irishmen might be proud.

A demonstration and discussion followed, and the thanks of the meeting having been conveyed to Professor Lilly for his able paper, the proceedings terminated.

MANCHESTER IMPROVEMENTS.

A REPORT which has been made to the improvement and buildings committee of the Manchester Corporation by the city surveyor shows that vacant or residue land to a total value of 335,881*l.* was sold during the ten years 1894 to 1903, that sum including 35,360*l.* received for vacant land transferred to other committees of the Corporation. Of this property 295,347*l.* worth was disposed of by private treaty and 40,000*l.* worth by public auction. Properties have been purchased by the committee at a cost of 134,231*l.* in Hanging Ditch, Cannon

Street, Great Ducie Street, Factory Lane, Rochdale Road, the value of the residue not required for street improvements estimated approximately at 112,243*l.* This sum, when revivied together with the value of the residue land resulting from Ardwick and other improvements, will be brought into annual account on March 31 next.

The estimated value of the residue land now in possession of the committee is approximately 190,000*l.* During the period under review the surplus lands of the committee were offered for sale on two occasions only. In December 1898, when forty-two plots of land, of the total estimated value of 282,200*l.* were offered for sale, twelve lots were sold and realised 30,000*l.* The second sale took place on March 20, 1901, when property to the value of 1,034*l.* was sold. Twenty-two lots, valued at 80,000*l.*, were offered, and only one lot was disposed of at auction.

After reviewing the method of procedure in these matters by the authorities of the county of London, the City of London, Glasgow, Liverpool, Birmingham, Sheffield and Bristol, the city surveyor says a balance of opinion in other towns is shown to be in favour of offering all property for disposal by public auction, whether it be for sale outright or on chief, or sub-lease only to lease for a period of years. The sale of Corporation property by public auction, when properly advertised and conducted under suitable conditions, has everything in its favour, and is free from the objections that can be advanced against the disposal of public property by private treaty without giving the ratepayers and the public generally the option of purchase. The city surveyor suggests for the consideration of the committee the advisability of periodically holding a sale by public auction of all property in the committee have for disposal; determining as soon as possible after each property has been acquired upon the method of disposing of the residue—namely, whether by sale on chief, or by lease for a period of years; and providing copies of conditions of sale, with plans and other necessary particulars relating thereto, immediately after the committee have determined upon the method of disposal, such particulars, with the probable date of the next sale of property, to be available for the information of intending purchasers.

The report was submitted to the committee, which was last of the municipal year, and consideration of it was deferred until a future day. Councillor J. R. Wilson, as chairman, and the Lord Mayor, as deputy-chairman, were thanked for their services in the past year.

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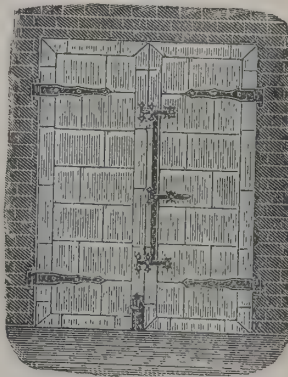
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The Architect.

THE WEEK.

lancholy end of the life of SILVANUS TREVAIL by hand suggests the evil of over-exertion which is mon in our time. As a busy architect and member of public bodies in Cornwall there was enough to his attention. But Mr. TREVAIL was induced to a prominent part in what may be called the politics of session. With as much ardour as if he were entirely championed the project of registration of architects, involved more worry and anxiety than the preparation for a large building. Mr. TREVAIL also advocated for the transformation of London, which would have even more powerful influence than was supposed GEORGES HAUSMANN when he adapted Paris for its use by cavalry charges and artillery operations in revolution. Mr. TREVAIL wished, moreover, to go on in other directions, and his failure to obtain the Institute Council revealed how he was feared for his force. He was confident of success, and defeat he became a different man. There could be no question of his possessing an unusual amount of energy and the precipitancy with which he turned it to himself is the more to be regretted. Mr. TREVAIL was to be a strong man who could be useful in his position for several years to come. He rendered many services to his fellow Cornishmen, which were gratefully acknowledged. But his success made him believe he was under still wider responsibility. He endeavoured to hold a commanding position in London without realising the entail, and as London did not yield to a first despair with its consequences led to the tragedy of

collection of etchings and dry-points belonging to the late TIMMER MENPES which can be seen in Messrs. PHILLIPS'S galleries is to be considered as representative of the late Mr. WHISTLER'S work at one period. It does not, therefore, exemplify all the moods of the artist. The etchings belong to a later time, and although they are prized by WHISTLER, they will not do much for the reputation hereafter. Mr. MENPES claims that his work is absolutely unique in their perfection, and belongs to a middle period, when WHISTLER'S best work was in course of production. A man with such dexterous hands and which were rarely in repose, could always find something for strokes in his plates, and Mr. MENPES says, "I printed he worked, engraving on the plate itself the process of printing." The various states—there are a dozen of *Irving as Philip of Spain*—are revelations of curious individuality that prized its simplest and would not accept suggestions, but yet was impelled towards changing. It is evident also that he wished to make the mechanical process of printing an aid to variety. Much interest will also be taken in etchings which are touched up with Indian ink or wash, and in some instances with extreme care. It is also that he often preferred French or Dutch to Japanese. From its peculiar character the exhibition cannot be considered as supplanting any other of its kind, but are to have only partial revelations of WHISTLER.

any exhibition of portraiture will find much that is interesting in the exhibition of the Society of Portrait Painters in the National Gallery. The collection of modern mezzotints, and engravings to be seen on the walls of the gallery could by themselves form a useful display and one which would be improved if the photographic reproductions were eliminated. Many of the oil-paintings are of the highest quality. Mr. ORCHARDSON'S *Sir David Stewart of Bantry* is a Provost of Aberdeen, although a daring experiment in colour and pink, dwarfs the magistrate. The late Mr. BURTON was not a good subject, and allowances should be made if MILLAIS'S portrait does not meet the usual standard. Nor are Mr. WATTS'S two portraits of ladies entirely satisfactory. It is not unlikely

that the majority of visitors will find most interest in the foreign contributions. Professor VON LENBACH'S *The late Right Hon. W. E. Gladstone* is a really creditable performance; the strong features are excellently rendered, but they are hardly suggestive of that tendency to smiling which was the Minister's characteristic. Señor ZULOAGA'S *Gallito et sa Famille* must be destined to be hung on some very big wall. As so often happens with Spanish painters, the subjects have not the average amount of national beauty, defects are defiantly displayed. The late BENJAMIN CONSTANT'S *Lord Savile*, although showing a sportsman with his dog and his gun, is happily not reminiscent of France. Another deceased artist, Mr. WHISTLER, is represented by a full length in a red robe with a black boa, entitled *Rouge et Noir; L'Eventail*. It suggests the certainty of the painter's process, for there is no experimenting. We can realise what he intended from what we see. The busts are interesting. Seven out of the thirteen are by the late ONSLOW FORD; two are by M. RODIN, and are more effective than some of his full-sized figures.

As long as the Public Health Act is unrepealed we suppose it will be impossible to determine what is a "drain" and a "sewer"; whether they are identical or entirely different in character. But by a process which is certain, if very slow, the Courts are gradually classifying the conductors of refuse in such a way that the want of precision in the Act will cease to be an evil. For instance, on Saturday the Court of Appeal decided that an open drain at the side of a road could be sometimes brought within the purview of the Act, because in the definition of "sewer," the words "drains of every description" are employed. The plaintiff, who lived in Milbrook Road, Dinas Powis, sought an injunction to restrain the local district council from permitting noxious matter to remain in a drain which ran by the road, and he claimed damages because of expenses incurred during the illness of his daughter, which arose from the state of the drain. When the case was heard at the Cardiff Assizes, Mr. Justice PHILLIMORE considered the drain was a sewer which the defendants should keep clean, and he awarded 30*l.* damages. The Local Board appealed. Their Lordships held that the drain received the rain-water from the roofs and the surface water of the curtilages, and conveyed both to the gratings of a sewer, which carried the water away. It was different from an agricultural drain, which might not be a sewer. Mr. Justice PHILLIMORE was right in holding it to be a sewer, although in other cases a similar drain might be different.

ANY reputation which ARY-SCHEFFER is likely to enjoy will, except among a few, depend on the interest of the engravings after his pictures. His *Christus Consolator*, *The Temptation of Christ*, *Mignon*, *St. Augustine* and *Monica*, *Faust* and *Marguerite*, are known everywhere by means of the plates from them. It was therefore fitting that those who wished to conserve his memory should have endowed the Academy of Fine Arts with a sufficient sum to enable a prize of 4,000 francs to be occasionally bestowed for the best engraving made by a living artist. ARY-SCHEFFER died in 1858, but the prize was awarded for the first time on October 31 of the present year. The recipient is M. JULES JACQUET, a professor at the Ecole des Beaux-Arts, and the work selected is the fine engraving "1807," after MEISSONIER. There will be no questioning the justice of the decision. ARY-SCHEFFER was of German nationality, but when very young he went to Paris and began the study of art. He became a friend of the sons and daughters of LOUIS PHILIPPE, and from them received several commissions. His pictures from scenes by GOETHE, BYRON and DANTE helped the Romanticists. After the fall of the ORLEANS dynasty he began to paint religious subjects. His colouring was never satisfactory, and was often ridiculed by HENRI HEINE. Among his portraits is one of CHARLES DICKENS, who considered the painter as "a most noble fellow," but said the portrait did not look at all like, and if he saw it in a gallery would not have supposed he was the original. There is an interesting biography of SCHEFFER in English by Mrs. GROTE.

A PROJECT OF FLAXMAN'S.

IT is inevitable for every sensitive artist to be desirous, at one time at least in his career, to express the colossal. Poets and musicians, equally with architects, painters and sculptors, have had the same ambition to produce works which are not to be measured by the ordinary scales. Nature does not fail to inspire them by a variety of examples. The Egyptian sculptors may never have come near mountains, but they were acquainted with vastness in plains and deserts which exercised a like effect. It sometimes happens that littleness suggests its opposite, and an artist can be bounded, like HAMLET, in a nutshell, and yet count himself a king of infinite space.

Nor is it requisite to be a man of vigorous physique in order to be ambitious to undertake colossal works. MICHEL ANGELO probably felt some affinity with his brawny sibyls and prophets. But what is to be said about JOHN FLAXMAN? He was a weakling from his birth, and it was owing to his incompetence to share in children's games that his infancy and boyhood were spent in contemplating the models and plaster casts in his father's shop in New Street, Covent Garden. Yet FLAXMAN was fascinated by the colossal. In his lectures he dwells upon colossal statues as if they formed a necessary rather than an exceptional division of the sculptor's art. He evidently looked forward to a time when more should be known through the aid of gems and coins about the appearance of ancient examples. The 60-ft. statue of the *Zeus* of Elis was affirmed by him to be renowned "not for stupendous magnitude alone, but more for awful majesty and sublime beauty; it was adorned with all the charms poetic vision could bestow, embodied by labours which have been the wonder and the school of all succeeding ages." FLAXMAN dwells on the details of the *Colossus* of Rhodes with the simple belief of a compiler of a book of wonders. He tells us that "when lying on the ground this work appeared miraculous. Few were able to embrace the thumbs, and the fingers were larger than many statues. Vast caverns yawned in the broken limbs, and within were seen great masses of stone, by whose weight it was supported. Twelve years were employed in the execution of it, and the cost 300 talents, about 60,000*l.* English."

About the time he was elected an Academician, or 1800, he was not satisfied with pondering over the difference between London and Rhodes, the latter possessing, as he said, besides the *Colossus*, a hundred other huge statues. He resolved to seek an opportunity to erect a figure which would be, in his own words, "the noblest monument of national glory in the world." The *Colossus* of Rhodes was 105 feet high; the *Zeus* of PHIDIAS was a seated figure 60 feet high, and might therefore when standing be supposed to be 72 feet; the *Zeus* of LYSIPPUS, which was placed before the theatre of POMPEY in Rome, was 60 feet; but the *Britannia Triumphant* which FLAXMAN contemplated, with its pedestal and basement, would have a height of 230 feet.

That height did not mark the limit of FLAXMAN'S power. He would, we imagine, have considered himself equal to undertaking a much larger figure. But the Committee for Raising a Naval Pillar or Monument had proposed 230 feet as the measurement of the architectural or sculptural work for which designs were invited.

FLAXMAN, in sending his design for a colossal figure, accompanied it with a letter in which he endeavoured to prove the superiority of that class of memorial to any other. If an obelisk were adopted it would be necessary, he said, as in the case of all imitations of ancient architecture, that its principles and character should be preserved. The height of the Egyptian obelisk, according to him, "is in general about ten times the breadth of its base, which, being mounted on a pedestal and plinth, the whole height could not be less than 12 diameters—a proportion much too slender for that strength and permanence which the monument in question should present. Besides, the character of the obelisk is so simple no ornament seems capable of being harmoniously united with it, excepting the hieroglyphics with which it was charged by the Egyptians."

The triumphal arch he thought to be liable to objections. First, it could not well be covered with bas-reliefs representing the engagements it was intended to celebrate, like the ancient arches, because sculpture did

not represent shipping with effect—and the great British victories were naval—but chiefly because the arch, consistently with a beautiful proportion, could not be raised sufficiently high to make a distant stately object. The column FLAXMAN considered to be preferable to the arch and the obelisk. It made a high and striking object with greater bulk and firmness than the obelisk; it was simpler than the arch and could be surmounted, surrounded and defended by such statues, trophies and architectural forms as the portraits of the heroes, the spoils of the conquered and the records of the national prowess required, thus making one great, harmonious and magnificent position. It was possible also to have the meta of a circus, the figure of a temple or a pharos, but they were not equal to the column. All were, however, inferior to the colossal statue, which might be built by the same kind of labour and with the same durability as a column, and have its proper or desired accompaniments, and in these respects would probably not be more expensive than the column.

The memorial which was desirable should, in the opinion of the sculptor, "be worthy of the grandeur of the country and the mighty objects it is intended to perpetuate, and should be a decided proof of the excellence of our artists, the skill of our mechanics and builders, and in all respects a fitting memorial of the magnanimity, virtue and wisdom of the country." As regards the expense, FLAXMAN mentions that the memorial of the Fire of London cost 14,500*l.*, a sum that would be equivalent to 29,000*l.* or 30,000*l.* at the beginning of the nineteenth century. "Surely," he says, "the spirit of the nation will feel that a memorial of such great singular blessings it enjoys, its wealth, its power, its unrivalled naval prowess, neither should nor could be equalled at the same expense as was extracted from wretchedness to perpetuate the remembrance of calamity." Doubtless the expense of the Monument would not, he maintained, be excessive. The sum of 50,000*l.* could, according to FLAXMAN, be obtained by 200,000 subscriptions of 5*l.* each, or 1,000,000 shilling subscriptions. As there were 12,000 parishes in the kingdom the money could be collected in a manner neither burdensome nor disagreeable.

The site he suggested was the summit of Greenwich Hill, for there "the gradation of scenery from the Thames rising with the fine architecture and porticoes of the naval hospital of the country, continued with the ground of woods and connected by the Observatory, such a finish, would afford a sublimity of prospect to be equalled in any other place."

It is needless to mention that neither FLAXMAN'S project nor any of the artists' in the same competition was accepted. The national memorial committee was chosen from time to time, and it was proposed to have the monument commemorative of military as well as naval triumphs, in the end the column and its immediate surroundings at Trafalgar Square were the indirect results of all the vain efforts.

Whether FLAXMAN would be equal to the undertaking of so colossal a work is doubtful. Evidently he recognized that a great part of the interior of the figure could be built up in courses by ordinary masons. If so, there would be some analogy between it and the statue of *Enlightening the World*, which the traveller from New York sees when his steamer is about to enter New York. As is well known, the interior of the latter is made of a complicated system of girders designed by EIFFEL, and having bolted to them a large number of copper plates beaten out to the shape required for the draped figure. It cannot be said that FLAXMAN was successful with the statue of the men who took part in the French war. He was not a master of proportion, or, rather, he adopted a system of production which led to defects in that quality. His work was worked from models larger than half size. Errors were consequently exaggerated. The statue of Earl Fitzroy St. Paul's was so shapeless after completion, it was necessary for FLAXMAN to spend months in operating on it with a chisel, and it is still lumpish in appearance. He was likely to change his system for the *Triumphant Britannia*, and, indeed, his model would hardly be more than a model of the full size. Towards the close of his life he employed large models, and the benefit derived from them is not

St. Michael, which is generally estimated to be his important work. It was impossible to record of him that he enjoyed the patronage he merited, and on that account his studio was never in the best of CUNNINGHAM, in describing a visit to the sculptor, that in the studio in Buckingham Street, Fitzroy, "there was but one chair and a small barrel, which he sat on, with a board laid over it. On the former he reclined and occupied the latter himself, having removed a white black cat, who seemed to consider the act as his own."

It must be admitted, however, there were some possibilities in favour of the work being successful. FLAXMAN was making for personifications and beings in whose representation imagination could exercise some power. His *Nelson* therefore might be superior to his *Nelson*, though one was an abstraction and the other a true hero. His maxims was that whatever was produced from rules and rules, even if the manual labour be most perfect, is nothing but a mechanical exercise. He did not in sentiment, and as at the time Britannia was being more than a figure on coins to him, as to other men, the realisation of his design might have given the world a new aspect of that genius he undoubtedly had. In later times we are less disposed in England to look at the colossal. In Germany, on the other hand, the memorials of the war of 1870 are unusually large, and sites for them are well chosen, and in consequence seem to be advantageous.

PRINCE BISHOP AND TRADING.*

The archiepiscopal city of Olmütz, in Moravia, is beyond the ordinary circular tours of Englishmen and travellers from Western regions. It has a population of about 22,000, of whom a third are Czechs and two-thirds Germans. The people brew, distil, manufacture starch, sugar, &c. It was once fortified, and was thus sustained a siege by FREDERICK THE GREAT. Its rulers and inhabitants have lost faith in that kind of defence. The fortifications are now transformed into parks and public gardens. The siege of 1758 has done for Olmütz the distinction of being made the subject of a slight but graphic sketch by THOMAS CARLYLE, in the main outlines continues to be true of the city. He tells us that "Olmütz is an ancient, pleasant city in the Plains of Mähren, romantic, indistinct to the English mind, with domes, with steeples eminent in its size, has its prince archbishop and ecclesiastic" with much else which need not be repeated here. The prince archbishop and some of the ecclesiastical form our theme. The race of prince archbishops is almost extinct. England for many years possessed one whom who was among the most powerful of the class. Now who survive are looked on as types of rulers of little relation to our time. What they do and how they differ from bishops who are not princes unless in an historical sense not many care to inquire. In a very few cases they are likely to be found in histories alone. On account we desire to bring before our readers an action and defence of the prelate who holds so distinguished a position in Olmütz. The ecclesiastical affairs of the principality are as vague to the English mind as they were in the middle of the eighteenth century. But the prince is to be drawn from the volume before us is that ecclesiastical prince is an inexhaustible subject for mention in newspapers, and he is charged with expending large sums on purposes which do not bring much credit to Moravians, Austrians or the world in general. It is to be alleged that in the barrack-like palace the numerous inhabitants have no occupation more profitable than that of killing time, feeding well and talking. The prelate seems to be engrossed by ecclesiastical duties which are so multifarious he can have little leisure for the simplest diversions. It is, however, no concern

of ours to describe the extent of his zeal as an ecclesiastic. We have only to consider the prince as a steward of valuable property; and, in fact, to regard him as a survival of the great prelates who in various parts of Europe during the Mediaeval period were praised or blamed as the critic judged them to be liberal or stingy in their expenditure.

We learn in the first place that in our time, and we imagine the same rule was always observed, the prince bishops are not invariably selected from scions of noble families. THEODORE KOHN, who is the prince archbishop of Olmütz, is the son of humble peasants. Indeed, his name suggests the weakness of his parents. It was intended he should bear a different one, but at his baptism the curate preferred to call him THEODORE, a change which would not be made in the case of a family with any influence. He was born in March 1845, and, like other poor children, from an early age he had to look after the cows in the meadows around Breznice. But he was too sensitive to be efficient in goading oxen when they were working in the fields. His father, who looked after the agriculture, was dissatisfied with his weakness, while the mother was content. His family was in such poverty, many sacrifices had to be endured to obtain for him the education that would qualify him for entering an ecclesiastical seminary. He was ordained priest in 1871, and between that year and April 1892, when he was elected prince archbishop, he passed through the various grades of the hierarchy with as much expedition as if he had been born in the purple. As his predecessor was the Cardinal FÜRSTENBERG, who gained distinction in Austria, it was no easy task to discharge his high office with similar dignity and vigour.

It is not stated how large are the revenue and contributions a prince bishop can obtain in Olmütz. But in his first year of office the new archbishop, it is said, expended from his privy purse in works of charity, promotion of societies, construction and repair of churches, and bourses for students, the sum of 84,544 florins, or, say, 7,000/. That average has been exceeded, for in nine years the total expenditure amounted to 896,562 florins, or about 75,000/. During the same period the department administering the property of the archbishopric disbursed for ecclesiastical purposes 322,310 florins. It has been alleged that his motives in laying out so much money were egoistical. But it is not clear what personal advantage can accrue to an individual, or how his vanity can be gratified by such works as erecting residences for employés, planting forests, draining, land improvement, roadmaking and much else, of which the profit will be mainly experienced long after the prelate has passed from life. In the year 1901 no less than 258,245 florins were laid out on new buildings, conservations and repairs, and in the eight preceding years of his occupancy of the episcopal chair the outlay under similar heads was 1,652,851 florins.

The churches of Moravia are not always remarkable as works of art, if we may judge from the illustrations given in the "Facta Loquuntur," but they appear to be in sound condition. The archbishop not only generously gives aid to the upholding and amelioration of buildings, but he has founded societies of which the members are expected to adopt the same aims. In four years 196 of those guilds were constituted, and they have collected large sums of money which will be expended on building. Some critics are offended because the archbishop believes it is one of the duties of his office to encourage art. We see engravings of altar vessels in gold and silver, lamps, covers for service books, statuary, altars, &c., which have been specially executed on his commissions. Most of the examples were costly, but in having them executed the prince archbishop is only preserving a tradition almost as ancient as Christianity itself. The see possesses a palace at Olmütz, and it can hardly be deemed an offence if the decorations are preserved and continued in a becoming style, or if the prince's portrait assumes the grandeur of those of its predecessors.

One important part of the archiepiscopal estate consists of forests. It is perhaps excusable if occasionally there is some indefiniteness about the extent of property of that kind. One of the first acts of the archbishop was to have a cadastral survey prepared, on which the various subdivisions should be shown. It was also necessary to establish an administrative bureau in which everything

* *Facta Loquuntur: ou Dix Années d'Activité Épiscopale.* Par François Botek et A. Kleiber. (Paris: F. A. Brockhaus; Olmütz, 1902.)

connected with planting and the cutting down of trees should be accurately noted. The sawing of the timber was accomplished by old-fashioned hydraulic machines; several steam saw-mills now execute the work. The removal of timber was a slow process. Roads have been formed and facilities arranged for transport. It was necessary also to improve rivers and streams, to drain land, to introduce cattle, to set up a dairy, and to execute other works described in detail in the volume.

It might not be considered extraordinary if some high secular official were sent to the property and could arrange for a profitable administration of forests and lands. But at Olmütz the work to western critics must appear remarkable when it is found the organiser is an ecclesiastic. Readers of "Wallenstein" will recall the complaints made by some of the officers about the inconvenience which arose through priests and monks having charge of various divisions of the War Department. A cavalry general related how—

Zuletzt, da schickten sie mir einen Capuziner,
Ich dacht' es war' um meiner Sünden willen!

or, in other words, a capuchin was to arrange with him about the horses he required. At Olmütz we can still discern some of the features of a system which was carried to excess at the court of FERDINAND II. The chapter and other leading ecclesiastics of the diocese co-operate with the archbishop in the management of the diocesan estates, and in that way gain experience which they are afterwards able to turn to account in many ways. If, as in the Middle Ages, it became necessary to carry out immense architectural works we presume the prince archbishop and his advisers would feel no hesitation in assuming the responsibility. Whether such a mode of conducting business is economical is not manifest from the "Facta Loquuntur." The best intentions may inspire all the outlay, and it may be for the public good to have estates, forests, tillage and cattle managed in the way described, but it would be more satisfactory if the defence of the system had been verified by secular experts. It seems incompatible that anyone who has such onerous duties imposed on him as an ecclesiastical superior should combine with them the kind of business for which a long course of training in secular affairs is supposed to be necessary. APOLLO feeding the flocks of ADMETUS was not more of an incongruity. The attacks of the journals may be unfounded, but to those living at a distance, at least, something more is required to refute them than particulars of a devotional life and extracts from account books. The inability to realise the necessities of the case is enough to suggest that the defence has not been prepared in the manner which a court of law would recommend.

THE LATE MR. S. TREVAIL.

ON Saturday last Mr. Silvanus Trevail, of Truro, who was a prominent architect in Cornwall, committed suicide by shooting himself in the lavatory of a railway carriage while on his way to attend the funeral of his uncle at Luxulyan.

The inquest was formally commenced on the same day, and was resumed on Monday in the Bodmin Guildhall. The following account is derived from the *Western Morning News*:—

Mr. R. P. Edyvean, the coroner, said they were met that evening to inquire into the cause of death of a gentleman well known to all of them, and well known throughout the county. He did not think they could find out much more than they already knew from the very graphic accounts in the morning's papers. He could not help saying, however, they were holding this inquiry in respect of one who by unaided and untiring industry and ability had raised himself from the comparatively obscure position of an architect in a small country town to the top of his profession. Whatever he took in hand he did with all his heart and soul, and that he succeeded there could not be the slightest doubt. Unfortunately his ability caused so many calls upon his time that he was afraid that was the cause of the unfortunate occurrence. He did not think the jury would have any doubt after hearing the evidence that the poor man's mind was quite unhinged, and that the pressure of business worries had brought about the sad result. They had hoped deceased would have lived for many years and have continued to be a proud ornament to the county. He knew deceased very well, and his death was a great shock to him. After reviewing the main facts, the coroner remarked that he did not think the jury would have any difficulty in coming to

the conclusion that deceased was not responsible for his act when he committed the deed.

Mr. Alfred J. Cornelius said he was Mr. Trevail's assistant, and had been with him for seven years. He never seen a revolver in his office or in his hand. He last deceased just before he left by the 11.40 train from Truro Saturday. He seemed very much worried and as if his mind were thoroughly unhinged. In fact, he had been so for two or four days before. His state of mind would have been plain only to those around him. Until the architects' dinner in last deceased seemed all right, and was very cheerful, but on his return to Truro he divulged to witness that he was much worried over his business affairs. From that time to his death he was in the same state of mind, and had only a few out of doors about a dozen times during that period. Deceased appeared to be suspicious, and would sometimes say he was lost and was dying.

The Coroner: I suppose he was a very hard-working man and worked night and day?—He worked hard before the architects' dinner, but had not done so since then. He had been unfit.

Then you date his going down the hill from the time of the architects' dinner?—Yes; in fact, he did not like to be out of doors.

Continuing, witness said he tried to cheer deceased, but however, always looked upon the black side of everything.

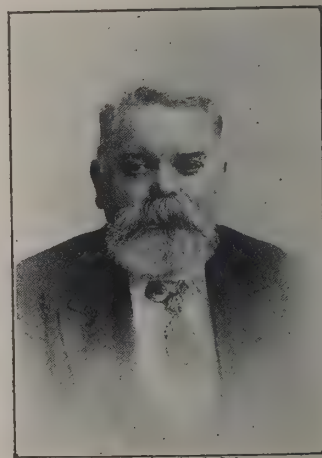
Do you know anything that should cause him worry?—Witness: Purely business affairs.

By the Foreman: Deceased never passed any remark to lead him to think he would commit suicide. Had he known deceased carried a revolver he would have been on his guard as he would have been in peril of his life, as would others around.

By Jurymen: He had not spoken to deceased's relatives about him as he was not insane and talked perfectly sensibly. He believed his relatives all knew his worries, and, in fact, he made frequent visits to him. Deceased left Truro on Saturday to attend his uncle's funeral. He must have got the revolver before witness saw him off in the cab to go to the station. He did not go out earlier that morning. He had not been on his journey during the week to the knowledge of witness.

The Coroner said for a man of the disposition of Mr. Trevail to suddenly exclude himself from contact with fellow-men pointed in itself to something being wrong. There seemed to be no doubt that business worries and pressures wholly unhinged the poor man's mind, and that at the time the act he was totally irresponsible. He therefore apprehended the jury would return a verdict to the effect that the deceased committed suicide by shooting himself with a revolver while temporarily insane.

The jury concurred with the coroner, and returned a verdict accordingly.



Mr. Silvanus Trevail, says the *Western Morning News* was born at Luxulyan in 1851, and came from a very old Cornish family that was known locally in the Norman and Plantagenet periods. He was educated by Dr. Drake, at Ledrah House, St. Austell, and took honours in mathematics, drawing and constitutional history in the university local examinations, whilst he also won the style of Associate of the Institute of British Architects, and for two years he held the high office of President of the Society of Architects of the United Kingdom. The Royal Institute of British Architects in 1878, selected works by Mr. Trevail to represent British architecture in the Paris Exhibition of that year, and for the Sydney and Melbourne Exhibitions of the two following years where he was the recipient of international medals and

s. He acted as architect for various public bodies, and a majority of the Board schools in Cornwall, as well as several of those in Devon, were built from designs in his skilled hands. There are also banks, churches, mansions, hotels, libraries, technical schools and hospitals which were built from his designs, and among these may be mentioned the Devon and Cornwall Banks at Truro, Falmouth and Newquay; the Cornish Banks at Helston, St. Columb and Newquay; the Post-office at Truro; the Board schools at Fowey, Mevagissey, St. Ives, Falmouth and in Oxford Street, Plymouth; the Passmore Public Libraries at Truro, Hayle, Camborne, Bodmin and Launceston; the library and hospital at East Ham; and the Public Library and Technical Schools at Newton Abbot. A splendid block of buildings known as the Central Technical Schools for Cornwall, at Truro, were also from his designs, and a perspective view of the school found a place on the wall in the Royal Academy exhibition of 1898. In hotels, Mr. Trevail's best known works were the Pendennis hotel, Falmouth; Carbis Bay hotel, St. Ives; the Housel Bay hotel, Lizard; the Atlantic and Headland hotels, Newquay; King Arthur's Castle hotel, Tintagel. The residence of Edward Hain, M.P., Treloyhan, St. Ives, is an excellent example of his work, whilst for churches those of Nanpean and St. Cross may be mentioned. Mr. Trevail's largest work was the addition to the Cornwall County Lunatic Asylum at Bodmin, which he was superintending up to the time of his death.

Having thoroughly at heart the welfare of his native county, Mr. Trevail, of course, took a prominent part in public life. In connection with this work, although his manners were not generally acceptable to some, yet there is no doubt that in all things he was well-meaning and desired to do his best for his county. He went to reside at Truro in the seventies, first attracted notice by gratuitously designing and superintending the erection of the series of triumphal arches and city decorations erected in honour of the visit of His Majesty King Edward, who, as Duke of Cornwall, in 1880, laid the foundation-stone of the cathedral. In consequence of the part he showed in the affairs of the city he was returned as councillor for the Eastern Ward, which position he held up to the time of his death, having been returned at the head of the poll on seven occasions. In 1894-95 Mr. Trevail was unanimously elected mayor, and during his year of office, an extremely successful one, he had the honour of entertaining the Lord Mayor of Liverpool at Truro. His mayoralty was marked by the establishment of the public library and technical schools. Mr. Trevail was also a justice of the peace for Truro. He had made the subject of local government a special study, and was one of the first members of the County Council, being elected for the Eastern Division of Truro, without opposition, on the formation of the county authority. He was a valuable member of that body, being one of the finance committee and chairman of the sanitary committee. In connection with the latter he did excellent work, "leading a sanitary crusade throughout the county, enhancing its attractions as a health and holiday resort to such an extent that thousands now visit the county annually who hitherto had elsewhere." He resigned his seat on the County Council, at two re-elections, when he accepted the County Asylum Commission. In 1894 Mr. Trevail made a great effort to bring the second great trunk line of railway through Cornwall, but succeeded to the extent of procuring the rejection by the House of Commons of a "Blocking Bill" upon its third reading after it had passed the committee stage, an achievement unprecedented in Parliamentary history. For this and other county services he was the recipient, at the hands of the Lieutenant, the Earl of Mount Edgcumbe, of a service medal, valued at 500 guineas, and subscribed for by upwards of 50 persons throughout the county. Mr. Trevail had travelled a great deal, having visited the principal cities of Europe and America. Whatever he took in hand he carried out in doing thoroughly, and this was one of his chief characteristics. A man of undoubted ability and possessed of great determination, he has done good work for his city and county. The deceased gentleman was a Churchman, and although at one time an ardent Liberal in politics, yet was a supporter of Sir Edwin Durning-Lawrence, Bart., the Liberal member for the Truro-Helston Division. Mr. Trevail was a bachelor. His parents only pre-deceased him within two years, and to their honour he gave the magnificent gift of a peal of bells to his old parish church of Luxulyan, the ceremony in connection with which took place thirteen months ago.

The Liverpool Architectural Society will hold its third ordinary meeting of the fifty-sixth session at 13 Harrington Street, on Monday next, November 16, when a paper will be read by Mr. H. Chatfield Clarke on "The Bill for Altering the Law of Ancient Lights."

HORTON AND WRAYSBURY.*

IT will be within the memory of members present that this ramble to Horton and Wraybury was to have taken place on June 20 last. It was at the time when the excessive supply of liquid nourishment vouchsafed by generous clouds to an ungrateful and complaining earth was strenuously competing with the Deluge of history. A note to the Vicar of Wraybury brought the kindly intimation that the roads were all under water two days before our proposed ramble, and on the day before I received a telegram to say that they were still impassable.

Leaving you to reflect upon the mutability of human affairs and the pertinacity of Athenæum rambles, one passes to the consideration of the beautiful neighbourhood which is no longer under water. Here we are on the borders of Middlesex, and I had originally intended to commence at Colnbrook in that county, and bring you thence to Horton and Wraybury. But there were difficulties, not floods, in the way, and the interesting old coaching town of Colnbrook will provide us with a future feast. From Colnbrook in the direction of London as far as Hounslow and Hanwell there is one vast flat plain unrelieved by the merest hillock, and sparsely clad with trees and shrubs. But at Horton this uninteresting flatness is exchanged for a far more pleasing aspect of natural beauty, and the hills and woods on the Surrey side of the river appear—Cooper's Hill, Virginia Water and St. Ann's Hill lend variety to the landscape, which is further beautified by a vignette of Windsor Castle. The whole scene is one of great pastoral beauty, and the thoughtful man who has read his Milton cannot fail to see how deeply the poet had drawn inspiration from that nature whose presence is here revealed.

Upon a plain blue slab on the floor of the chancel of Horton Church you may read, "Heare lyeth the Body of Sara Milton, the wife of John Milton, who died the 3d of April, 1637." This was the poet's mother. John Milton shares with Shakespeare and Dante, by common consent, the foremost place in the rank of poets. Born in Bread Street, Cheapside, on December 9, 1608, he entered St. Paul's School in 1620, proceeded to Cambridge in 1625, graduated B.A. in 1629 and M.A. in 1632, and in the latter year came to Horton, where his father had retired in part from business, and here the first-fruits of his genius were manifested—

How soon hath time, the subtle thief of youth,
Stolen on his wing my three-and-twentieth year,

and, asking himself in the same sonnet how he shall spend his life, he affirms that—

It shall be still . . .
if I have grace to use it so,
As ever in my great taskmaster's eye.

The influence of the pastoral charm of this Buckinghamshire village upon Milton was evidently a deep one, and we have the poet's own impressions in a college composition, probably written at the time he proceeded to his M.A. degree, in which he "calls to witness the groves and rivers and the beloved village elms under which in the last past summer I remember having had supreme delight with the Muses, when I too, among rural scenes and remote forest, seemed as if I could have grown and vegetated through a hidden eternity." Buckinghamshire is the county of the nightingale, and had you been here in the time of the floods you would probably have heard him as Milton heard him 270 years ago, when he apostrophised him in one of his beautiful sonnets:—

O nightingale, that on yon bloomy spray
Warbl'st at eve, when all the woods are still,
Thou with fresh hope the lover's heart doth fill,
While the jolly hours lead on propitious May.

John Milton's time at Horton appears to have been the happiest of his life, filled up as it was with classical reading, the while his imagination formed the outline and his industry and scholarship filled in the detail of some of his earlier poems. These, written at Horton, were the "Sonnet to the Nightingale," already mentioned, "L'Allegro," "Il Penseroso," "Arcades," "Comus," and "Lycidas." Each of them reveals the influence of his pastoral surroundings, as in "L'Allegro" he declaims against the pessimist—

Hence, loathed melancholy of Cerberus,
and invites him to join the genius loci

And trip it as ye go
On the light fantastic toe,
And in thy right hand lead with thee
The mountain nymph, sweet Liberty.

* A paper read by Mr. Theophilus Pitt, F.C.S., before the members of the Upper Norwood Athenæum.

How great is the privilege to us to gaze upon these scenes with the poet's own impressions and thoughts in our minds. It is like reading English history on the sites and amid the scenes where the events have happened, a privilege which often comes in the way of our Society. What impressions, then, had Milton of the venerable structure which still stands in Horton as it did 700 years and more ago? Alas! none that we know of. He was not indifferent to the beauty of English architectural remains—

But let my due feet never fail
To walk the studious cloysters pale,
And love the high embowed roof,
With antic pillars massy proof,
And storied windows richly dight,
Cast a dim religious light.

And the burial of his mother in Horton Church some six months before he left England shows that he had some part in the religious life of the parish; but one wonders what were the conditions at this time, a century after the final repudiation of the Papal authority, when the Puritans were at the height of their power. Did Milton think at all of all that the five centuries of the existence of his parish church meant? His classical scholarship was of the first order, his Biblical knowledge was no less great, but of the parish, the diocese, the province, he seems to have known nothing, and so, rightly, left them alone. Here we must part with John Milton until we meet with him again at Chalfont St. Giles.

The very impressive church of Horton, dedicated in honour of St. Michael, stands in a large churchyard, kept with more than usual care, as befits its position and purpose. The churchyard contains some of the ancient yew trees which are somewhat plentiful in the neighbourhood. The church contains



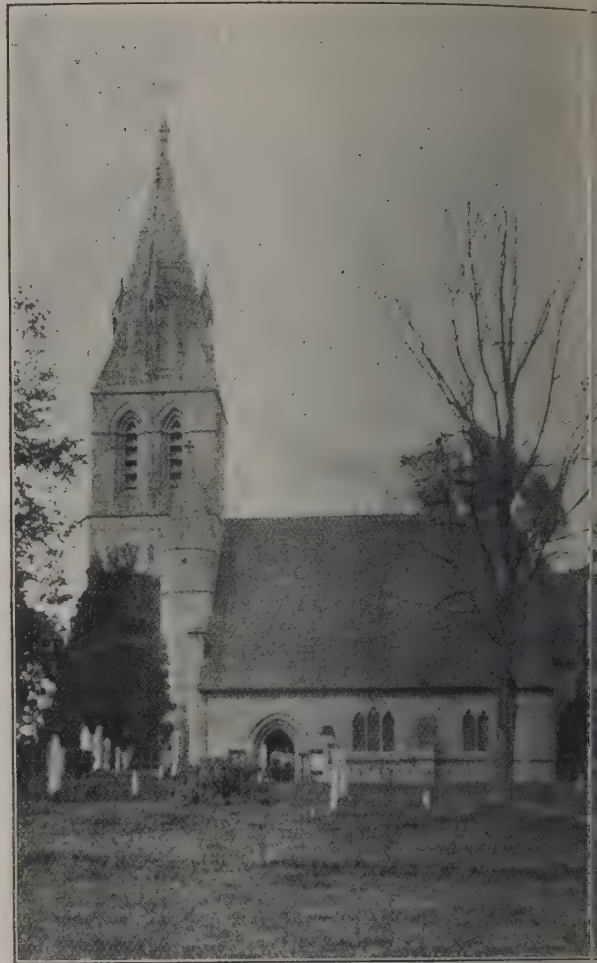
HORTON CHURCH.

work of the four periods of English architecture, Norman, Early English, Decorated and Perpendicular. The door within the north porch is a very beautiful and well-preserved specimen of work in the first-mentioned style, with double chevron moulding. There is no tympanum with relief-carved subjects such as may be seen in many score of churches in the country; there is a unique collection of drawings of such tympani in the Guildhall at the present time. The church consists of chancel, nave, north aisle and a small chapel on the south, western tower with a short turret at one angle and two porches. The nave arcade is Early English, with cylindrical shafts, and the body of the church is Perpendicular. The font is a plain Norman structure. There are interesting bricks of some antiquity and unusual size in the wall adjoining the churchyard. Horton in Domesday Book is Hortone, in Erlai hundred, held by Gilbert de Gand and others, and had been held by a vassal of Ulf's, who "could not give or sell it without leave."

Wraysbury is a picturesque village on the Thames, and is evidently a site of some antiquity. Its church, dedicated in honour of St. Andrew, was rebuilt in 1862, but it contains the chancel and nave arcades of the older church. The tower and spire were added in 1871; the old spire was of wood and was over the nave, and the doorway in the north aisle is a copy of that of the old church. The vicar, the Rev. L. F. Hake, has very kindly tabulated the chief points of interest:—(1) The font, (2) a fine piece of carving round the pews in the south aisle, (3) the Jacobean pulpit, (4) a brass with canopy in the centre of the chancel, the Stonor brass, 1512, (6) doorway and window built up in the north wall of the chancel, to be seen also in the vestry, (7) a portion of illuminated leather formerly part of an altar-piece.

The Stonor brass above mentioned is interesting in that it represents a youth named Stonor habited in what is probably

the dress of an Eton scholar, consisting of a long gown with girdle and edged with fur, fastened over on to the right side, and having tight sleeves. He wears a cap with a broad lappet passing under the chin, and from the back a streamer.



WRAYSBURY CHURCH.

floats gracefully below the shoulders. There are other examples of scholastic habit to be seen at Headbourne Worth, Hants, where there is a brass to John Kent, scholar of Winchester College, and at Little Ilford, Essex, where Thomas Heron, a schoolboy, who died at the age of fourteen, is represented with his penner and inkhorn suspended at the girdle.

The church also contains mural monuments to the Stonor, Hassell, Harcourt and Gyll families, and in the churchyard on the north side are several extra-mural tablets to members of



COTTAGE AT WRAYSBURY.

Harcourt family. The lych-gate is good work of the thirteenth century, and is engraved in Lipscomb's "History of Wiltshire." Traysbury is called Weresberie in Domesday Book, an eleventh-century editor of which explains that by it is meant Traysbury. The manor was held by Robert Gernon at the time of the Survey, and it answered for twenty hides, had the pannage for hogs, and was in the hundred of Stoches. The quotations from Milton are from the edition of 1673, and for Tho. Dring at the Blew Anchor, next Mitre Court, against Fetter Lane, in Fleet Street. The illustrations are from photographs kindly lent by the Rev. Arthur Fearon, Esq., and Mr. T. C. Thatcher.

TESSERÆ.

Development of English Gothic.

In this country the successive changes in style have been partly imported, partly national. The early Norman was the distinct importation of a style ready-made, but its subsequent developments in this country were the joint product of Englishmen and Normans. The Transitional style has been shown to have at first grown naturally out of this Anglo-Norman development, and to have been in England to a great extent English. Yet later on this English transition style was largely influenced by unquestionably French elements. The style of the first half of the thirteenth century may be said to be distinctly English, being distinguished definitely from that of France by the feature, if not wholly, at least mainly English, of the round abacused capital. About the middle of the thirteenth century a great French element came in, which in a degree transformed the style—the traceried window. This when once established again began to develop itself somewhat differently from its prototypes in France, and was all along differentiated from them by being united constantly with the round capital, whereas in France the angular abacus was still predominant. The later middle pointed in this country was not only wholly English in feeling and invention, but it at a later date seems to have become the source from which the French (possibly during the English wars) developed their Flamboyant style. It may be always remembered, was not cotermporary with the flowing style, but arose in France just when the style of the flowing line may be supposed to have suggested it had been reshaped in England. The next great change in this country was the very reverse of the cotermporary change in France, while in one country the geometrical arrangement of tracery had continued to prevail at the same time that the flowing lines were universal in the other, the latter seem to have been adopted in France just when in England there was a sort of revulsion against them, showing itself in the adoption of the straight and vertical line as the leading element of tracery. This was in its earlier days clearly an aim at regaining the firmness and strength of character which had been lost during the reign of the flowing line. Elegance was sacrificed to strength of character, a mellifluous poetry of style to stern unbending prose. There is doubtless a noble simplicity and strength of character in the earlier Perpendicular style. Westminster Hall, the remodelled nave of Winchester Cathedral, the choir of York Minster, cannot fail to prove this, but the how or other artistic interest seems greatly lost. We feel we have passed out of that series of phases, growing one out of another, which give so delightful a charm to the study of the earlier styles, and to have entered upon a wholly new era—one destined to produce innumerable and noble buildings, yet one which has emerged from the region of romance and entered the region of mere unadorned history.

The German Pfahlgraben.

The great Roman station of Saalburg was the chief of all Roman military posts along the line of the Taunus. And beyond it we reach the real limit of the Roman power in the regions. The Pfahlgraben, the dyke drawn in an irregular shape from the Lahn to the Main, answers to the massive walls made by the Romans in our own island to defend the fully subdued and organised province against the incursions of the unsubdued natives. But as a mere structure of earth, a vallum and not a murus, it is not an object to be compared with the stately bulwark of stone with which—according to Dr. Merivale, in the latest days of their power—the Imperial people fenced in the smaller extent of their dominion in Britain. In the immediate neighbourhood of Saalburg the Pfahlgraben itself is not a very striking object of great height and almost covered with brushwood, it is easily passed over by anyone who was not specially looking for it. Save for its lying so near to works the nature of which cannot be mistaken, it might easily escape notice altogether, or it might be taken for some fence of a far less

ancient and dignified kind. But about the fortress whose remains rise above it, about the Saalburg itself, there can be no mistake whatever. The walls nowhere rise much above the foundations; there is nothing standing up, like the vast Roman buildings at Trier, like the mighty walls of Anderida, or even like the smaller fragments at York, Lincoln and Leicester. Yet no one can raise any question as to what the building was or who the people were who reared it. The Saalburg is the camp of the conqueror, pitched there to guard the furthest outposts of his dominion. It was the chief of the Roman stations along the Taunus range, looking backward on the land which Rome had brought more or less thoroughly under her dominion, and looking forward on the land which she did not venture to claim as her own, but which still remained the undisputed heritage of the free German. Between him and herself she had drawn a line to be at once a boundary and a bulwark, and the spot to which we have carried ourselves in fact or in thought is the greatest and strongest of the posts by which that bulwark was to be guarded. The look-out from the Saalburg over the Pfahlgraben which lies beneath it is still a look-out on a wild and free land which shows but few signs of man's works or dwellings. As we trace out the length and breadth of the fortress, its walls, its gates, the hall of its prætorium, the places within and without its walls set apart for the various purposes of Roman military life, it needs no great flight of imagination again to people them with those who, seventeen or eighteen hundred years back, guarded that fortress against the assaults of men of our own blood and speech who were striving to win back the land which the stranger had rent from them. We see the site of the altars where, on the soil whence the worshipper of Thunder and Woden had been driven, prayers and incense went up to the Jupiter of the Roman Capitol, to Mars the father of Rome, and to Venus the mother of her Cæsars. We trace out the ground once covered by the tents of the legionaries gathered around the central dwelling of their Imperator. We look forth from thence on the wide expanse beyond the boundary wall, and we think with what feelings our kinsfolk on the yet unconquered soil may have now and then heard an echo of the sounds, or caught a distant glimpse of the scenes, which went on daily within the bulwark which told that the whole land of their forefathers was no longer theirs. They saw, spreading its wings in their native sky, the proud badge of Rome's dominion, the eagle of Marius and Cæsar, and they looked not forward to the day when they themselves should be the heirs of Rome's titles and Rome's dominion, when the Roman eagle should become the badge of German rule, and when the Tiber should welcome as Roman Cæsar whatever king might be chosen on the banks of the liberated Rhine.

Mythology in Modern Art.

The paganism of Italy was so real a thing in the days of Leo X. and Raphael, Lorenzo dei Medici and Ficino, that it was hardly going beyond the living sympathies of the time to represent and enjoy the gods and goddesses of the Farnesina, the Aurora of the Ludovisi, the Sibyls of the Sistine. Charon ferries the souls into hell with most religious solemnity in the Campo Santo of Pisa; Virgil was almost as living a friend to Dante as the hero of "In Memoriam" to Tennyson; it was after all but a revival of the deities which the nation had once believed in. But we are too far off in thought in these days, naturally, intellectually and physically. Nymphs look but cold abstractions in the Royal Academy, they shiver in our climate; our northern nations do not dream of such like in the woods, they are unnatural here, and while we go dead against the feeling of the nation we cannot make national works. The nude will always affront the sense of right of the homely middle and lower classes: this feeling is inextricably bound up with what is really good in their lives, and it is no use appealing to them by such means. There is something in modern civilisation so essentially different from that of the Greek that we never can regard such matters with the same eyes. Every human passion, sentiment and power were in his view equally divine: there was nothing to him either immoral or displeasing in the depicting of any human appetite. Ours may be a lower civilisation in this—we will not dispute about terms. Our delicacy may be real indelicacy in the matter, but its existence is a fact. The world has drunk deeply of the knowledge of good and evil, and cannot return to its childlike nakedness of expression, even if (which we deny) it were desirable. That a certain number of works of classic beauty should be "invented," as the Italians call it, for the educated minority who care for them and can understand them; that (Enones should be written and processions in honour of Greek myths should be painted, is good. There is room for all. But let the poets and painters do so as a pastime, not as their life's work, knowing that Homer and Dante and Phidias and Raphael were not grown thus, and indeed could not have produced an article so purely of culture and abstraction, instead of being inspired by the faith of their people, and in return raising and ennobling that faith.

NOTES AND COMMENTS.

WE have more than once referred to the difficulties awaiting county councillors who, under the new Education Act, are responsible for the maintenance of school buildings. As a rule the draughtsmen of such measures are indifferent to subjects relating to construction, and the various professional societies would scorn to meddle with such humble affairs. It is easy to say let the county authorities be responsible, but the real question is what officers will have to perform the work? Will the extra labour be cast upon officers having other duties without receiving additional pay, or are new officers to be appointed? It deserves to be remembered that at the present time unusual attention is given to public roads, and it is generally admitted that the county surveyors cannot cope with all their duties. To increase their labours is not desirable in the public interest. An indication of the problem was afforded on Tuesday at the meeting of the East Sussex Council. It was proposed to increase the salary of the surveyor from 500*l.* to 600*l.* a year, and to engage an extra assistant. Nothing was mentioned at first about the surveyor having to supervise 170 school buildings which had been taken over by the education committee. It was no doubt considered that so large a number of buildings would be only a trifling increase to the surveyor's responsibilities. Some of the members of the County Council protested against such a mixture of business, and maintained that the time had arrived for the appointment of a county architect whose task would be to look after buildings. The Chairman, however, said that with an architect and an engineer there would be not only very great expense, but considerable friction. Eventually it was decided to increase the surveyor's salary, and to leave the important question of his duties to further consideration. The position of county councils is, no doubt, embarrassing. All over the country school boards were afraid to obtain reports from architects on the state of their buildings. By shirking repairs the schools have suffered, and county councils now find themselves saddled with the duty of upholding structures which are in an unsatisfactory condition. To suppose that a county surveyor whilst rushing through his examination of roads can at a glance or by a short visit discover all the defects, and the best way of remedying them, is certainly a most uneconomical method of having buildings restored.

THE death was announced on the 6th inst. of LUDWIG PASSINI, the painter. He was then in Venice. As he was a member of the Academies of Berlin, Vienna and Venice, his international position is suggested. His family belonged to Italy. He was born in Vienna seventy-one years ago, and he was accepted as one of the most delightful masters of the Berlin school. Whilst so many of the artists around him were making great efforts to discover some new regions for painting, PASSINI was satisfied to find his subjects in the streets and churches of Italy. His works gave delight, if it were only by their contrast with those which were to be found in the same exhibition. Moreover, his scenes were accepted as if they were records of an Italy that was quickly passing away and deserved to be preserved. There was no painter who had more thoroughly studied Italian childhood in its poverty and merriment, and especially in the form of little boys in attendance at the altar or who sang church anthems in the language of their forefathers, but which was unknown to them. Over every scene there was a magic by which they gained a peculiar character that was discernible amid a multitude of pictures.

WHEN M. HUYSMANS published his "La Cathédrale" we described the book. The author did more for the cathedral of Chartres than Sir WALTER SCOTT for the Glasgow or VICTOR HUGO for the Paris building. Indeed it might be said that the interest of the reader is attracted by the great Gothic work rather than by any of the human characters who are brought into connection with it. Since the book was written M. HUYSMANS has lost his habitation in a Benedictine monastery, for he shared in the ejection of the monks. But he has not given up his interest in cathedrals. He lately visited Cologne, but as he did not realise how extensively the military spirit prevails in all parts of Germany, he was surprised to find that in ex-

amining the building he had to submit to regulations, that he could not remain beyond a certain time in one spot, and that conversation was prohibited. His artistic sensibility revolted at the modernity of the interior, and only by visit to Strasburg was it restored. The latter, although now belongs to the German empire, remains in nearly the same state as when it was a French historic monument. The touchiness of Frenchmen is increased when they come under German control. But much is to be said in favour of the regulations imposed in German churches. A great many tourists—and unhappily Englishmen are not to be excepted—do not manifest much of a reverential spirit when they visit the old buildings. The indifference is annoying to natives, and it is right that steps should be taken to restrain it.

OVER sixty volumes of *L'Art* have been published, but we doubt if in the whole collection there has been a more remarkable number than that for October. WATTEAU works are scarce in most public galleries, including the Louvre. In Madrid there are two, and of one of them *Le Contrat de Mariage*, a very large etching by M. GIROUX is presented. The scene is supposed to take place in wood, and the plate shows an appreciation of WATTEAU style as well as a mastery of light and shade. The work is worth a year's subscription. There are several other plates some representing exquisite examples of woodwork, tapestry, and other decoration. The illustrations from the "Prometheus" of AESCHYLUS by DAVID D'ANGERS, the sculptor, deserve comparing with those by JOHN FLAXMAN. The French artist represents the Titan as displaying more self-control. Other plates recall the age of the Grand Monarque. A couple of poems by M. CHAPMAN, a Canadian, suggest the love of France which prevails in the colony. Altogether the number is a remarkable example of enterprise.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: NORTH TRANSEPT AND CLOCK
THERE must have been much inconvenience in determining the time for church services before clock were invented. Hour glasses were the only means to fix the succession of the hours, but common people were not likely to possess such aids or to have them synchronise with those employed by the clergy. Church bells in those days were indispensable in order to summon the people. As an early example of a clock that of Exeter is now of exceptional interest. JOHN BRITTON says it was constructed on the now exploded principle of astronomy which regarded the earth as the centre of the universe, and it shows the hour of the day and the age of the moon. On the face or dial, which is about 7 feet in diameter, are two circles, one marked from 1 to 30 for the moon's age; the other figured from 1 to 12 twice over for the hours. In the centre is fixed a semi-globe representing the earth round which a smaller ball, the moon, painted half white and half black, revolves monthly, and by turning upon its axis shows the various phases of the luminary which represents. Between the two circles is a third ball, representing the sun, with a fleur-de lis, which points to the hours as it daily revolves round the earth. Some additional works were added in the year 1760 to show the minutes, which are painted in a circle over the ancient dial. From the Patent Rolls of the 11th of EDWARD II. it is evident there was a clock in this church in 1317. The next mention is in the Fabric Roll of 1372-73 in which some expenses concerning the clock occur, and that the latter was the very machine illustrated may be inferred from a remarkable entry in the Roll of 1376-77, in which the sum of 11*9s.* 9*d.* is set down within three months for expenses "circa Camera in boreali turre pro Horologio quod vocatur de novo construendam." The whole charge in that Roll, novæ Camerae pro Horologio, is 10*l.* 6*s.* 5*d.* The rude, though strong, workmanship of the present clock, its general design, and the appearance of antiquity it possesses, seem to connect themselves with the above reign.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.:
GENERAL OFFICE.

COWLEY MANOR: DINING ROOM.

DESIGN FOR CITY OF LIVERPOOL BATHS, TRAMWAY, AND
OTHER OFFICES.

THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. H. T. Hare, president, in the chair.

The following were elected as members:—Messrs. H. A. Woodington, W. G. Huxley, A. C. Lee, J. P. n and H. P. Burke-Downing were unanimously re-elected members.

F. C. EDEN read the following paper, written by Mr. Nicholson, who was unable to attend:—

Modern Churches.

Modern church design may be said to have been evolved in the century which has just ended. Owing to a variety of causes church building was at a standstill in England in the death of Queen Anne and the end of the eighteenth century. It is conceded, even by those who disagree with Mr. Pugin's opinion of the Georges, that the influence of the American Court was not such as to foster an enthusiastic churchmanship. Moreover, during the greater part of the eighteenth century the nation was engaged in a life and death struggle with the French monarchy, the American colonists, and afterwards with Napoleon. The population was almost stationary, the old churches sufficed for all requirements. If they fell into disrepair, they were patched up; if they were considered draughty and cold ceilings were made, and partitions and galleries were built; if they fell or were burnt down they were either left in ruins or else rebuilt in the best possible fashion. In London and some other large towns a few new churches were built; generally these were parish churches, financed by the ground landlords and supported by means of pew rents.

St. Peter's Church in Vere Street and Berkeley Chapel, Bristol, may be taken as typical of the ecclesiastical ideas of the middle of the eighteenth century, plain, substantial, brick buildings with round-headed windows and ugly belfries, their style reminiscent of St. James's, Piccadilly, or St. Martin's-in-the-Fields.

The Church of England was roused to activity by the preaching of the Wesleys and the influence of the Tractarians, and after the final overthrow of Napoleon, the prosperity of the nation has steadily increased. The growth of cosmopolitanism has led to the toleration of all forms of religion. Dissent is no longer looked upon as an ecclesiastical nuisance; Dissenters and Freethinkers are no longer treated as heretics, and consequently an immense amount of building has been undertaken by the Church and other religious bodies in the past century.

A few churches that were built or enlarged between the French Revolution and the Great Rebellion were generally of debased character, such as is met with in many Oxford colleges. In 1818, when Sir George Jones, who introduced Italian models after his travels on the Continent, built the church of St. Katherine in the Strand, and the chapel at Lincoln's Inn somewhat after the old manner. After the Restoration, however, Charles II. and his Court had grown accustomed to foreign fashions during his exile abroad, and the wits and critics of the period regarded Gothic architecture as a barbarous anachronism. The prevailing style of the end of the seventeenth century became the school of Wren. Side by side with this, however, lingered on the remains of the old Gothic tradition, which had never entirely died out in the remoter country districts, which was in some few instances revived under the patronage of the old-fashioned divines of the school of Laud and his followers. Thus we find Bishop Hackett restoring the ruined abbey of Lichfield, and rebuilding its central steeple upon new lines. Again, two of Wren's City churches and four of his country churches are of Gothic character; so, too, is his work at Westminster Abbey. At Oxford, Tom Tower and Hawksmoor's All Souls are certainly more Gothic than Classic, and the nave and tower of the church at Warwick, built in the reign of one Sir William Wilson. The churches of Exeter, Bath and Falmouth, the spires at Higham Ferrers and Stratford-on-Avon are familiar examples of Gothic work of the seventeenth and eighteenth centuries.

In the closing years of the eighteenth century, the period may be taken as the starting-point of modern Church architecture. It was the age of the Greek revival in architecture. The first descendant of the school of Wren was Sir William Chambers, who was also one of the earliest of revivalists, for on his return from his travels in China he built the Pagoda at Kew in imitation of Chinese work. The belfries and towers remaining in front of several houses in Bloomsbury, some summer-houses in suburban gardens and the lacquered grandfather's clocks are almost the only remains of the once popular craze that was introduced by the style of the Adam Brothers was the vernacular

architecture of the day. Based to a certain extent upon Anglo-Classical traditions, the Adam school had introduced a certain playfulness into the design of domestic buildings, united with a perhaps excessive degree of refinement in architectural and decorative details, these details, though of Classical origin, being treated in a novel and thoroughly artistic manner.

The publications of the Adams themselves and of Stuart and other writers brought into fashion the more literal reproduction of Classical architecture, both of Greek and Roman character. But meanwhile other influences were making way among a large class of people. In the first quarter of the eighteenth century the *Gentleman's Magazine* was established. This publication soon became the recognised chronicle of matters of antiquarian interest. Even the earlier numbers contain occasional descriptions of Mediaeval buildings; the later volumes of the eighteenth century and the earlier ones of the nineteenth are full of entertaining criticisms of contemporary architecture, and the publication continued to treat of similar subjects until 1865 or thereabouts. The influence of the *Gentleman's Magazine* was distinctly in favour of a revival of Gothic architecture.

The first person who had seriously attempted this was probably the architect Essex, since Horace Walpole's performances can hardly be taken seriously. Essex was employed at Ely, where he refitted the choir of the cathedral; at Lincoln, where he rebuilt one of the north-eastern transept chapels in a very correct imitation of thirteenth-century work, and also set up the canopied reredos to the high altar; and at Cambridge, where he designed the reredos of King's College Chapel.

At the end of the eighteenth century there also flourished a certain clever Italian modeller, one Bernasconi, whose attention was turned to the study of Gothic ornament. He was employed in refitting the choir of Southwell Minster, where he set up stone canopies to the stalls, the details being carried out in a hard cement or stucco. Both the design and the workmanship were admirable, and since these fittings were unique of their kind, it seems a pity that they were destroyed in the recent restoration of the cathedral. The canopies of the return stalls have been preserved; they are partly fourteenth-century work, but were extensively restored by Bernasconi. The same artist restored the former reredos at Westminster Abbey and made that in the Beauchamp Chapel at Warwick. He may also have worked under Wyatt at Oxford and elsewhere. The Wyatts, father and son, had a large practice at the beginning of the last century. Their name has become a by-word on account of the sins they committed in the name of restoration, but much of their work is effective if somewhat theatrical in character, as at Fonthill and Windsor, and in the remodelling of New College Chapel.

The early Gothic revivalists were not, however, numerous nor influential, the style which most commended itself to the critics of the Regency and the reign of George IV. being that of literal Classical revival. Soane, Decimus Burton and Wilkins were leaders in this movement, while the Wyatts and Nash frequently worked in the same style, which was adopted in most of the numerous London churches that were built in the years immediately following the battle of Waterloo.

In the year 1818 Parliament unanimously voted a million of money for church building in London and other growing cities. A favourite ecclesiastical architect of the day was a certain F. Bedford, who designed many churches in the South of London, of which St. John's, Waterloo Road, may be taken as a typical example; a large, plain, square room, fitted up with pews and galleries, with a portico at one end and a belfry on the ridge. Merciless criticisms of some of the churches appeared in the *Gentleman's Magazine* over the signature E. I. C. This critic was, however, generous enough in his remarks on some of the better work that was being done at this time by Cockerell, Barry and Savage. Three churches were built at the expense of the ratepayers in St. Pancras by Henry Inwood. The new parish church is too well known to need description. It was designed in 1819 after the model of the Erechtheum, the steeple being adapted from the Tower of the Winds. In spite of the absurdity of the general design, the church is well worth studying for its excellent workmanship and the refinement of some of its details. The interior of the apse is decidedly fine and original. The two other churches in St. Pancras by the same architect are inferior to the parish church: that in Regent Square is a rather ornate Greek Ionic building, somewhat on the same lines as the last; the other, in Somers Town, is a dismal piece of Gothic work in white brick.

The most remarkable Classical church of this period was Cockerell's Hanover Chapel in Regent Street, which stood on the site of Salvati's shop. The recent destruction of this charming building seems most deplorable, although the new church in Davies Street, which was to replace it, is one of our best and most interesting modern buildings. The design recalled that of Hawksmoor's church in Lombard Street; it was a square church with twin belfries. Hawksmoor's square nave had, however, a square lantern and flat roof; Cockerell's

was covered with a dome. It also possessed a portico projecting across the pavement of Regent Street and an annexe at the west end. The entrances were under the portico, at the east end of the church right and left of the altar, which was backed with a high reredos forming the front of the organ loft. The supports of the dome were arranged like those at St. Mary Woolnoth, but the interior of Cockerell's building was disfigured by a double tier of galleries. In later years the liturgical arrangement of the church had been altered, and a chancel formed at the west end opposite the entrance. The exterior was very effective, with its dome and two towers, and the portico was not spoiled with an ugly pepper-pot steeple set astride its pediment.

Marylebone Church, completed in the year 1818 from designs by Thomas Hardwick at a cost of 60,000*l.*, has a pretty steeple bestriding the ridge of a rather fine portico. The combination of these two features is incongruous, but the effect of the building is good owing to the weathering of the Portland stone of which it is built. The original arrangements of the interior were quite unprecedented: two tiers of galleries, and the altar backed with a divided organ, the centre of which enclosed a large transparency by Benjamin West. John Nash's well-known church in Langham Place is an oblong basilica, arranged more or less in accordance with eighteenth-century traditions. The west end has a round tower, with an effective Roman Ionic peristyle and Corinthian columns round the belfry. It is finished with a tall, sharp spire, 146 feet high, a striking if peculiar feature, and the church is most admirably placed at a turn of the street.

Soane's churches at Walworth and Marylebone, St. Peter's, Eaton Square, by Hakewill, and a church in Bermondsey by Savage, are all of revived Greek character, and better than the general run of the work done at the time, each of them showing some attempt to evolve a type of building suited to the needs of the age, instead of a blind reproduction of temple forms.

The Gothic tradition, as we have seen, had hardly become totally extinct before attempts began to be made to apply Mediaeval details to modern buildings. Churches more or less Gothic in character were built in London and elsewhere. Such are St. Dunstan's-in-the-East, designed by Lang, the architect of the Custom House, about the year 1820; and St. Dunstan's, Fleet Street, by Shaw, the architect of Christ's Hospital, about 1825, an octagonal nave with an effective tower and openwork lantern.

Amongst the Commissioners' churches, two—by Sir Charles Barry and James Savage, at Islington—were singled out for special praise by E. I. C., the critic who has been mentioned in connection with the *Gentleman's Magazine*. These are large brick buildings of Perpendicular character, pewed and galleried like the Classic churches of the period, built with embattled parapets and square towers or octagonal belfries. Similar churches were built at Edinburgh and in several provincial towns, such as Liverpool and Brighton, and places in the Potteries district. The best of this class of churches was that of St. Luke, at Chelsea, by James Savage, a building of considerable size, with a pinnacled west tower. The nave of this church is groined in Bath stone, and has flying buttresses very scientifically designed, and though the building is not at all massive, it appears to have stood very well. Taking into account the difficulties which its designer must have had to face, it cannot be denied that his work does him great credit.

The liturgical arrangements of all these churches were bad, and their architectural detail was generally tame when it was not altogether ungraceful. Yet, as a general rule, they were honestly and soundly constructed, and sometimes they have an appearance of size and stateliness which is lacking in much of the work of succeeding generations.

The Tractarian movement, the writings of Pugin and the rebuilding of the Palace of Westminster, combined in the encouragement of the Gothic revival in the second quarter of the nineteenth century. Owing to the growth of religious toleration testified to by the repeal of various laws directed against the Roman Catholics and Protestant Dissenters, perhaps also owing to the rise of an easy-going latitudinarianism in the National Church, Gothic architecture ceased to be looked upon with suspicion, or regarded as a badge of Popery. The Tractarians taught the importance of the sacraments, and their successors restored the observance of many ceremonies which had fallen into disuse in previous generations. As a natural consequence, the preaching places which had hitherto sufficed for them ceased to satisfy the requirements of the majority of Churchmen. The modern type of church arrangement was thus gradually evolved during the reign of Queen Victoria, and, with very few exceptions, existing buildings were altered in such a way as to make them conform to the prevailing fashion.

The churches built at the beginning of the nineteenth century are mostly to be found in populous towns, but after the year 1837 numbers of new churches were built in country places and many of the old village churches were restored; the

attention of architects was thus diverted to the picturesque qualities which belong especially to this class of building.

A prominent early Victorian architect was Edward Blore, who restored Lambeth Palace and refitted the choir of Westminster and Peterborough. There exist several churches from his hand, some of them in a starved Early English style, others imitated from the Romanesque churches of the Rhine provinces. Christ Church, Watney Street, Stepney, and the chapel of St. Mark's College, Chelsea, are examples belonging to the last-mentioned class. These buildings are, as a rule, built of white brick, with cement or Bath-stone dressings, and they are characterised by a singular combination of pretentiousness and meanness. The style, fortunately, found admirers, and after isolated attempts to reproduce Norman work, or, as in the case of Wilton Church, basilican arrangements, the fashionable church architects of the middle of the last century settled down to a style imitated from English Decorated work, using Early English, which was supposed to bear being starved, for cheap jobs.

Considerable improvements were at this period introduced in the liturgical arrangements of churches—galleries and pews were generally abolished, chancels were formed, and more space was provided about the altars.

Like most good people who are very much in earnest, the Gothic Revivalists often went too far. They built too hastily and too cheaply, they restored too energetically. Some of their work is already ruinous after only half a century's wear and tear; yet it is hardly fair to blame the individual architects for this, since they were obliged to supply a growing demand at a very low cost, and if one man declined a commission a rival would always be found ready to step into his shoes. It is instructive in this connection to compare the cost of a few churches built at different periods during the last century:—

Date.	Church.	Architect.	Cost.	P. Sittings.
1813 <i>a</i>	Marylebone Church.	Hardwick.	60,000	2
1822 <i>b</i>	St. Pancras Church.	Inwood.	76,000	3
1824 <i>b</i>	St. Luke's, Chelsea.	Savage.	20,000	1
1825	Hanover Chapel.	Cockerell.	16,000	1
1846	Trinity, Paddington.	Cundy.	14,000	
1846	St. Saviour's, Leeds.	Derick.	20,000	
1854	Newport, I.W.	Dawkes.	11,000	
1854	Doncaster Church.	Scott.	40,000	2
1870	Cork Cathedral.	Burges.	100,000	
1890	Trinity, Chelsea.	Sedding.	20,000 <i>c</i>	1

(a) Begun. (b) Consecrated. (c) Bath stone.
(d) With tower. (e) Shell.

And it must be remembered *that the older examples generally had galleries, a fact which makes the discrepancy between them and the later buildings in respect of cost and accommodation the more remarkable.

The cheapness of churches built in the fifties may be partly accounted for by the growth of the railways and partly by the fact that church designs were then generally based upon rural and parochial models. The choice of this type minimised constructive difficulties and made it possible to cover a considerable space in a very economical fashion. As a result, churches of this age are seldom of a really imposing or dignified character.

Pugin set the fashion of spires and open timber roofs, neither of which features can be made effective in a cheap church. Pugin's own works invariably possess distinction of character, notably his churches at Birmingham and Chelsea, the convent at Alton, the churches at Rugby and Ramsbury, and his work at the Houses of Parliament.

The first of these, St. Chad's, Birmingham, built at a very commencement of the reign of Victoria, is a masterpiece of design, exceedingly bold in conception. Its tall nave and aisles are covered with a great unbroken slant roof, carried by graceful arcades. The transepts are shallow and the choir an apse and is flanked with chapels. Its stained glass, its woodwork and much of its metalwork are both rich and dignified in effect. Externally, it is very severe and simple, with brick walls and slate roof. The hipped roofs of the transepts somewhat recall Flemish work. The western spires are rather small in scale, neither turrets nor steeples, but the sculptured west doorway is charming. The frontispiece of Pugin's "Apology" shows this church with a central spire, which was never carried out.

The style which Pugin could handle impressively was the successful when imitated by his contemporaries. Innumerable churches were built in large towns and their suburbs in the forties, fifties and sixties, as well as in country places. The ideal materials of this age were Kentish rag, with Bath stone dressings. The style was generally Decorated, the roofs were steep open ones, with plaster between skimpy varnished rafters, floors were laid in red and black tiles, pews were

bed deal, organs were at first placed in west galleries, later on in chancel aisles or organ chambers. Their pipes were gaily illuminated. Arcaded dados under the east windows did duty for reredos, and the fashionable glaziers Hardman and Wailes, though a few enamel transparencies were imported from abroad. It is needless to quote examples to illustrate this dismal, though perhaps inevitable, picture in the annals of modern ecclesiology. It must not, however, be forgotten that some good work was done at this time. Scott's church at Camberwell, for instance, with its fine steeple and its long chancel, is solidly built and of good work, though internally the effect is spoiled by the galleries. A fine Roman Catholic church in Stepney was built about the same time from the designs of one Wardell; and away in India, the cathedral, the university buildings and numerous houses in the city of Sydney were being carried out under the eye of Blackett in a bold and vigorous Perpendicular style, somewhat reminiscent of the work of Wykeham. Meanwhile, the Ecclesiological Society, the moving spirit of which was Beresford Hope, was steadily influencing the architects of the day. Beginning by insisting upon a literal reproduction of old forms as a necessary preparatory process, the aim of these enthusiasts was to bring about the development of a new and living vernacular architecture based upon old models.

Since the Ecclesiological Society and its individual members possessed considerable influence in the selection of architects to carry out church work, their opinions naturally carried great weight. Scott and Brandon, the architect of the great Church in St. Pancras, were to a certain degree in sympathy with the views of this Society, but less so than Butterfield and Street. Carpenter's opportunities were few, but his fine church in Munster Square is sufficient evidence of his ability, and an unexecuted design of his for a church at Colombo is quite remarkable as an original attempt to adapt Gothic to a hot climate. Slater, who had to partner with Carpenter, Ferrey, Withers, Dawkes, and Brandon, Teulon and Christian were all popular church builders in the fifties and sixties. But the work of Butterfield and Street was far ahead of that of their contemporaries, and its superiority quite justifies the patronage they received from the Ecclesiological Society. All Saints, Margaret Street, Butterfield's first great work, was designed so long ago as 1845, and is a marvellous production for its date. The fine details of this church, and the completeness and thoughtfulness of its details, stamp its designer as an artist of real

talent. Whatever may be thought of some of the details of Butterfield's work, there can be nothing but admiration felt for his insistence upon principles, and for the thoroughness with which he worked. When he built All Saints, Margaret Street, he laid down certain rules of his own, and from those rules he never deviated at any period of his long career. Although no two of his works are alike, every one of them exhibits the same peculiarities, a complete mastery of proportion and scale, an insistence upon sound construction and accurate workmanship, and upon a certain definite standard of liturgical ornament. His architectural detail was invariably based upon purely English models. He made a frank use of modern materials and modern constructive expedients, and always insisted upon the inclusion of every detail of ornament and structure as part and parcel of the architect's scheme, determined by him at the very outset of an undertaking. Perhaps Butterfield's greatest success was his remodelling of the school at Rugby, where, with most unpromising materials, and on a cramped site, he succeeded in producing a more dignified chapel than is possessed by any of the English schools, hardly excepting even Eton or Winchester. The mention of the last-named building, however, is the fact that Butterfield's restoration work is less commendable than his original designs, at any rate if it be considered an axiom that the restorer should efface his own personality in his work. Butterfield had few followers, but the work of George Edmund Street had a very strong influence upon his contemporaries. Like Butterfield, Street remained true to Gothic motives, though in the middle of his career he was very much influenced by the beauties of French and Italian models. His constructive ability was hardly equal to Butterfield's, but, like him, he insisted upon sound building upon adherence to a standard of liturgical arrangement in all his works.

Gilbert Scott, in his career of forty years' duration, did more than any architect to influence the taste of the nation. Beginning at first in correct English Decorated style, his later designs are often somewhat French in character, though he went to the same length as Street or Burges in these respects. Posterity will perhaps judge him upon the merits of his numerous restorations which he carried out. This is hardly his memory; he may have made mistakes sometimes, when we look at St. Alban's, at Chichester and at Southwark cathedrals, and at many continental churches, we may

well be thankful that he was, at any rate, more conservative and modest than most of the architects of his time.

Burges did not carry out very much important church work besides Cork Cathedral and the excellent restorations at Waltham Abbey. His church of St. Faith at Stoke Newington is, however, interesting as being arranged upon distinctly modern lines. It consists of a wide nave with an apse and a coved ceiling and broad lancet windows, below which runs an arcaded passage aisle, the general disposition recalling the Bishop's Chapel at Rheims, and the detail being French in character. Burges's fine church at Limehouse, with its simple saddleback tower, is less well known.

The churches built by James Brooks in North London are designed in an early and severe manner, solidly built and of fine proportion. Two of these, St. Chad's and St. Columba's, at Haggerston, are cruciform buildings, the latter with a low tower over its chancel, and are distinctly impressive, although, like much of this architect's work, rather cold and uninteresting in detail. Brooks's churches are roomy and well arranged for modern requirements, and their architect frequently introduced vaulting over the whole or a part of the buildings carried out by him.

The late John L. Pearson's large town churches are a class by themselves. Beginning with the pretty but rather tame building in Bessborough Gardens, in correct Middle-pointed style, he was next employed at St. Peter's, Vauxhall, an apsidal brick church of French character, vaulted throughout. He afterwards settled down into a distinct manner of his own, which is exemplified at Kilburn and Red Lion Square, at Croydon, Norwood, Liverpool and Bournemouth, and which culminated in the cathedral at Truro. These churches are all vaulted throughout, and designed with great constructive skill, the area of the supports being reduced to the least possible limits. Their plans are often ingeniously arranged to fit an irregular site, their detail is severe and of strictly English origin, but they vary considerably in general design. Perhaps the individual features of these churches may be considered unduly small in scale, and their effect is rather toy-like in consequence of this, yet the various parts are always in agreeable proportion with one another, and are refined in themselves. In later life both Brooks and Pearson carried out work of Decorated and Perpendicular character, but their chief successes were attained when they were working in earlier styles.

A contemporary of these was the late Sir Arthur Blomfield, some of whose earlier churches deserve attention on account of their frank modernity, iron columns and galleries being freely introduced. The remodelling of Quebec Chapel, near the Marble Arch, was carried out from Blomfield's designs, and St. Barnabas, Oxford, was built by him in a plain round arched style, mainly of concrete. His later work was usually of Perpendicular character.

Little important church work was done at the end of the nineteenth century, and most of it was entrusted either to the architects just mentioned or to living artists of unquestioned ability. The younger Gilbert Scott and John Sedding, though their opportunities were few, certainly founded a school of imitators if not of followers. The former, with Messrs. Bodley & Garner and others, evolved a refined modification of late Gothic work, which is seen at its best in large town churches. Sedding, with an intimate knowledge of old work, was nevertheless frankly modern in his ideals. Each of his buildings marks a fresh phase of his versatile powers. The earliest and most complete of his churches, that at Bournemouth, has a nave and chancel with very slender arches opening into a north aisle, a stone rood-screen and reredos, and a western tower, the detail being late Decorated, and all the accessories of the church very complete. Cardiff, Hayle, Falmouth and Highgate are great, simple, hall-like churches, with narrow aisles and no chancel arches, their detail based upon early models, and their interiors invariably characterised by a remarkable sense of spaciousness. At Truro Sedding followed the old Cornish type. At Clerkenwell the work is Renaissance, steel stanchions and girders being enclosed in concrete columns and entablatures. Holy Trinity, Chelsea, is a wide, hall-like church, with widely spaced and massive piers, and, as is well known, it was intended to give eminent painters and sculptors a free hand in its internal decoration under the general guidance of the architect. The last church which Sedding designed was built after his death at Ealing by his successor, Mr. H. Wilson. Here the supports are unusually far apart, and the piers carry wide and low segmental arches. There is no clerestory, but galleries are formed over the flat ceilings of the aisles, with three triforium arches in each bay of the nave. The nave is lighted by a huge west window with traceried buttresses, suggested, perhaps, by those at Gloucester. Sedding, like Pugin, was a most versatile designer. His woodwork is unrivalled in fancy and refinement; his embroidery, glasswork and metalwork are full of interest, and always designed in strict accordance with the nature of the material used.

To some extent J. Bentley's work resembled that of Sedding, though it was founded more strictly upon precedent. In his

last and most important church he was compelled to follow archaic and foreign models, and he attained a result which bids fair to be honoured with the sincerest form of flattery.

During recent years many good, bad and indifferent churches have been built, many styles have been imitated, and many mannerisms developed only to be forgotten. One is therefore led to the conclusion that architectural style is no longer a question of mouldings and traceries in these days of cosmopolitanism and railways.

A building may be unmistakably modern whatever may be the shape of its windows or its pillars, the disposition of its parts, or the materials of which it is constructed. Hence there is little advantage in discussing questions of style, which, after all, must be left to the discretion of the individual designer.

Unintelligent plagiarism of eccentricities should, however, be deprecated. Thus, a fashion has lately arisen for bisecting traceried windows with clumsy mullions running up to the arch apex, a device calculated to cause the stonework to be fractured in the event of any settlement. Another latter-day freak is the boldly buttressed tower, abruptly cut off at the top without any cornice or other architectural finish, and sometimes capped with a temporary-looking, shed-like roof or with a stunted dome.

As regards ornament, it goes without saying that it should not be used unless it is the best of its kind. This means that good diaperwork is better than bad figurework; whitewash is better than commonplace decoration, and plain windows to be preferred to tinted cathedral glazing, and, indeed, to most stained glass. Brick and stone are better than tawdry polished granite, and good wovenwork than ordinary church embroideries.

Architecturally, the great invention of recent years is the cheap church. The cheap church of fifty years ago was ornate, but shoddily built. Twenty years ago economy was effected by building substantial and fairly complex churches of the cheapest and ugliest materials, red and yellow brick, fitting them up with varnished deal furniture, and stunting their general proportions. Where funds are limited it seems better to adopt an economical plan from the outset, discarding chancel arches and complexities of roofing, and spending the available funds upon sound building, and some degree of finish in the details. Sedding's churches at Falmouth and Ealing are capital examples of economical planning. Though solidly built, and of good scale and proportion and interesting detail, the cost of these churches worked out at about 6*z*. a foot, and 9*z*., or less, per sitting. Economy may be effected by avoiding undue multiplication of parts, and by disposing the section of the church in such fashion as to secure an agreeable proportion in each of its alleys without undue expenditure of material.

The unit by which the eye measures the size of a church is the width of the nave bays. If these are unduly wide, and the scale is not restored by some device such as a subdivision of the bays, the church looks shorter than it really is. We must all have noticed how the adoption of sexpartite vaulting shortens an interior. On the other hand, if the features are too small, the church will look toy-like. The best dimensions seem to vary between 15 and 25 feet, according to the size of the church. An agreeable proportion between height and width can generally be secured, whatever the size of the church, by the adjustment of the relative widths of nave and aisles. Thus, if a church be 60 feet across and its nave 30 feet wide, the wall plates must be, let us say, 40 feet from the floor, in order to secure agreeable proportions. If, however, the nave be reduced to 21 feet in width and the aisles proportionately increased, the wall plates need only be 28 feet from the floor in order to obtain the same proportion as before. Unless ample funds are available it seems a mistake to attempt a clerestory, because a one-storey building looks much higher in proportion than one in which the height is subdivided into pier arch and clerestory. It is generally possible to obtain a sufficiently tall arcade to give dignity to the interior of a one-storeyed church, and if the aisle roofs are flat or span ones like the old west-country churches, a dignified range of windows can be contrived in the aisle walls. Where clerestories are attempted in small churches, it is desirable that there should be a considerable difference in scale between aisle and clerestory. Thus the clerestory may be subordinated to the aisle, as was commonly done in fifteenth-century parish churches, or, on the other hand, the clerestory may dominate the design, like that at Malvern Abbey. The cheapest known form of church is that in which a single large slant roof covers both the nave and the aisles. If this plan must be adopted for the sake of economy, it is still possible to secure good scale in the central alley by using bold arcades and large end windows. In these cases the aisles must, of course, be sacrificed, and their windows must be small, perhaps square-headed. Good hints for the treatment of such churches may be gathered from the villages churches in the timber districts of England, and from some French work. The detail of such buildings should, of course, be simple; and the extent to which simplicity may be carried without sacrifice of dignity may best be learned from a study of old work.

A small and cheap, but most successful, village church was built some years ago by Mr. Harrison Townsend in a Surrey hamlet. Its plan is without aisles, a simple nave and sanctuary with shallow transepts and a small chancel enclosed with screen-work. The roof is low-pitched and covered with pantiles, the eaves project boldly, a simple bell-cot stands over the sanctuary arch. The ceiling is a Welsh groin, springing some 5 feet from the floor, and there are a range of plain, round-headed windows on each side, a large western doorway, and a recessed sanctuary cleverly lighted from the roof. There is boldness and distinction about this little church which is quite unusual to find in the generality of modern work, and the cost worked out, I believe, at not more than 3*z*. or 4*z*. a sitting.

Although, as has been indicated, it is possible, and of a legitimate, to exercise parsimony in adjusting the proportions of the cross section of a church, it must not be forgotten that actual height is a thing in itself most desirable. Although lack of height can be neutralised by skilful disposition of resources at the architect's disposal, it is a very false economy to attempt to save money by crowding the floor space of a church. The planning of altar, font, seats and so forth is determined by the average sizes of the human body, and the requirements of the Incorporated Church Building Society may be taken as defining an irreducible minimum in these respects. A sanctuary should be roomy, not less than one, or in large churches, two bays in length. Unless there is ample space steps should not be multiplied, narrow and crowded steps being both dangerous and undignified, especially at the altar. Altar rails should be placed upon a single step, and the approaches and return gangways should be broad and direct.

The wider that pews can be spaced the better. If the space is cramped it is better to introduce galleries than to crowd the floor space. Pews seem preferable to fixed rows of chairs, which are ugly and rickety, but there seems no good reason why a part of the church should not be pewed and the rest of the floor left open and used only for movable chairs, as is often the case abroad. The usual English system is possibly answerable for keeping the very poor away from church from a feeling of shyness at having to sit alongside of well-dressed people in a public place.

Roomy vestibules, screened off from the body of a church and fitted with swing doors, greatly add to its convenience and comfort, and may be advantageously introduced, even though they may necessitate the building of western galleries. Vestries and accessory buildings are too generally cramped in modern churches, but a detailed discussion of these matters is unnecessary, since they have been dealt with in a thoroughly practical and sensible fashion in Mr. Micklethwaite's excellent little book upon modern parish churches.

As regards the position for the choir and the organ, it is important that these should not be placed too far apart, nor at a long distance from the altar in an English church, because large portions of the prayer-book services take the form of verse and response between priest and people. The conventional plan of treating the musical parts of the services independent of the ritual—for instance, the performance of organ solos or anthems during the canon of the mass—does not seem likely to commend itself to English ideas. Except, therefore, in a very short church, there are objections to placing the organ and choir in a west gallery, though, if the church can be two organs, the larger instrument should certainly be placed at the end of the nave or of one of the transepts, where sufficient height is available to allow the larger pipes to speak properly. The common custom of placing the choir in a chancel generally works fairly well, and it seems a pity to abandon it for the mere sake of novelty. But in some very large and long churches, and in cases where there is a low and narrow chancel arch, the singers are best placed in the nave or in galleries facing each other, like those at Milan and St. Anastasia, Verona and Exeter Cathedral. These minor galleries may be used with a west-end organ. The best arrangement must, however, be determined by so many circumstances that it is not possible to lay down a general rule for the placing of the organ and choir. The Italian plan of putting them behind the altar would not commend itself to English ideas, although it is a suitable arrangement where, as in monastic churches, the choir is entirely composed of clergy. A choir of laymen and boys placed facing the communicants at the altar rails would be a cause of distraction to many people, and this, therefore, would be an objectionable arrangement in a modern parish church.

Chapels are convenient, indeed, almost necessary adjuncts to parish churches of any size. A chapel should be conveniently placed with regard to the entrance doors of the church, and should have an entrance of its own, and its heating and lighting arrangements should, if possible, be self-contained. Only two steps are necessary at a side altar, the footpace and the communion step, as side altars are only used for plain celebrations.

The traditional position of an English church tower is upon the main axis of the church, either at the west end or upon the crossing. But there may often be circumstances that suggest

ne other position as best for the tower, such as the side of nave or the chancel; and in such cases it is often possible to obtain fine internal effects by a judicious contrast of the massive supports of the tower with the lighter piers and arches of the rest of the church, as is done in the fifteenth-century church of St. Mary Steps, at Exeter. The internal treatment of the tower is one of the great chances open to the church architect, and this feature has been handled in a remarkably masterly way by Butterfield at St. Alban's, Holborn, at Stoke Newington and at Rugby. Some suggestive tower interiors are occasionally met with in small ancient churches, such as Wodeaton and Minster Lovell, near Oxford. And the seventeenth-century Brittany steeples, which are structurally towers ended inside out, deserve study as being less costly than ordinary towers, and far more effective than mere bell-cots.

Should it fall to our lot to design cathedrals or large collegiate churches, we should, I think, unless we have very good reasons to the contrary, place the towers and dispose the main parts of the building in a regular and monumental fashion, and very doubtful whether a happier grouping can be desired than in the traditional English combination of a large central lantern with smaller belfries at the west end. The requisites of a modern cathedral are a nave sufficiently spacious for a large congregation, and a choir roomy enough for the cathedral staff, the senior clergy of the diocese. The cathedral must contain an official chair of the bishop, and it should dominate a group of diocesan buildings such as the chapter-house, the congress hall, the diocesan offices, the music school, and so forth. Many Mediaeval cathedrals and abbeys have been more or less successfully adapted for modern use, but it will be admitted that a new cathedral should not follow old monastic models in a literal fashion. The ideals of the French cathedral of the thirteenth century as exemplified at Paris and Bourges, have more in common with modern requirements than monastic churches of our own forefathers. The plans of French cathedrals are unbroken rectangles, with apses and ambles and galleries all round; the choir and altar being in the middle and in full view of the laity, who were admitted to the nave, the aisles, the ambulatories and the galleries. This appears to be an ideal arrangement for a great national church, and possesses advantages that are lacking in the later French cathedrals, with their innumerable private chapels, and in our monasteries with their long, narrow plans and closely-screened choir. The cathedral builders of the future should surely employ the fullest use of modern constructive facilities and engineering skill in order to enclose great unbroken floor spaces with structures that shall be stable, fireproof, durable and fireproof. The great crossing space at St. Paul's has enabled the Chapter to make their church in a certain sense the religious centre of the British Empire. An ordinary Gothic church is not suitable for great national or civic functions; hence the makeshift expedients that are necessary when Westminster Abbey is used for coronations or thanksgiving services.

It has not been possible in this paper to discuss the special structural problems that have to be faced by the church architect, nor to treat of the details of architectural ornament, of sculpture, of painting or of stained glass. A knowledge of all these matters is especially necessary for the church architect, and the shoddiness and commercialism are more offensive, if not more immoral, in church work than they are in buildings designed to gratify the luxurious tastes of individuals or the vanity of secular corporations. Thirty or forty years ago the average architect, imitating the mannerisms of the leaders of the Gothic revival, tricked out his wall surfaces in patterned brickwork, or left them in rough rubblework pointed with black mortar; set up columns of polished granite and laid the floors with shiny tiles; designed gabled screens and reredoses, filled our churches with garish and ill-drawn glass and with mechanical tailor's metalwork. All this was supposed to constitute a glorious school of architecture. We, who are ready enough to laugh at the work of the sixties and seventies, must take heed lest, in our craving for originality, we should turn the rule of future critics against ourselves. And since originality is not to be obtained by a mere jumbling together of several old features of different origins in a new building, the surest way to architectural progress would seem to be that we should acquire a thorough knowledge of construction and design, that we should study nature and avoid conscious eclecticism either of old or of contemporary work, and that we should thoroughly master the conditions of every problem presented for our solution, and endeavour to work out that solution in the simplest and the most unostentatious fashion we can discover.

Mr. E. PRIOLEAU WARREN, who moved a vote of thanks to the author of the paper, said the subject had been treated in a scholarly manner, and showed a mastery of details expressed in the feeling of an artist. In dealing with the design of a church the architect was on more difficult ground than when designing other buildings. The problems could always be solved by common sense, but with regard to modern church

building, in many cases the common-sense aspect had been very much lost sight of. Features were introduced without their being necessary, and whether they were constructionally required or not, such as dividing the chancel by an arch. Precedent was too closely followed in the designs. Under modern conditions the work could be conceived as a whole, whereas in old churches it was not so. The parish church grew up by additions for spaciousness, and the constructive divisions were necessary. Mr. Nicholson said that in building a church where economy had to be followed it was wise not to have a chancel arch. This was especially true if there was a restriction to length, and the effect, too, was more dignified. It was a curious fact that above a certain size of church it became rapidly easier as the size increased to build economically. A church was relatively much cheaper to build than a municipal building or a factory. With regard to materials simplicity should be observed, and it was not necessary to have much stone. An interior could be carried out entirely in brick, an introduction of stone often giving a patchy effect. The mere use of plaster could suggest stateliness, an example being found in the churches in southern countries, where the arches on square soffits were often plainly finished in plaster, and the work suggested a reasonable and economical treatment for the modern cheap church. Of course, where expense permitted, it was more admirable to have a stone interior than a plaster one, but so long, however, as the plaster seen was not too smooth and smartly rendered, but kept with surface, a good result could be obtained in a simple manner.

Mr. A. NEEDHAM WILSON, who seconded the vote of thanks, suggested that the modern tendency of ecclesiastical designing should be towards vastness and comfortable accommodation, the work of the artist, carver and glazier helping to develop in the worshipper feelings of awe and reverence.

Mr. G. H. FELLOWES PRYNNE supported the motion.

THE PRESIDENT, in conclusion, said the problem of building a church was one which stood by itself and called for quite different qualifications in the architect than the more civil work. The style of design did not matter much, since a man might think eloquently either in a Gothic or Classic structure, for if the essential qualities were there they would appeal to everyone, but the work to express these qualities must be conceived by an architect with an earnest sense of devotion and religious feeling.

ST. BARTHOLOMEW'S HOSPITAL.

THE General Court of Governors have agreed to the following resolutions, which were proposed by Mr. Charles Alfred Cripps, K.C., M.P., and seconded by Sir William S. Church, president of the Royal College of Physicians, and carried with only one dissentient, viz. :—

1. That this Court desires to record its unqualified satisfaction that the Mansion House committee, after impartial and exhaustive inquiry, have come to the following conclusions, viz. :—

(a) That it is impossible, in the public interest, to remove the hospital from its present site.

(b) That the additions to and rearrangement and improvement of the existing buildings, as proposed by the Governors, are absolutely necessary for continued efficiency in the treatment of patients, and for bringing the hospital in all departments up to the standard of modern sanitary and scientific requirements.

(c) That an appeal to the public to supply the cost of the requisite new buildings and improvements is fully justified, it having been shown to be impossible for the hospital to provide the same out of its own resources.

(d) That the reputation and character of the hospital have been fully vindicated, and that its administration has been conducted in a wise and enlightened spirit, with due regard to economy and to the best interests of the patients.

2. That the Court begs to offer to the gentlemen who served on the Mansion House committee its cordial thanks for the large amount of time and the great attention bestowed by them on all matters connected with their inquiry.

3. That, in the general scheme of rebuilding, provision be made for (a) additional operating theatres; (b) new casualty and out-patient departments; (c) new nurses' home; (d) new quarters for the resident medical and surgical staff; (e) an isolation block and other new ward blocks, to supply the place of those to be demolished; (f) new mortuary, post-mortem rooms and pathological department; (g) internal structural rearrangement of the east, west and south wings of the hospital.

4. That the house committee, with power to add to their number, be requested to determine, after consultation with the medical staff, by which of the several plans submitted by the architects, subject to such modifications as from time to time appear desirable, provision for the foregoing purposes can best be secured; but that it be an instruction to the house com-

mittee to carry out the recommendation of the Mansion House committee as regards the out-patient department, as shown on Plan No. 6 laid before that committee.

5. That the first block to be built be the new casualty and out-patient departments; dispensary, &c., and the new operating theatres; that the nurses' home be next built; and that the remaining blocks be built in such order as, having regard to their relative urgency, may be considered most expedient and convenient for the general work of the hospital.

6. That the medical staff be consulted from time to time on all details that affect the sanitary arrangements, the treatment of the patients or the interests of the medical school.

7. That the treasurer and almoners be authorised to make arrangements from time to time for the temporary use of such of the Christ's Hospital buildings as may be necessary for carrying on the work of the hospital. Also that they be given authority to make any provision they may think proper for officers and servants whose present quarters are destroyed or interfered with thereby.

8. That application be made to Parliament in the ensuing session for power to the Governors to use, for the purposes of the hospital in connection with the proposed new buildings and improvements, the site of the church of St. Bartholomew the Less and the burial-ground adjoining within the hospital precincts, and for the union for ecclesiastical purposes of the parish of St. Bartholomew the Less with the adjacent parish of St. Bartholomew the Great.

9. That, after the Lord Mayor elect has entered upon office, the treasurer and almoners do wait upon him with a request from this General Court of Governors that, at some convenient date, he will convene a meeting of the citizens for the purpose of raising the requisite funds for the new buildings and improvements needed.

HITTITES AND ETRUSCANS.

THE following letter from Major Conder, R.E., who was for several years engaged in the exploration of Palestine, appeared in the *Times* :—

Having read with much interest the letter of October 27, in your columns, on the connection between the Hittites, Hyksos and Etruscans, I venture to send a few remarks on the literature of the question, which is one that I have often been permitted to discuss in your columns.

The ideas advocated are by no means new. As early as 1874 the late Dr. Isaac Taylor, in his remarkable volume on "Etruscan Researches," pointed out the Mongol character of the Etruscan language. His argument, from the numerals especially, is one which ought to convince philologists, and many known Etruscan words compare with the vocabulary of the Mongol language of Mesopotamia, usually called the Akkadian. The Etruscan title Tarkon compares (as Dr. Taylor notes) with the Turkish title Tarkhan, to which we may add that the latter word is a common element in the names of Hittite chiefs. Taylor also alludes to the Mongol type of the Etruscans and to their art. The *tutulus* and the *Calceus repandus* of Etruscan pictures are the same as the conical cap and the so-called Turkish shoe of the Hittites, but the latter was also worn by the Hebrews, according to the black obelisk of Shalmaneser.

As regards the Hyksos, whom I know Dr. Taylor to have referred to the same Mongol origin, the question is more difficult from lack of evidence, the main reason for holding this opinion being the worship of Sutekh common to Hyksos and Hittites. It should, however, not be overlooked that the Egyptian dictionary contains at least 100 words which do not appear to be either Egyptian or Semitic, but which are found also in the Akkadian vocabulary. This is one indication of a Mongol influence in Egypt which is most probably to be ascribed to the Hyksos. The Men, or Minyans, who ruled in Egypt at this period, came from near Assyria, as Dr. Brugsch has shown, and appear to have been connected with the Mongol Minyans near Lake Van, whose King Dusratta wrote to the Pharaohs in the fifteenth century B.C.

There can also, I think, be no doubt that the syllabic signs found on foreign pottery in Egypt belong to the same system used in Cyprus and in Crete, which had its origin in the so-called "Hittite" hieroglyphics.

The whole subject of the Hittite, or Mongolic influence on the West is discussed in the *Edinburgh Review* for July 1901, in a paper called "Greece and Asia," much on the lines followed by the letter published in the *Times* of October 28, and many yet more striking comparisons will be there found. As regards the Mongol character of the Hittites themselves, Sir Henry Rawlinson and Dr. Birch were convinced that many tribes of Syria and of Asia Minor were of this race, to which the Akkadians of Mesopotamia also most certainly belonged. But if the Hittites were Mongols it is only natural to suppose that their language also was Mongolic, and that the key to its

interpretation is to be found in the Akkadian. Attempts to assign arbitrary values to the Hittite emblems, ignoring the known sounds of the Cypriote syllabary, and not defining even the class of the language or making use of any comparative methods, can never carry conviction to the minds of scholars.

Your correspondents are no doubt correct in speaking of a Hittite "Confederacy" rather than of an empire. The Hittites were only one of the leading tribes of such confederacy of Mongol chiefs. But Dr. Flinders Petrie, on the other hand, is certainly right in denying that the Amu of the Beni Hassan pictures (who were Edomites) are to be reckoned with the Hittites. As to the horned head-dress, however, it is curious that he should regard it as Western, when it so constantly appears on Babylonian bas-reliefs, and on Akkadian seals in Mesopotamia. The close connection of the Hittites with Babylon has been shown, yet more clearly of late, by the discovery *in situ* of a fine Hittite text and bas-relief at Babylon itself. As to the date of Hittite emigration to Syria, we have no evidence that it may not have occurred before 2000 B.C., and it was clearly accomplished not long after. Dr. Cheyne regards the Southern Hittites as "non-existent," but says nothing of the discovery at Lachish, in the south of Palestine, of a seal which bears Hittite signs together with Egyptian, and which, by its position in the ruins, appears to be as old as the time of the eighteenth Egyptian dynasty. If the king of Kadesh, conquered by Thothmes III. at Megiddo in the sixteenth century B.C. was a Hittite, as appears probable, since Kadesh on Orontes (now Kades) was the objective of his campaigns, and was certainly a Hittite capital, we have also evidence of the presence of Hittites far south before the exodus; and there appears to be no sound reason for questioning the existence of Hittites in the south, as stated in Genesis.

The discussion is of interest to me, because the view put forward from the University of Liverpool is that which I proposed in the *Times* in 1887, long before De Cara had written anything on the subject, and which I have been allowed, from time to time, to advocate ever since in your columns. The evidence of the texts found by Chantre in Cappadocia, to the same effect, was published by you on October 10 and October 24, 1899; and the bearing of the question on the decipherment of the Cretan texts on April 16, 1901. The letter which you have now published is entirely in accord with the view which I have advocated in my volume on the "Hittites and their Language," published by Messrs. Blackwood in 1898. There can, to my mind, be no doubt (especially since the discovery of a Hittite text at Babylon), that this important tribe belonged to the same Mongol race which (as Akkadians) first became civilised in Mesopotamia, and spread to Cappadocia, Ionia and Egypt; that their language also was Mongolic, and that the Etruscans, who reached Italy from Lydia, were an offshoot of the same energetic stock.

THE CAMPANILE OF ST. MARK'S.

A CORRESPONDENT of the *Scotsman* in Venice, who has carefully followed the efforts to erect a new campanile, in his last communication refers to the laying of the first stone of the new campanile of St. Mark's on the foundations of the old campanile, when no excavation had been made round these foundations to ascertain what their state was under the level of the Piazza of St. Mark's. When that excavation was made in order to broaden those foundations, it was discovered that they were not below ground what they were above it. Their condition was discovered to be such that they could not be built upon. The stones were loose, as the lime had been washed away from between them, and these stones themselves were laid irregularly, apparently in water. The result was that the architect Beltrami, who had charge of the work, hastily threw it all up, and left Venice. Since then it has been at a standstill. At last, however, it has been resumed, not that anything quite definite has been yet settled by the five architects who have taken the place of Beltrami, but their hope is that they may be able to go on without either taking the old foundations entirely away or building on them as they are. As, in any case, the foundations must be enlarged, that work is being proceeded with. The old foundations cover 255 square metres; the three metre broad trench that has been dug round them contains 275 square metres, which would make the enlarged foundations to cover 525 square metres. This trench has been carried four metres below the level of the Piazza, so that its bottom is on a level with the tops of the piles and the two platforms of wood on which the old foundations are placed. But before anything can be done the mucky, wet bottom of the trench must be made firm and solid. This is being done now by the driving in of larch piles, strong tree trunks, 4 metres long, and sharpened at one end. They are not being driven in touching each other, as was done in preparing for the foundations, of palaces in olden times, but intervals are left between them to be filled in with cement. As

is, 4,000 piles will be required. Four battering-rams are in use, and the work of driving goes on apace. In bygone times the strokes of the battering-rams were tuned to the music of popular songs that described the work being done. This has been prohibited, as complaints have been made to the authorities that the singing gave annoyance and attracted crowds. Still, as the men must sing to regulate the pull up and the drop of the iron ram, which weighs 230 kilogrammes, they do it almost as an undertone. Some of the lines of the song are such as these:—"Up to the cupola and down to the sea;" "It's gone, seek its companion, where there's neither sun nor moon." It is a pity that anything so characteristic of Venice should be modified. It is losing its old character fast enough.

When these piles are driven home, and the platforms of oak laid on them, then pieces of the old foundations will be removed, and the new platforms of oak properly joined to the old, and the foundations also solidly united. The hope is that this may suffice, and thus the shame of having to take all down and begin to build new foundations altogether be avoided. However, all depends on what the partial removals of the old foundations may reveal. Several months must elapse before the pile-driving is completed and the time come to touch the new work. During these last ten days of high tides and heavy rains it was found almost impossible to keep the trench clear of water, and indeed the pile-driving was frequently interrupted.

GLASGOW ARCHITECTURAL ASSOCIATION.

At the second ordinary meeting of the Glasgow Architectural Association, held in the rooms, Pitt Street, Glasgow, on Friday last, a paper was read by Mr. C. Ernest Elcock, entitled "Through York with a Camera." The audience was taken on an extensive tour through the old city. The cathedral, the minster, came in for a large share of attention, the lecturer rapidly sketching its rise from about the middle of the seventh century to the present day. Some good slides of portions of the streets and houses not usually photographed were also shown, not omitting the "Bars," or ancient gates, of the city, which are in a remarkably good state of preservation. In the course of the paper the lecturer made several pointed allusions to the imitative and "slavish copying of antique detail," which is unfortunately the prevailing style of much of present-day architecture. In closing, he strongly encouraged all his hearers to endeavour to express in their work the customs and requirements of modern life, not cloaking their buildings with an architecture which belonged to other climatic conditions and needs, but erecting buildings instinct with the life and vigour of our own times, yet free from the outrageous torturing of material which is supposed by some eccentric individuals to be the acme in architectural design.

PRESERVATION OF ANCIENT MONUMENTS IN INDIA.

A RESOLUTION of the Government of India directs that in future the annual reports of the purely departmental work of the archaeological surveys shall be distinct from the reports of the progress of archaeological research in India. The latter are in future to be prepared with the aim of supplying the public and students of archaeology with interesting and readable accounts of the archaeological work being done in the country year by year. In the words of the resolution, they are to contain clear and accurate accounts of the works of restoration and preservation of important buildings and sites of excavations and fresh discoveries, and will be illustrated. They will also give a *résumé* of the epigraphical, numismatic, exploratory and other work of the department compiled from special reports of the provincial surveyors and from personal observation. The preparation of drawings should continue slowly and methodically, and they should be given to the public as soon as they are ready, but the free use of the more economical process of photography is inculcated for the illustrative work of the archaeological survey. "Whenever scaffolding is erected to carry out repairs to a building the opportunity should be taken to photograph any architectural details which would otherwise be inaccessible to the camera. A complete series of photographs should also be made of both the exterior and interior of buildings selected for extensive repairs before the work of conservation is commenced. In the case of structures of a perishable nature or in an advanced stage of decay, it is specially desirable that complete photographic illustrations should be obtained without delay. It should further be the aim of the department to make its photographs freely available to students of archaeology, for which purpose a catalogue of them should be published periodically." As to the preservation of ancient monuments, the Government does not think that this work is sufficiently attended to at present;

and accordingly, rules are laid down requiring the surveyors to advise on conservation and restoration within their districts, as well as to make lists of the ancient monuments there, and to assist and supervise the officers of public works in the task of repairing and preserving them. In respect to ancient sites, local Governments are desired to permit no excavations except by thoroughly competent persons, and to disturb ancient sites only under the supervision of the local archaeological surveyor.

USHER HALL, EDINBURGH.

A PUBLIC meeting of citizens "who consider that competitive plans should be invited for the construction of the Usher Hall," was held on the 6th inst. Sir Colin G. Macrae presided.

The Chairman said it was certainly of the utmost importance that the desire of Mr. Usher should be carried out to the best of the ability of those in charge of the matter. There were sufficient reasons why the proposal of the Town Council should not be adhered to. He would be the very last man to say one word in disparagement of the city architect. He had no doubt that the city architect discharged his duties with efficiency and ability, and certainly to the satisfaction of his employers. If it had been a case of erecting a police station or a fire station, or some work within the natural administration of the Town Council, there could have been no question raised, but when it came to the matter of the Usher Hall they got on exceptional ground. It was of the utmost importance that the building erected should be one that would adorn and beautify and not discredit the city. It was a most important matter, if they wished to encourage the talent and genius of a country, that public works should not be confined to officials. He quoted what happened in the case of the Scott Monument, which was the work of an obscure and little known architect, who was successful out of fifty-four competitors. The Town Council, he thought, would do well to reconsider the resolution they had come to, and possibly to withdraw it.

Mr. Will. C. Smith, K.C., moved "That this meeting of citizens strongly disapproves of the proposal of the Town Council to entrust the preparation of the plans for the Usher Hall to the city architect, and urges that competitive plans be invited therefor; and that an independent assessor of undoubted standing be appointed to adjudicate upon them." He said the resolution had not been brought forward in any spirit of criticism or depreciation of the works department. He did not know what experience either Mr. Morham or Mr. Williamson had in the designing of a large public hall such as was now proposed to be erected in Edinburgh, but he was quite sure that if the work were entrusted to either of them they would get their best efforts in the matter; but the principle of the resolution was that this was the business not of a temporary body like the Town Council, it was the business of the citizens of Edinburgh who were to enjoy the hall in all time to come. If Mr. Usher's gift were used wisely his good example might possibly be followed by others. The site was one of the most interesting and beautiful in the city, and upon the wise use of it would depend whether they added to the beauty of the city, or, possibly, impaired it for ever. However excellent the city architect's department might be, why on earth should the citizens of Edinburgh in this matter confine themselves to one source of inspiration and ideas?

Professor Baldwin Brown, who seconded the resolution, said that as a matter of fact competitions for designs had recently led to no very satisfactory result, but that was because the honourable understanding upon which these competitions were based and intended to be carried on had not been fully accomplished. The game had not been played according to the rules. It was not a perfect system, and a committee of the Institute of British Architects were considering whether it could be improved; but he did not know any other system which gave any young and untried architect his chance. The site was in a magnificent situation, but it was obvious that it did not offer an opportunity such as it would if the building were on the open Meadows. At any rate, there was a façade to Castle Terrace, in full view of a considerable part of Princes Street. If it were only that, he would feel pretty confident in handing over the work to the excellent architects in the office of the works department of the city, because in these matters they had a tradition in Edinburgh. He did not think any architect could go very far wrong if he followed the Edinburgh tradition in monumental façade, but they had to consider the interior, where questions of colour, wall-painting, and decoration and material had to be considered. The public taste and artists' opportunities had very much advanced. They wanted an architect of genius who would set the fashion for the future, who would show what it was possible to do in an interior with the use of the comparatively new material which was now available. With all possible respect to the works department he should not like to say that there was there either genius or

originality. He did not think genius and originality were in their place in the Town Council or in any department of it. As a matter of principle they should express the opinion that in a matter of that kind, which lay entirely outside the routine work of the Town Council, the members of the architectural profession generally should have their chance of showing what they were capable of doing.

Mr. John Sanderson said he had many conversations with the late Mr. Usher on the subject of the hall, and he knew Mr. Usher's feeling was that there should be open competition for the design. On one occasion Mr. Usher promised a young architect that when the plans came to be prepared he should get a chance of competing.

The resolution was unanimously adopted.

LEEDS ARCHITECTURAL SOCIETY.

AT the annual meeting of the Leeds and Yorkshire Architectural Society, Mr. Butler Wilson, the president, in the chair, Mr. H. S. Chorley (hon. secretary) presented the twenty-eighth report, which is a detailed account of the proceedings of the Society for the past eighteen months. The aggregate membership, it appears, is 141, namely, thirty-one honorary members, sixty-one members and forty-four associates, as against a membership of 137 at the date of the last report, showing an increase of four. The Council express regret that Mr. C. R. Chorley, one of the oldest members of the Society and a past president, has resigned his membership on account of his leaving Yorkshire on his retirement from business. Regret is also expressed at the resignation of Mr. J. Tweedale, and at the death of Mr. E. Birchall, also a past president. At the preliminary and intermediate R.I.B.A. examinations for the North-Eastern Division of the country, in June and November, twenty-one candidates presented themselves. The competition among the associates for the prizes offered by the Society was keener and more enthusiastic than in the immediate previous years, and the work submitted was judged to be of a better and more even quality than had been the case in the three previous years. The silver medal and prize of 5 guineas given by the President for the best measured drawing of any ecclesiastical or domestic building erected anterior to 1800 A.D., was awarded to Mr. Martin Shaw Briggs for measured drawings of Swinsty Hall, Yorkshire. A special prize of 3 guineas was awarded to Mr. P. A. Horrocks for measured drawings of Hall & the Wood, Bolton; the prize of 3 guineas for the best design of an entrance-lodge and gateway to Mr. Ralph Thorp; the prize of 2 guineas for the best essay on "Modern Street Facades in Leeds" to Mr. Martin Shaw Briggs, and the sketching prize of 3 guineas to Mr. J. C. Procter. The Council report that no further steps have been taken to create a chair of architecture at the Yorkshire College.

Mention is made in the report of the Council's active interest in the proposed laying-out of Victoria Square, and also in the improvement of City Square. In regard to the former it is pointed out that the first essential is the enlargement of the square on its southern side, the present area being totally inadequate to receive any architectural treatment which would be in scale with the town hall. In regard to City Square, the President formed one of a deputation from the Society to the improvements committee, and asked that a new frontage line at the south-west corner between Wellington Street and Quebec Street should be adopted corresponding to and exactly repeating the building line of the Standard Assurance buildings on the opposite side of the square, and also that the building to be erected on the vacant ground should harmonise, and as far as possible correspond in outline and skyline with the Standard Assurance buildings. It is satisfactory to record that this suggestion has been adopted. The Council express their gratitude for the valuable collection of architectural works bequeathed to the Society by the late Mr. E. Birchall, and notify that steps are being taken to deposit the Society's library with the City Library authorities for better security and supervision.

The report was adopted on the motion of Mr. G. F. Bowman, seconded by Mr. R. P. Oglesby.

Mr. W. H. Thorp (hon. treasurer) read the statement of accounts, which showed a balance in hand at the end of the financial year of 95*l.* 5*s.* 2*d.*, as compared with 96*l.* 8*s.* 1*d.* the previous year.

The balance-sheet was adopted on the motion of Mr. H. Perkin.

Dr. Charles Waldstein is now delivering a short course of four lectures at the University of London, South Kensington, under the University Extension Board. He will deal with the excavations in Greece since 1870. Dr. Waldstein has undertaken to supplement the lectures by one on "The Art of Praxiteles" some time early in the new year.

GENERAL.

The King is about to present to the British Museum and the Victoria and Albert Museum a great many objects and books which belonged to Queen Victoria, including sculptured slabs and a version of the "Book of the Dead."

The Housing Committee of the London County Council are responsible for 4,363 tenements, accommodating 22,222 persons. The number of tenements unlet at present are 116. The total rent last year was 81,000*l.* The amount unrecovered was 103*l.*

The Institute of Builders announce that a lecture entitled "A Comparison of English and American Methods in the Erection of Buildings" will be given by Mr. C. Heathcote, of Manchester, in the hall of the Society of Arts on December 1.

A Statue of the Saviour, about 17 feet high, sent from Denmark, has been erected on the right of the steps of the approach to the Royal Mausoleum at Frogmore, near Windsor Castle, at the expense of Queen Alexandra, in memory of Queen Victoria.

A New Church in the Early English style of architecture, designed to accommodate 450 worshippers, was dedicated last week at Elland, in Yorkshire. The scheme has cost about 12,000*l.*, and when completed the total outlay will have been 15,000*l.* Towards this sum a loan has been raised by the rector among the parishioners at 4 per cent. on his own responsibility.

The Benedictine Abbey of St. Mary Buckfast, which is situated in the valley of the Upper Dart, has narrowly escaped destruction by fire. The abbey was founded before the Conquest. It was suppressed at the time of the dissolution of the monasteries by Henry VIII, but came into possession of the Benedictines again some twenty-three years since.

The Central Society of French Architects will give on December 9 a ball for the benefit of the charitable funds of the Society and of the Society of Fraternal Assistance of French Architects.

The Church of St. John, Leeds, built in 1631-33, the finest ecclesiastical building of the city, has been reopened after restoration at a cost of 1,500*l.*

The Bibliothèque St. Geneviève, which is opposite the Panthéon, was one of the first buildings in Paris in which iron was employed architecturally. When it was proposed to introduce electric light there was some hesitation. M. Henri Beau, the electrician, has been able to convince M. Dufrasse, the architect, about safety, and the installation will soon be commenced.

M. Roukhomovski, the son of the Russian artist who prepared the tiara of Saitapharnes recently in the Louvre, has become a pupil of the Ecole des Beaux-Arts. His two brothers are likely to imitate him.

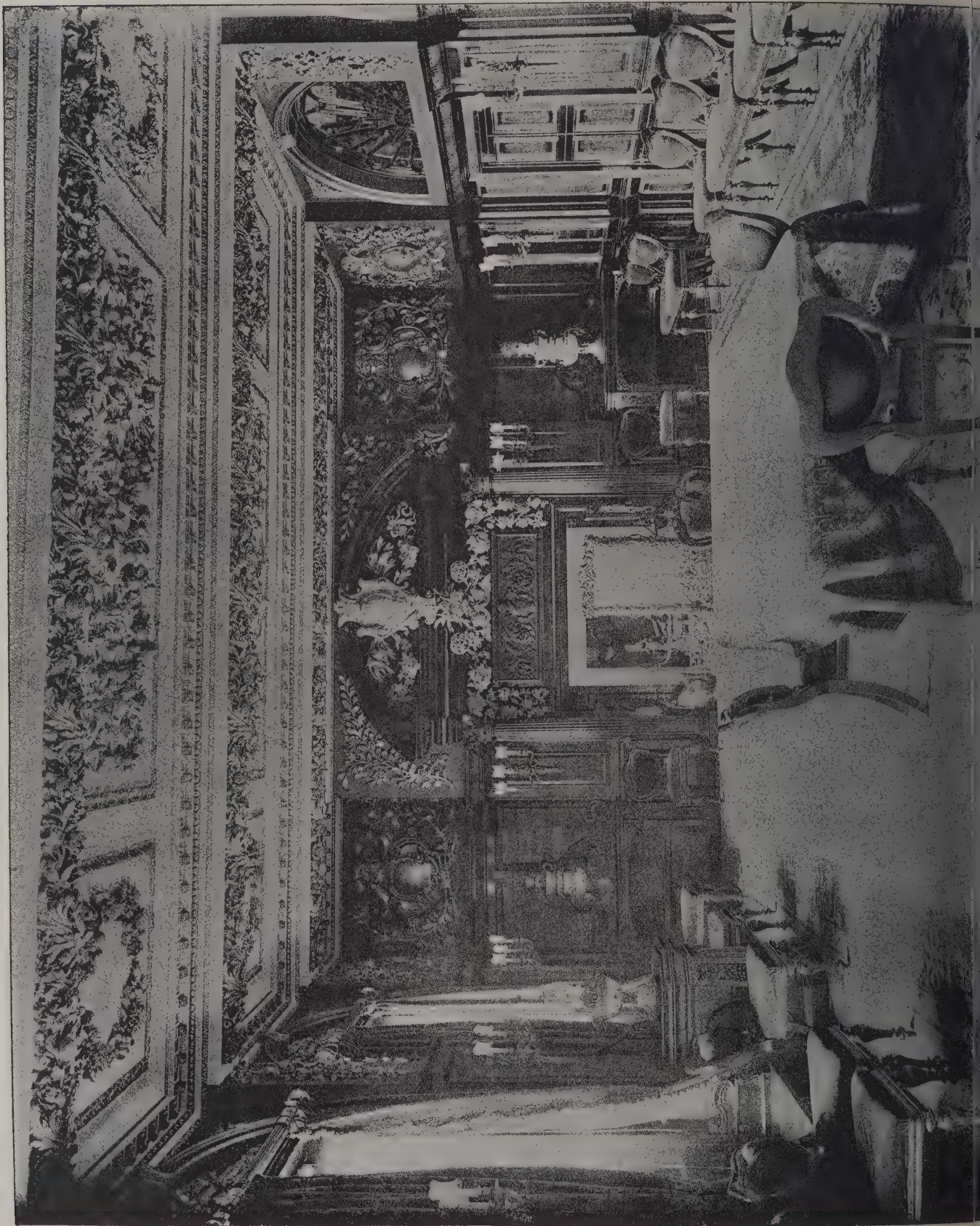
The London County Council have adopted the recommendation of the main drainage committee that the expenditure of a sum not exceeding 291,000*l.* should be sanctioned in respect to the construction of a second section of the proposed new sewers between the Crossness outfall and the Plumstead railway station, and that the work should be carried out without the intervention of a contractor, and that the drawings, specifications and estimates should be referred to the works committee for that purpose.

M. Verlet, the sculptor, has prepared a model of the statue of Prince Henry of Orleans, which is to be erected in the French colony of Indo-China.

The Liverpool Cathedral Committee have decided to proceed, in the first instance, with the main fabric of the building, including the choir and the cross of the transepts. This part of the building will accommodate a congregation of 3,500, and the cost will approximate to 240,000*l.* The superficial area to be occupied by the cathedral when completed will, it is said, exceed that of any similar building in Great Britain. It is hoped His Majesty will be able to lay the foundation-stone in the spring.

Beethoven's House in Vienna, the last he occupied, is to be demolished. Photographs of the rooms will be sent to various museums.

Viscount Portman, Lord Howard de Walden and the Borough Council are alike engaged in an effort to solve the problem of decently housing the working-classes in Marylebone at reasonable rents. Lord Portman has already completed blocks of artisans' dwellings in Queen Street, on his estate, and Lord Howard de Walden is providing similar accommodation in St. John's Wood. Jointly with the London County Council the local municipal authority is about to clear the insanitary Devonshire Place area, in preparation for the erection of improved industrial dwellings thereon; and, under part 3 of the Housing of the Working Classes Act, the Council will become the owners and managers of a block of artisans' dwellings to be built on a site already acquired in John Street.



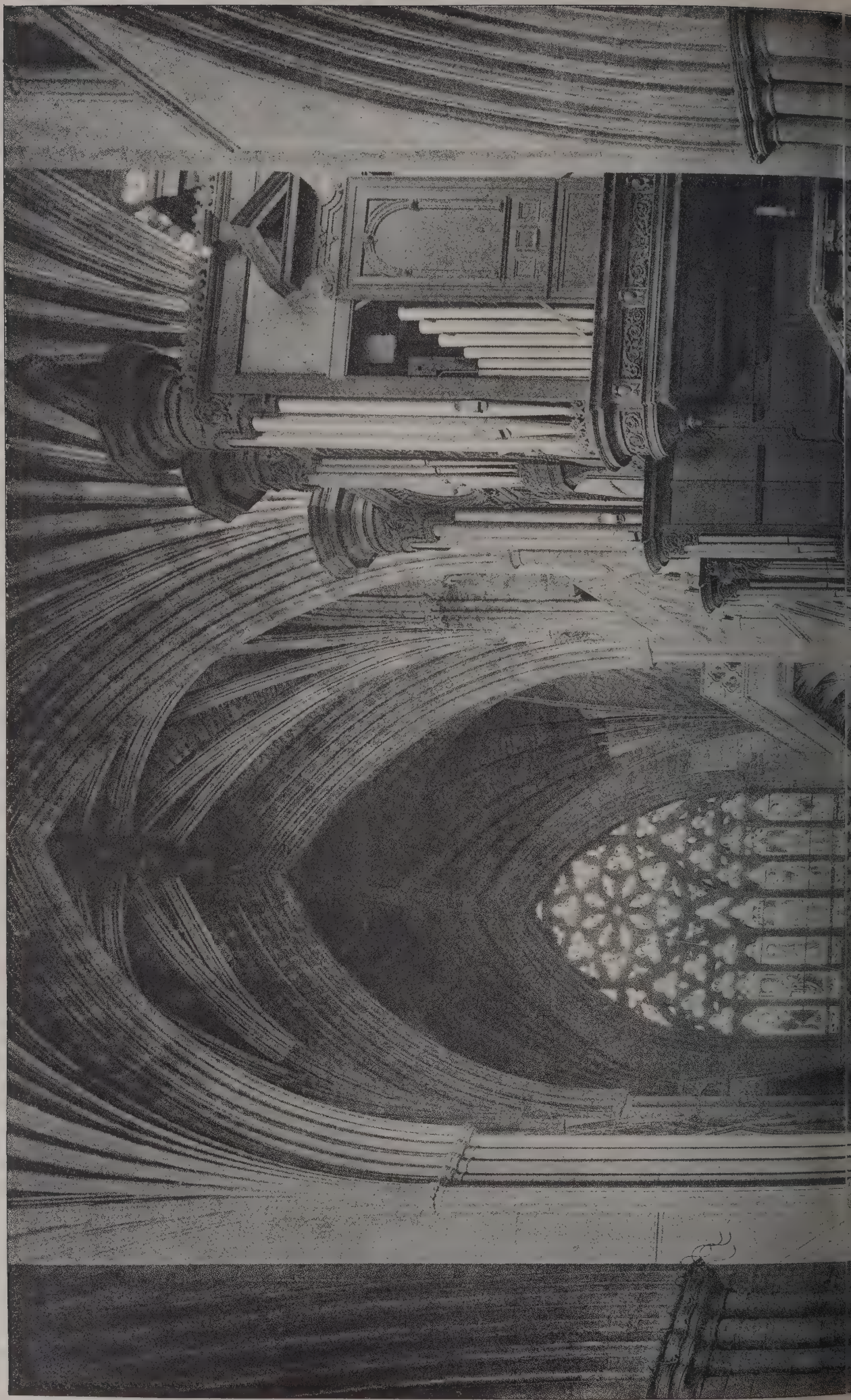


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COWLEY MANOR: DINING ROOM.

R. A. BRIGGS, F.R.I.B.A., Architect.

The Architect, Nov. 13th 1903.





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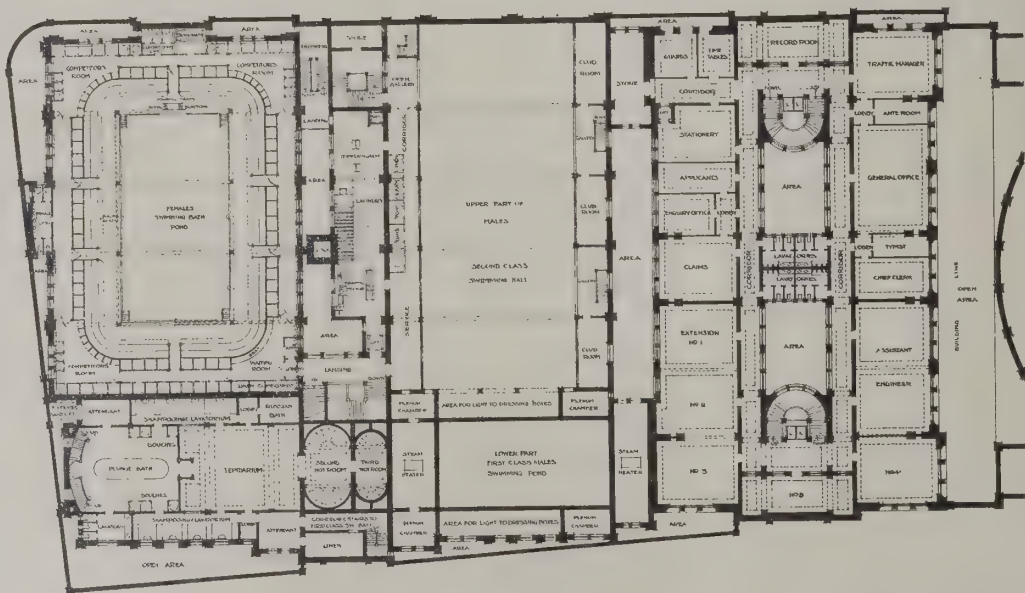
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UNIVERSITY of ILLINOIS



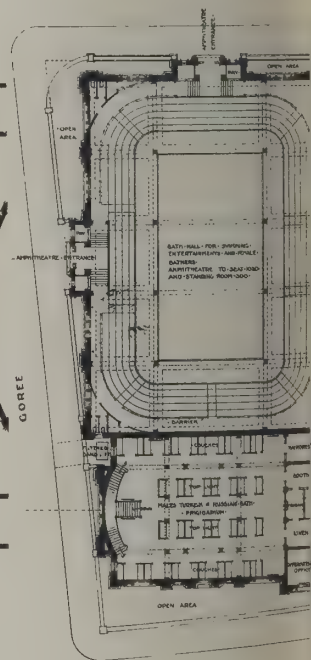
• MAIN ENTRANCE
TO BATHS •

OFFIC

• ELEVATION TO WATER STREET •

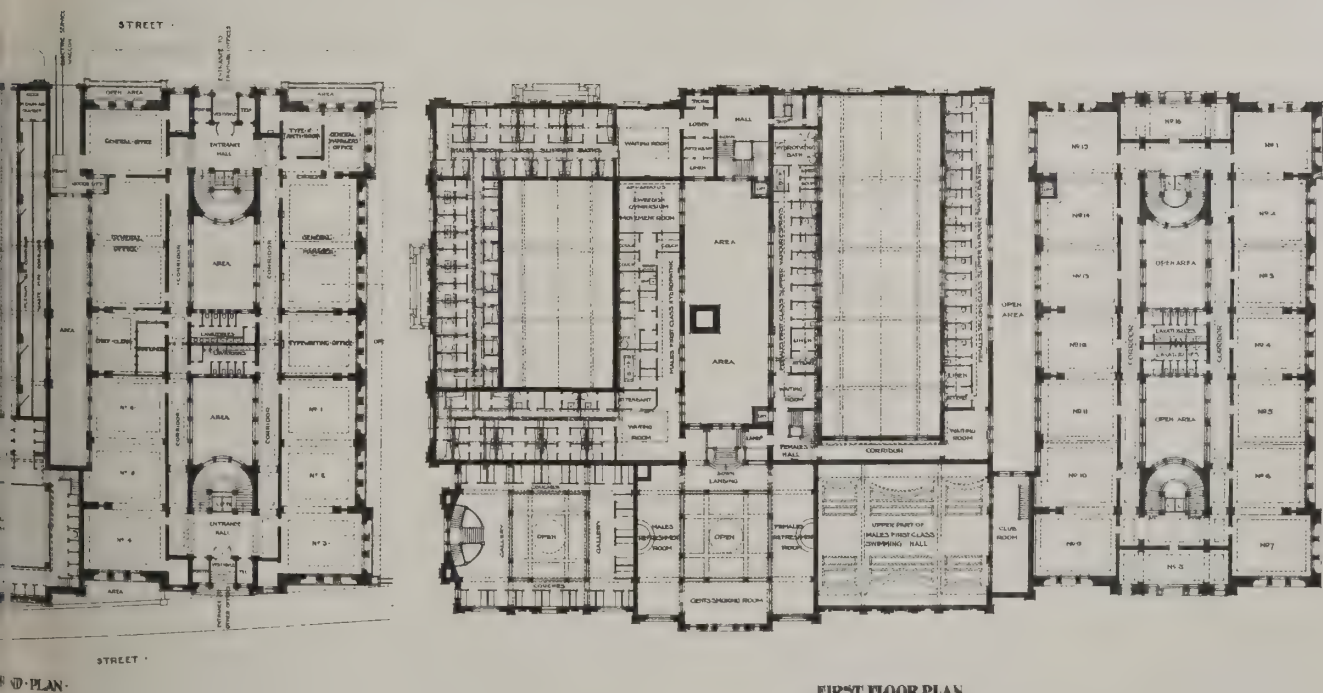


• LOWER GROUND PLAN •





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chitect.

THE Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

authors of signed articles and papers read in public must necessarily be held responsible for their contents.

communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BRAY.—Nov. 30.—The committee of Bray Pavilion and Water Gardens invite plans for proposed pavilion and winter gardens at Bray. First prize, 30*l.*; second prize, 15*l.*; third prize, 10*l.*; with three prizes of 5*l.* 5*s.* each. Messrs. Frank Snell, Edw. Lee and P. Macdonnell, hon. secretaries, Town Hall, Bray.

LONDON.—Dec. 16.—The Lambeth Borough Council are about to erect a public library, with residence for librarian, in the Herne Hill ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for plans for a public library, with residence for librarian, in the Herne Hill ward of the borough to Mr. H. J. Smith, town clerk, Lambeth Town Hall, Kennington Green, by 12 noon on December 16. General information as to the extent and nature of the accommodation required in the proposed library residence can be obtained on application to the town clerk.

SCOTLAND.—Dec. 7.—The Elgin Landward School Board invite competitive plans and estimates for the erection of school buildings at New Elgin capable of accommodating about 340 pupils. Mr. Hugh Stewart, clerk to the Board, Elgin.

SELY OAK.—Dec. 7.—Competitive plans and designs are invited for public baths at Selly Oak, near Birmingham. Full particulars of the site for the proposed baths, limit of maximum expenditure, &c., with copies of sketch plans showing the accommodation required, &c., may be obtained on application to the Urban District Council's surveyor, Mr. A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham.

SUNDERLAND.—Nov. 21.—Designs are invited for proposed additions and alterations to the town hall. Premiums 100*l.*, 50*l.* and 25*l.* will be offered for the first, second and third designs respectively. Mr. John W. Moncur, borough engineer, Town Hall, Sunderland.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l.* returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

BIRKDALE.—Dec. 4.—For the erection of a hospital, with the necessary isolation houses, administration block and other outbuildings at Birkdale, Lancs. Mr. J. F. Keeley, clerk to the Urban District Council, Town Hall, Birkdale.

BLACKPOOL.—Nov. 20.—For the erection of a parish church for the new parish of All Saints. Mr. Frank H. Gorst, architect, 7 Birley Street, Blackpool.

BOOTLE.—Nov. 18.—For the erection of a dwarf brick wall, stone coping and gate piers, and the supplying and fixing of wrought-iron railings and gates to enclose the Stanley Garden in Stanley Road. Mr. B. J. Wolfenden, borough engineer, Bootle, Lancs.

BOSTON SPA.—For the erection of banking premises and manager's house at Boston Spa. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

BRADFORD.—Nov. 16.—For additions to the central offices in Manor Row, Bradford, for the Guardians. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CROYDON.—Nov. 17.—For the construction of about 1,100 yards of brick culverts, 2 feet to 2 feet 9 inches in diameter, at Norbury. Mr. F. C. Lloyd, town clerk, Town Hall, Croydon.

DODWORTH.—Nov. 28.—For the construction of a brick culvert through or under land near Keresforth Road, Dodworth, Yorks. Mr. George Strutt, surveyor, High Street, Dodworth.

DORCHESTER.—Nov. 14.—For the erection of a cottage at Herringstone, Dorchester. Mr. J. Feacey, architect, South Walks, Dorchester.

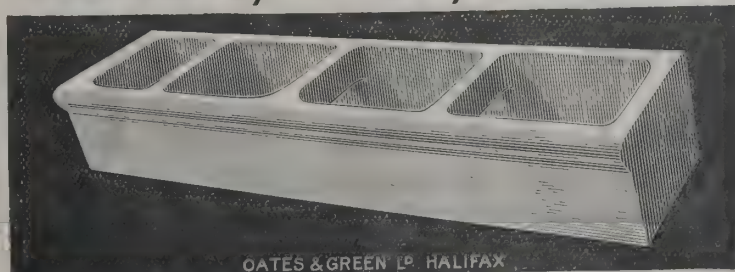
DROXFORD.—Nov. 23.—For repairs in the master's office at the workhouse. Mr. Francis Clark, clerk to Guardians, Bishop's Waltham, Hants.

DURHAM.—For the erection of new printing works at Stanley. Mr. T. E. Crossling, architect, Front Street, Stanley.

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DURHAM.—For the erection of coke ovens, boiler seats and chimney at Tanfield Lea Colliery. Messrs. James Joicey & Co., Ltd., Newcastle-on-Tyne.

DURHAM.—Dec. 1.—For alterations and repairs of dwelling-house at Heworth. Mr. H. Miller, architect, Council Buildings, Felling, Durham.

FELIXSTOWE.—Nov. 20.—For the erection of an additional house at Felixstowe Coastguard station, Suffolk. Particulars and bills of quantities will be supplied on application to the Director of Works Department, Admiralty.

HARTLEPOOL.—Nov. 18.—For plastering, colouring and painting at the Galley's Field school. Mr. H. C. Crummack, borough engineer, Hartlepool.

HINDLEY.—Nov. 21.—For the erection of a palisade wall near the grammar school, Park Road, Hindley, Lancs. Mr. Alfred Holden, surveyor, Council Offices, Hindley.

HORWICH.—Nov. 25.—For the construction of a storage reservoir at Marklands, catchwater reservoir on Wildersmoor, the laying of cast-iron pipes, also the construction of sewers, with manholes, &c. Mr. Peter Taverner, clerk to Urban District Council, Council Offices, Horwich, Lancs.

HOUGHTON-LE-SPRING.—Nov. 19.—For alterations to and the provision of a fireproof room at the union offices, Houghton-le-Spring. Mr. John Geo. Baty, clerk, Union Offices, William Street, Houghton-le-Spring, R.S.O.

IPSWICH.—Nov. 30.—For the erection of a new out-patients department at the Ipswich and East Suffolk Hospital (Dr. Bartlett's gift). Mr. John S. Corder, architect, Wimbourne House, Ipswich.

IRELAND.—Nov. 16.—For alterations and additions to premises, Castletownbere, to convert same into a hotel. Mr. Samuel F. Hynes, architect, 71 South Mall, Cork.

IRELAND.—Nov. 24.—For the erection of coastguard and signal stations at Aranmore, county Donegal. Specification can be seen at the District Office of Public Works, Londonderry.

KEIGHLEY.—Nov. 23.—For additions and alterations at Eastwood schools. Mr. Wilson Bailey, architect, Tanfield Buildings, Market Street, Bradford.

KENDAL.—For refronting the shop, 6 Cheapside, Kendal. Mr. John Stalker, architect, Kendal.

KNARESBOROUGH.—Nov. 28.—For the construction of a purifier-house and lime shed. Mr. J. E. Walker, surveyor, Town Hall, Knareborough.

LEEDS.—Nov. 17.—For the erection of a Wesleyan school hall, Lidgett Park, Roundhay. Mr. W. H. Beevers, architect, 26 Bond Street, Leeds.

LEEDS.—Nov. 18.—For the erection of a bridge over the Wortley Beck at Brown Lane. Particulars can be obtained from the City Engineer's Office, Municipal Buildings, Leeds.

LICHFIELD.—Nov. 27.—For the taking-down of the houses, stables, walls and outbuildings in Upper St. John Street (the site of the proposed workmen's dwellings). Mr. Emerson Brooke, city surveyor, Stowe Street Depot, Lichfield.

LINDAL-IN-FURNESS.—Nov. 19.—For the erection of a branch library, The Green, Lindal-in-Furness. Mr. J. Richardson, surveyor, Council Offices, Dalton.

LUTON.—Nov. 16.—For the erection of sheds and piggeries at the workhouse. Messrs. J. R. Brown & Son, architects, Castle Street, Luton.

MANCHESTER.—Nov. 19.—For the erection of temporary lodges on the infirmary site. Particulars may be obtained at the offices of the City Architect, Town Hall.

MANCHESTER.—Nov. 19.—For setting-back entrance gate, walling, railing, &c., and taking-down two entrance lodges at the Royal Infirmary. Particulars may be obtained at the offices of the City Architect, Town Hall.

MIDDLETON.—Nov. 16.—For the erection of ladies' lavatory; the erection of a urinal; building of gable ends at Dane Street; painting of three houses in Chester, Essex and Dorset streets; supply and fixing of wrought-iron railing, Rhodes recreation ground, &c. Mr. W. Welburn, borough surveyor, Town Hall, Middleton.

NANTWICH.—Nov. 19.—For the erection of an infirmary and nurses' home at the union workhouse, Nantwich. Mr. C. E. Davenport, architect, 152 Hospital Street, Nantwich.

NEWCASTLE-UPON-TYNE.—Nov. 20.—For alterations and extensions at Arthur's Hill Council school. Mr. Alfred Gaddard, secretary, Education Offices, Northumberland Road, Newcastle-upon-Tyne.

NORMANTON.—Nov. 16.—For alterations and additions to Normanton police station, for the West Riding County Council, Yorks. Mr. J. Vickers Edwards, county architect, Wakefield.

NOTTINGHAM.—Nov. 16.—For alterations and additions to the epidemic hospital, Bagthorpe. Mr. Frank B. Lewis, architect, Guildhall, Nottingham.

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OLDHAM.—Nov. 16.—For the erection of a proposed library in Middleton Road and Victoria Street, Chadderton. Messrs. A. R. Groome & J. Lindsay Grant, architects, 2 St. Peter's Square, Manchester.

PORTSMOUTH.—Nov. 16.—For the construction of a waiting-room and additional bedrooms at the lunatic asylum. Mr. Alexander Hellard, town clerk, Town Hall.

PORTSMOUTH.—Nov. 20.—For the erection of a school in Reginald Road, Eastney. Mr. G. E. Smith, architect, 145 Victoria Road, N., Southsea.

PUDSEY.—Nov. 18.—For additions to Prospect Mills, Pudsey. Messrs. Kendall & Bakes, architects, Calverley Chambers, Victoria Square, Leeds.

RADCLIFFE.—Nov. 30.—For the erection of butcher's premises and manager's house at Radcliffe. Mr. J. G. Crone, architect, 26 Cloth Market, Newcastle-upon-Tyne.

SALFORD.—Nov. 18.—For the erection of a retaining-wall Lower Broughton Road. Mr. L. C. Evans, town clerk, Town Hall, Salford.

SCOTLAND.—Nov. 19.—For the erection of Dennistoun district library, Glasgow. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

SCOTLAND.—Nov. 23.—For the erection of a villa in Forth Avenue, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SHEFFIELD.—Nov. 23.—For the erection of sale-shops and artisans' dwellings on surplus land in Snig Hill. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

STOCKPORT.—For the erection of a church for the Methodist New Connexion at Cheadle Heath, Stockport. Messrs. J. Wills & Sons, architects, Victoria Chambers, Derby.

SUNDERLAND.—Nov. 24.—For the erection of offices near Wheatshaf tramway depot. Mr. F. E. Coates, architect, Fawcett Street, Sunderland.

THORNHILL.—Nov. 23.—For pulling-down and rebuilding boundary walls and other works in Savile Road, Savile Town. Mr. S. W. Parker, surveyor, Council Offices, Thornhill, Yorks.

TOTTENHAM.—Nov. 23.—For the erection of an infant department for 600, cookery-room and caretaker's residence, and alterations to the existing departments at the Lancasterian Schools, Church Road. Mr. G. E. T. Laurence, architect, 2 Buckingham Street, Strand, W.C.

WALES.—Nov. 16.—For the erection of a sun parlour at Montpelier, Llandrindod Wells. Mr. R. Wellings Thomas, architect, Llandrindod Wells.

WALES.—Nov. 16.—For the erection of a caretaker's house, with boundary wall and outbuildings, near the Council's offices at Ebbw Vale, and for alteration of the building formerly used as a pattern stores on the drill-ground into a fire brigade station. Mr. T. J. Thomas, town surveyor, District Council Offices, Ebbw Vale.

WALES.—Nov. 17.—For the erection of a gallery in the Richmond Road Baptist chapel, Pontnewydd. Mr. L. D. Jones, Cromwell Place, Pontnewydd.

WALES.—Nov. 23.—For (a) rebuilding wall in front of Bethel chapel, Glyn-Neath; (b) repairing churchyard wall. Mr. J. Stanley Thomas, secretary, Stanley House, Glyn-Neath.

WALES.—Nov. 26.—For the erection of two business premises at Pengam. Mr. Davies, Coal Hole inn, Gellihaf, Maesycwmmmer.

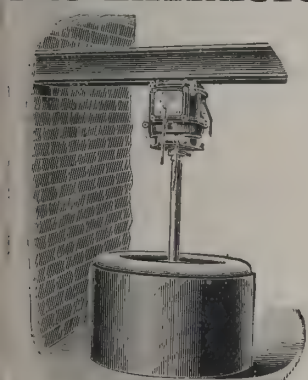
WALES.—Nov. 26.—For rebuilding 59 High Street, Merthyr. Mr. C. M. Davies, 112 High Street, Merthyr Tydfil.

WALES.—Nov. 26.—For the erection of a school for 250 infants at Edwardsville, Treharris, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect, Aberdare.

SERIOUS FIRES.

THE close of the past week has once more demonstrated the absolute need of the use of fireproof materials in the erection of not only public buildings, but also all workshops and manufacturing, and for this reason we would urge upon architects the absolute necessity for using fireproof material in the erection of these buildings. In cases where building owners have been misguided enough, and still are, to erect important premises without the assistance of a qualified architect, great responsibility is being incurred. The Building Act partially offers protection, but quite inadequately. The fires which have so disastrously broken out last week at Glasgow, in the Euston Road and the Bethnal Green Road, London, and also at Accrington, have been one more warning of the unprotected state of many of our works and factories. We do not wish here to recommend any particular material, but a perusal of our advertisement pages for the past month will suggest so many materials of service in this respect.

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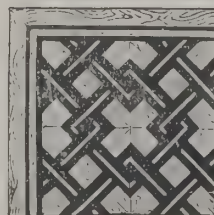
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(accepted). £855 0 0

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J. W. HEGINBOTTOM, Droydsden (accepted) . . . 42 15 0

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For street works in Purlwell Hall Road, North Bank Road and Yard No. 9 off Cross Bank Road. Mr. O. J. KIRBY, borough surveyor.

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Yard No. 9 (accepted) £1,828 6 4

G. Whitehead & Son 1,277 12 0

W. Yates 1,227 14 7

A. Graham & Sons 1,192 13 3

D. T. Speight & Co. 1,156 12 0

C. Waterhouse 1,155 19 8

Garforth Bros. 1,141 11 0

F. Crabtree 1,061 0 11

G. & J. Mortimer 1,060 7 4

M. Hall 1,048 19 6

S. Coop & Son 1,034 11 3

H. & W. Barraclough 1,009 18 7

KENYON Bros., William Street, King Cross,

Halifax, streets (accepted) 894 5 4

For the erection of an approach tower to the Independent Methodist chapel, Cambridge Street. Mr. O. J. KIRBY, borough surveyor.

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Gayforth & Day 370 0 0

A. Graham & Sons 362 0 0

S. S. Baines 328 14 0

Humphreys & Green 298 18 7

Chadwick Bros. 273 8 6

B. Farrar 261 0 0

G. F. Hepworth 240 0 0

G. & J. MORTIMER, Carlinghow (accepted) . . . 197 10 0

BATLEY—continued.

For the erection of boundary walls at the sewage outfall works, Bradford Road.

J. Crossley, jun. £676 19 0

G. Whitehead 668 12 0

E. Chadwick & Son 605 13 6

B. Farrar 530 0 0

J. Ackroyd & Sons 529 4 0

S. S. Baines 527 14 0

G. F. Hepworth 487 8 0

T. Mortimer 475 2 0

Grayshon & Pickles 473 19 0

G. & J. MORTIMER, Coal Pit Lane, Carlinghow

(accepted) 421 2 0

For excavation work and the erection of retaining and face walls in Carlinghow Lane

Wall.

S. Coop & Son £1,231 0 0

J. Oldroyd 944 10 0

B. Farrar 927 0 0

J. Ackroyd & Son 892 8 0

A. Graham & Sons 881 0 0

S. Exley Bros. 758 10 0

J. Crossley, jun. 681 0 0

T. Mortimer 664 0 0

G. & J. MORTIMER, Coalpit Lane, Carlinghow

(accepted) 616 10 0

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B. Farrar 756 0 0

T. Oldroyd 714 1 0

J. Ackroyd & Son 693 10 0

J. Oldroyd 692 1 0

J. Crossley, jun. 631 0 0

T. Mortimer 561 0 0

S. EXLEY BROS. (accepted) 558

BRADFORD.

For the erection of district baths, Wakefield Road, Bradford.

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R. Raper, Bradford, carpenter and joiner.

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T. Nelson & Son, Bradford, slater.

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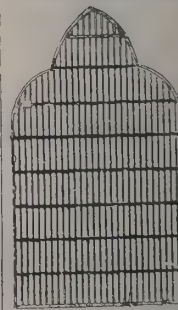
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J. Smith	3,352	0	0
T. Binns	3,253	13	0
kinson Bros.	3,162	0	0
os & Foad.	2,995	0	0
H. B. Neal.	2,983	0	0
G. Osenton	2,982	1	5
J. Adcock	2,886	0	0
Browning	2,876	0	0
Rutter	2,813	3	11
Bell	2,810	0	0
ner & Co.	2,800	0	0
n & Co.	2,779	0	0
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(2) G. A. DRAKE (accepted)	29	10	0

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H. S. Watling	£1,760	0	0
G. S. Faulkner.	558	5	6
S. Kavanagh	539	0	0
Mott & Sons	510	0	0
A. C. Soan	470	0	0

Barfields Road.

H. S. Watling	2,850	0	0
Mott & Sons	1,059	0	0
G. S. Faulkner.	1,017	6	4
S. Kavanagh	994	0	0
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Watling	1,400	0	0
Hewins & Goodhand	1,282	11	0
W. BURKITT, 7 Brecon Street, Buckingham Street, Holderness Road, Hull (accepted)	983	10	4

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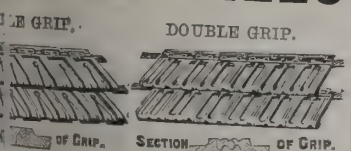
Watling	950	0	0
T. R. Waterman	801	0	0
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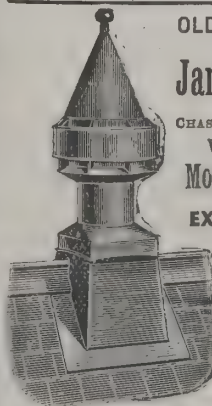
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C. Emmett.	8,550 0 0
Wisdom Bros.	8,300 0 0
A. & B. Hanson.	8,194 0 0
Leslie & Co.	8,147 0 0
Sheffield Bros.	8,100 0 0
J. Ferguson & Co.	8,045 0 0
E. Plaistowe.	7,859 0 0
W. IRWIN, Islington (accepted).	7,455 0 0

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For piling at Alexandra Park. Mr. E. BUCKHAM, borough	
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Moran & Son.	£290 0 0
G. Double.	271 0 0
A. Fasey & Son.	216 0 0
S. A. Kenney.	213 0 0
S. SKERRITT, Ipswich (accepted).	175 0 0
G. Burgoyne (withdrawn).	87 10 0

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valves at the Ipswich Borough Asylum. Mr. E. BUCKHAM	
borough surveyor.	
A. Stearn & Son.	£238
Crisp & Smith.	205
F. H. ORVIS, Bishop's Hill (accepted).	192 1
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W. H. Death.	339
S. A. Kenney.	320
A. Sadler.	320
G. Grimwood & Sons.	307
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C. A. Green.	280
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Adams	1,688	0	0
Kitteringham	1,574	0	0
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Bloomfield	1,437	0	0

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Stimpson & Co	6,195	0	0
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B. E. Nightingale	5,840	0	0
J. APPLEBY & SONS, Cornwall Works, Lam- beth (accepted)	5,794	0	0

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For making-up a portion of the Springfield Road. Mr. JOHN
ELFORD, borough surveyor.
G. T. BUDDEN, Newtown, Poole (accepted) . £238 7 6

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For the erection of a stone wall, cast-iron railings, bandstand
foundation, &c., in Easton Square. Mr. R. S. HENSHAW,
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G. T. Conway £826 6 8
Wakeham Bros. 673 10 0
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R. Farrer, joiner.
J. Scarth, plumber.
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F. Thompson, slater.
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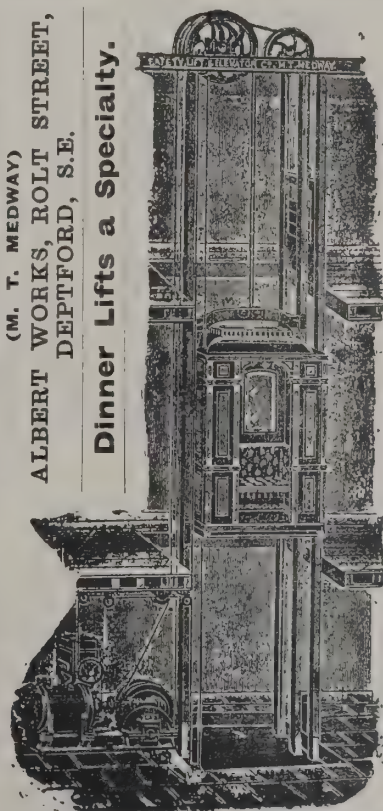
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QUEENBOROUGH.

For providing and laying about 409 lineal yards of 4-inch cast-iron water-main, with valves, hydrants, air-valves, &c. Mr. H. SMALL, borough surveyor, Town Hall, Queenborough, Sheerness.

J. Coker	£239	12	3
C. J. Harris	220	0	0
J. T. Murry	191	2	2
W. Lodder	162	4	6
H. Statham	143	15	0
J. Bligh	136	12	0
A. T. Catley	135	0	0
G. Hancock	125	0	0
MILLEN & CHRISFIELD, Sittingbourne (accepted)	119	15	0

ST. ALBANS.

For drainage-works in Boundary Road, Upper Culver Road and Heath Road, St. Albans.

J. DICKSON, Townsend (accepted)	£358	0	0
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ST. AUSTELL.

For laying pipes for an additional water supply to Fowey, St. Austell, Cornwall.

J. H. MITCHELL, Tywardreath (accepted)	£134	17	0
--	------	----	---

SOUTHWICK.

For sewerage works. Mr. GEO. W. WARR, surveyor.

J. Parsons & Sons	£449	0	0
E. King	421	15	6
Saunders Bros.	402	0	0
W. Whiteman	389	0	0
J. Whittington	379	0	0
C. Mayo	371	0	1
WOOLGAR BROS., Albion Street, Southwick (accepted)	359	5	10

SOWERBY BRIDGE.

For the erection of a fire-brigade station in Hollings Mill Lane, Sowerby Bridge, Yorks.

Accepted tenders.

J. Turner & Sons, mason.
J. Sutcliffe & Sons, joiner.
J. Kershaw & Sons, plumber.
T. Dyson, concreter.
W. Robinson & Son, slater.
A. Siddal, steelwork.

UXBRIDGE ROAD.

For the erection of shops and residential flats. Messrs. PALGRAVE & Co., architects, 28 Victoria Street, S.W.

J. W. Dean	Bath Stone.	Terra-cotta.
Kellett & Sons, Ltd.	£21,000	£21,000
Chessum & Sons	20,025	19,750
Leslie & Co.	19,625	19,625
H. G. Holloway	18,861	18,861
	18,763	18,823

WALES.

For the erection of new schools for 1,200 children, with boundary walls, playsheds, latrines and caretaker's house. Llanishen Street, The Heath, Cardiff, for the Cardiff School Board. Messrs. VEALL & SANT, architects, Cardiff.

Shepton & Son	£18,623	0	0
David Davies	18,239	0	0
W. Thomas & Co.	16,417	0	0
E. R. Evans & Bros.	16,277	0	0
Jas Allan	15,724	0	0
C. C. Dunn	15,600	0	0
Symonds & Co.	15,411	0	0
Knox & Wells	15,400	0	0
W. T. Morgan	15,050	0	0
Lalley & Co., Ltd., Cardiff*	14,832	0	0

* Accepted subject to approval of the Board of Education.

For the widening and improving of a length of about 200 yards of the district road leading from Porthcawl to Pyle, and on the Pyle side of Nottage.

Barnes, Chaplin & Co.	£343	4	2
E. Powell	299	0	0
David & Howell	337	12	4
R. JONES, Coychurch (accepted)	259	12	8

WATFORD.

For the construction of 306 lineal yards of 9-inch earthenware sewer and 217 lineal yards of 9-inch earthenware surface-water drain, with manholes, &c.

W. E. Bushnell	£539	18	8
Siddons & Freeman	426	9	0
W. Halsey & Son	419	7	11
G. R. Mann	403	9	3
Bracey & Clark	351	0	0
A. B. Champliss	286	1	3
H. BROWN, Watford (accepted)	277	0	0

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322 Fawcett Road, SOUTHSEA.

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C. Bradshaw & Son,
Chapel Street, St. Philips Marsh.

WILLESDEN.

extension of the new infirmary in Acton Lane, Willesden Junction, N.W., for the Guardians of the Poor of Willesden Parish. Mr. ALFRED SAXON SNELL, architect. Quantities by Messrs. NORTHCROFT, SON & NICHOLSON.

Somerford & Son	£5,629	o	o
& B. Hanson	5,278	o	o
erridge & Shaw	5,263	o	o
Gray Hill	5,230	o	o
owley & Drake	5,221	o	o
eslie & Co.	5,153	o	o
Laurence & Son	5,149	o	o
Ferguson & Co.	5,120	o	o
Reason	4,997	o	o
Chamberlain	4,965	o	o
Appleby & Son	4,947	o	o
GODSON & SONS, Kilburn Lane, W. (accepted)	4,930	o	o

BUILDING AND BUILDERS.

CONTRACT for steel tram rails, which it is estimated will come 90,000l., is one of the requirements of the London City Council. Tenders will be shortly invited.

NEW Primitive Methodist premises, to cost 3,000l., are to be built in Memorial Road, Walkden, to supersede a mission-school.

THE Hon. Mrs. Meynell Ingram has contributed 30,000l. towards the cost of a new church and vicarage at Holbeck. Halifax laid the corner-stone of the edifice on the 7th

THE memorial-stone of a new Masonic Temple which is being erected in Cadzow Street, Hamilton, N.B., at a cost of 7,000l., and is now nearing completion, was laid on Friday last.

THE designs for the new Waldorf hotel, and the two theatres to be erected in Aldwych, the new thoroughfare from the Strand to Holborn, have met with the approval of the London City Council.

MR. F. W. M. KING, architect, has been re-elected for the first time to represent South Norwood on the Croydon Council. This represents some fourteen years' service, part of

which has been spent as chairman of some of the most important committees of the borough.

A NEW Presbyterian church is shortly to be built at Croydon. For that purpose freehold land was purchased some two years back, and temporary buildings erected. Last week a bazaar was opened by the Right Hon. C. T. Ritchie for the purpose of providing the necessary funds.

THE foundation-stone of the new town hall at High Wycombe was laid last week. The hall, which will cost about 11,000l., will be the largest public building in Buckinghamshire. The site is in Queen Victoria Road, which Earl Carrington recently constructed in commemoration of Her late Majesty's reign.

THE Urmston District Council have confirmed a resolution of the general purposes committee to the effect that Messrs. Hopwood (chairman), Hill and Scholfield be a sub-committee to inquire into the question of the provision of new Council offices for the district and report to a future meeting as to how and when such premises can be erected.

MR. W. H. LEVER is building a new Congregational church at Port Sunlight at a cost of 25,000l. An important reservation in the trust deed is that, in the event of the premises ever being required by Mr. Lever's firm for business purposes, he will repurchase them at a sum of not less than 50,000l., which shall be expended by the trustees upon similar property on another site in the same town.

FOR three months a young woman, Mrs. Earl F. Boutwell, kept her sex a secret from her friends at Niagara Falls, and masqueraded the while in male attire. She worked as a carpenter with her husband, who gave his name as E. F. Bell. They secured a job to put up a verandah at the Central Hotel, and performed the contract very creditably. The disguised woman, we learn, was smooth of tongue, good-looking and very popular.

A NEW Wesleyan school is in course of erection at Carrville, Durham, the foundation-stone laying ceremony taking place on the 31st ult. The building will cost about 400l. It adjoins the chapel on the high side of the village, and will accommodate 300 children. Communication will be obtained with the chapel by means of folding doors, and on Sundays and other occasions when required the room will be utilised as a vestry. The work is being carried out by Messrs. Draper & Sons, contractors, of Leamside, from plans by Mr. J. Gradon, of Durham.

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THE PASTEUR FILTER

At the annual meeting of the Hanley Town Council, the town clerk stated that he had received a communication from the postal authorities to the effect that the plans of the Hanley new post office had been considered by the Postmaster-general and had now been approved. The contract drawings were well in hand, and it was hoped that they should be able to make a commencement with the work at an early date. The original plans, he said, were on a much larger scale than those which had now been adopted.

THE foundation-stone was laid last week of a new church for Broadheath, Worcester, for which great need has arisen owing to the rapid increase of the congregation, which has hitherto worshipped in a small chapel of ease erected in 1836. The new building, which is estimated to cost about 3,050*l.*, will consist of a nave, chancel, tower at the west end, and an ambulatory on the south side, which will afford an easy means for extension. Seating accommodation will be afforded for 210 people.

THE erection of the first section of Christ Church, Whaley Bridge, which will be a chapel-of-ease to Chapel-en-le-Frith parish church, is progressing, and it has just been decided to add a spire to the present structure. It is expected to be complete by Easter next year. Another new church for the Peak district is shortly to be built within three minutes' walk of Chinley station. Land for the site has been purchased, and is situate in the parish of Chapel-en-le-Frith. It will be designated St. John's Church.

VARIETIES.

MR. ARTHUR WALMISLEY, engineer, of 9 Victoria Street, S.W., has been elected Mayor of Dover.

THE Free Public Library, Stoke Newington, is being altered and enlarged. Mr. Sidney G. Goss, of Broad Street Buildings, E.C., is the architect.

THE new Wesleyan Methodist church and Sunday schools erected on a site adjoining the new County Council's buildings in Old Elvet, at a cost of about 11,000*l.*, were opened on the 28th ult.

A MONUMENT to the late Cardinal Vaughan is to be erected in Westminster Cathedral, and a committee, of which

the Duke of Norfolk has consented to be president, has been formed to carry out the arrangement.

THE Chancery Lane Safe Deposit Company desire to caution their numerous clients against unauthorised persons who apply for the renewal of policies under their key registration system. All the company's agents are furnished with official credentials and receipts.

THE British Chamber of Commerce in Paris has decided to form an Anglo-French Club, with suitable premises for the purpose in both London and Paris. The object is to bring into closer touch the manufacturers and merchants of the two nations.

THE new school which has recently been erected by the London School Board in Kingsgate Road, Hampstead, opened for the admission of children on Monday last. The building, which has cost over 17,700*l.*, provides accommodation for 452 boys and girls.

A REPRESENTATIVE meeting of commercial travellers at Leicester recently passed a resolution in favour of such change in our present fiscal policy as would secure for Great Britain a freer and fairer system of trading than at present exists. A similar meeting and resolution was passed at Portsmouth last week.

THE American company which is building the railway from Guayaquil, Ecuador, to Quito, has opened the station at Guamate, at an elevation of 10,000 feet, and 126 miles from Guayaquil. The most difficult part of the work on the railway has now been accomplished. With the exception of Lhasa, Thibet, Quito, in Ecuador, is the only capital in the world to this day can only be reached for a considerable part of the journey from the sea on mule-back.

MESSRS. SILK, WILSON & SONS, of Manchester, have constructed an excellent model of the Assouan Dam, which is intended for the forthcoming St. Louis Exhibition. The model was prepared at the request of Sir Benjamin Baker, the engineer, and Sir John Aird, the contractor. Its dimensions are 16 ft. by 4 feet, and as it is built exactly to scale it affords a splendid idea of the magnitude of the engineering feat which has been so satisfactorily completed. The model has been constructed with a careful eye to accuracy, both of detail and of colour, one of the engineers having visited Manchester for the express purpose of supplying all the necessary information.

AT Wreton, near Pickering, Yorks, on the 28th ult. a considerable number of Wesleyan Methodists attended the dedication of the chapel which they have recently had renovated.

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ILLUSTRATIONS.

FEDERAL SERIES.—EXETER: NORTH TRANSEPT AND CLOCK.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.:
GENERAL OFFICE.

COWLEY MANOR: DINING-ROOM.

DESIGN FOR CITY OF LIVERPOOL BATHS, TRAMWAY AND
OTHER OFFICES.

hoolroom has been built at the south end of the chapel to
mmodate about fifty scholars, there having, up to this
been no accommodation of the sort, and it will also be
as a vestry. The interior of the chapel has been re-
orged, new pews have been provided and a well-designed
um has been erected at the south side of the building. A
porch at the entrance on the north side gives an improved
arance to the exterior.

HE Benedictine Abbey of St. Mary Buckfast, which is
ted in the valley of the Upper Dart, narrowly escaped
uction by fire on Wednesday, Nov. 4. The stable and
r outbuildings contiguous to the church were burned down,
had it not been for the prompt assistance rendered by the
brigade belonging to an adjoining woollen factory, it is
eaved that the whole of the buildings would have been
royed. The abbey dates far back in English history, being
ded before the Conquest. It was suppressed at the time
e dissolution of the monasteries by Henry VIII., but came
possession of the Benedictines again some twenty-three
s since. Under the guidance of the Lord Abbot, the
ks are rebuilding a portion of the ancient monastery at
siderable cost.

AT Caersws last week Mr. Jones, of Trewythen, laid the
stone of the handsome village hall which has been erected
cost of close upon 2,000*l.*, and later, his sister, Miss Jones,
Brynhaflen, unlocked the front doors and declared the
ding open. The hall, which is the joint gift of Mr. and
s Jones, occupies a large piece of land, given by another
er, Mrs. Davies, of Plas Dinam, in close proximity to the

main street of the village. The hall has a handsome frontage,
and bears some resemblance to the Byzantine style of archi-
tecture; it contains a fine suite of rooms, the main hall,
which includes a gallery at one end and a platform at
the other, being 70 feet long by 32 feet and 25 feet
high. This room is flanked on the left by a commodious
reading-room and the right by a games-room, while at
the north end there are the usual cloak-rooms, and at the
south end the usual offices and tea-making-rooms. The outer
walls are of Sweeney brick and the front elevation is of Ruabon
brick with freestone dressings. The hall is well lighted by
means of a dozen or more windows of cathedral glass, a
number of hanging lamps being available for evening meetings.
A number of artistically-designed open fire-grates are provided
for heating purposes. The boundary wall is also of Ruabon
brick, and is surmounted by some handsome wrought-iron
railings, designed by the architect, Mr. Parke, of Newtown.
The building is well furnished with pitch-pine convertible seats
and desks; in fact, it is lacking in nothing, and the villagers
are to be congratulated on the possession of one of the finest,
if not the finest, village hall in Wales.

THE report of the Bishop of Manchester's Commission for
the provision of sites and buildings for churches and mission-
rooms in the five rural deaneries of Manchester and Salford
was prepared for, but not presented to, the Diocesan Confer-
ence. New subscriptions to the amount of 835*l.* had been
received since January, including a further liberal donation of
500*l.* from Mr. C. J. Heywood. The following amount was
paid in grants for sites and buildings in the year 1903:—
St. Hilda (site) 300*l.*, ditto (portion of 300*l.* grant, church),
50*l.*; St. Werburgh, Chorlton-cum-Hardy (church), 100*l.*;
St. James, Gorton (part of 50*l.* grant, site), 37*l.* 12*s.* 6*d.*;
St. Mark, Levenshulme (site), 50*l.*; St. Agnes, North
Reddish (site), 150*l.*; total 687*l.* 12*s.* 6*d.* A loan of 100*l.*
has also been made to the parish of St. James, Gorton,
towards the purchase of a site. Grants promised condi-
tionally and not yet paid are as follows:—St. Philip,
Bradford Road, for mission-room, 200*l.*; St. Hilda, Old
Trafford, church, 250*l.*; St. Cuthbert, Trafford Park, site,
1,200*l.*; St. James, Gorton, balance (site), 12*l.* 7*s.* 6*d.*; total,
1,662*l.* 7*s.* 6*d.* The present estimated deficiency in the fund is
900*l.* New parishes are to be formed at once. St. Philip,
Gorton, out of the parish of St. James; Holy Trinity, Fails-
worth, out of the parish of St. John; and St. Saviour's, Cheet-

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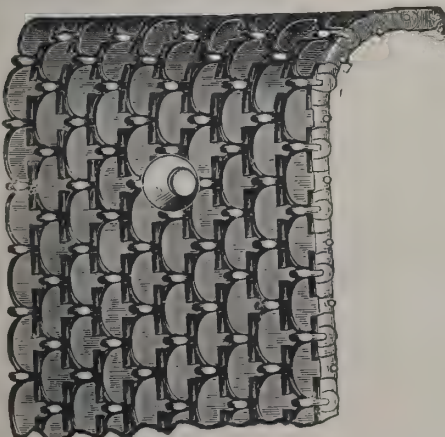
PATENT METALLIC WOVEN
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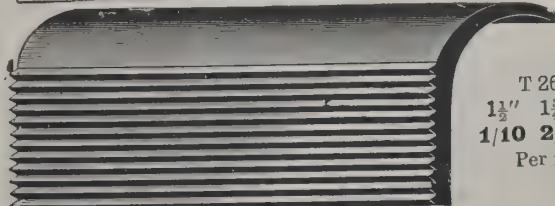


T 2110.

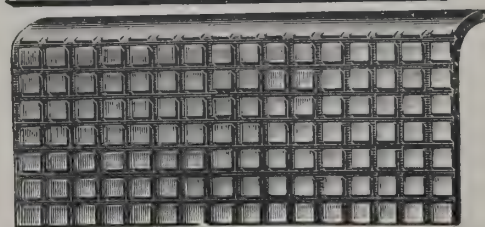
Block sizes	24"	27"	30"	33"	36"
including Nosing	2/6	2/11	3/3	3/6	3/9 each
"	3/9	4/3	4/9	5/3	5/8 "
"	5/-	5/8	6/3	6/11	7/6 "
"	6/3	7/-	7/10	8/8	9/5 "



T 2716.
1 1/2" Nosing.
2" 2 1/2" 3"
1/5 1/8 1/11
Per foot sanded.



T 2686.
1 1/2" 1 3/4" 2"
1/10 2/1 2/2
Per foot.



T 2718.
Sanded.
2 1/2" 3" 3 1/2"
1/6 2/- 2/6
Per foot.

ham, out of St. Alban and the Cathedral district. New parishes are to be formed in Newton Heath and Levenshulme, and for the former the Dean and Chapter have given a site for a church and rectory. In consequence of the bishop's resignation the duties of the Commission terminated at the close of the end of October. During the past seven years seventeen new districts have been formed on the recommendation of the Bishop's Commission, and seven others also recommended by the Commission are waiting formal sanction of the Ecclesiastical Commissioners.

ELECTRIC NOTE.

THE Marylebone Borough Council instead of (as at first proposed) seeking fresh Parliamentary powers enabling the Borough Council of Marylebone to complete the purchase of the local property of the Metropolitan Electric Supply Company, a course already decided upon as "expedient," will probably appoint a committee "to confer with the company with a view to an arrangement being arrived at to remove the present deadlock." The position is that, according to legal ruling, the Borough Council cannot raise the money to buy until they are the electric-lighting authority, and they cannot become that authority until they have bought. It is proposed to apply to Parliament to cut this Gordian knot and empower the Council to raise the requisite money of a million and a quarter. On the other hand, a minority are opposed under the circumstances to the completion of purchase.

TRADE NOTES.

MESSRS. R. WAYGOOD & CO., LTD., of Falmouth Road, London, S.E., inform us that they have removed their Glasgow address to 116 Hope Street, the premises of the Liverpool and London and Globe Insurance Company, where three of their electric passenger lifts have been fitted.

It may be of interest to architects to learn that the Sprague Elevator Company of New York have recently completed negotiations with the Metropolitan Engineering Association, of 4 Queen Victoria Street, E.C., for the sole representation of their interests in the British Empire and Europe. The splendid work which the forty-eight Sprague elevators installed in the

Central London Railway are doing is generally known, and Sprague elevators now embody the very latest improvements in lift construction.

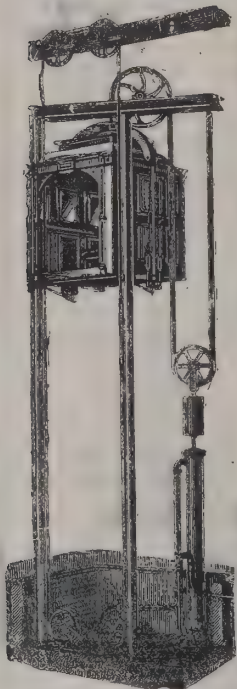
MESSRS. WILLIAM POTTS & SONS, church clock manufacturers, Leeds and Newcastle-on-Tyne, have received instructions to fix a Cambridge quarter-chime clock with two external dials at Killamarsch Church, Derbyshire. They are also completing a new church clock for Newcastle-on-Tyne Corporation at Christ Church, Shieldfield, Newcastle, and have just finished a large clock with two dials for Colonel Hope Edwards, J.P., Netley Hall, near Shrewsbury. All the above are from L. Grimthorpe's plans, for whom they have made clocks for half a century.

THE British Uralite Company, Ltd., of 50 Cannon Street, have received the following testimonial from Messrs. H. Baird & Sons, Ltd., maltsters and hop merchants, of Glasgow:—"Dear Sirs,—Regarding our recent fire at Springburn maltings, we have very much pleasure in stating that we were in connection with this a very practical demonstration of the value of Uralite as a protection against fire. In one particular instance we had a 5-horse motor which was placed right in the centre of the building which was burned. We had taken the precaution of having this carefully cased round with Uralite and then covered with Uralite, and it was found that after the fire was over the box and motor were absolutely intact, without the slightest injury by fire having been done.—For H. BAIRD & SONS, LTD. (signed), MONTAGU M. W. BAIRD, managing director."

NEW CATALOGUES.

A BROCHURE from the Fram Fireproof Flooring Co., Trafford Park, Manchester, contains handsome illustrations of the numerous important public and other buildings in which this method of fireproof construction has been adopted. Many of our readers are aware, this system of fireproof flooring is not only totally different from any form of construction hitherto in use, but also possesses entirely new and distinctive merits of its own. One of its great advantages is the extreme rapidity with which the floors can be laid and the immediate use to which they can be put, there being no occasion to wait for concrete drying, owing to blocks being supplied perfectly dry. The "Fram" arch block floors are constructed with ordinary rolled steel joists, placed at certain distances apart, and

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Owing to the demand for the Cathedral Series, all numbers previous to October 3, 1903, now charged at 6d. each.

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these the "Fram" arch blocks are laid. It is claimed they have been designed to give the greatest possible that can be obtained in a concrete floor, and that they have been introduced into the market, subjected to severe tests to establish their practical as well as their carrying capacity, the blocks, we are informed, actually sustained a load of over 34 tons on the square before giving way. "Fram" arch blocks were first introduced by Mr. Rud. A. Stoffert, of Glasgow and Edinburgh, and were so successful and largely adopted by architects that the manufacture has been gradually extended and in various parts of the country, including Manchester, Newcastle and London, where already a considerable amount of work has been done. The Fram Fireproof Flooring, among other recent work, just completed the new flooring in the alterations of the Lyceum, Bold Street, Liverpool.

The Safety Lift and Elevator Company (M. T. Medley & Co.), of Albert Works, Rolt Street, Deptford, we have received and have got up illustrated catalogue wherein are described various kinds of lifts of which the firm are manufacturers, which range from the simplest dinner lift to the most elaborate passenger elevator or that for the carriage of the goods. In the manufacture of the various lifts every care is taken to make each part simple and strong. Cages and lifts are manufactured expressly for the firm of special design suggested by a long experience. Guides are of well-selected timber, braced together, and of a special construction conducive to silent working.

Messrs. HAYWARD BROS. & ECKSTEIN, LTD., of Union Works, Borough, are sending out a new catalogue, also illustrating casements, sashes, collapsible gates, fireproof doors, and all these various goods a large selection will be found, and the catalogue gives in most cases dimensions and will be found very useful by architects and others, and will be sent on application.

EDITHWESTON STONE.

Edithweston, though situate just within the parish of Edithweston (Rutland), from which it derives its name, is part of the same hill, and lies very close to and on the same level as the old Ketton quarries. Thus it is not

surprising that this stone is in every way a reproduction of the famous "Ketton" which was quarried many years ago, and which has been proved by time to be worthy of the confidence placed in its remarkable qualities by those who specified its use.

Edithweston stone possesses these valuable features:—It is easily worked when quarried, but becomes very hard after a short exposure to the weather, and combines exceptional durability with a very pleasing colour. Its oolitic grain is very fine and distinct, enabling the stone to be worked to a very sharp "arris," which it will retain, thereby making it a desirable material for the monumentalist as well as for the builder.

It has been used for many important buildings, among which may be found the following:—London City and Midland Bank, Peterborough; new cemetery chapel, Leicester; Midland Counties Bank, Peterborough; hospital for infectious diseases, Leicester; London City and Midland Bank, Nuneaton; Barclay & Co.'s Bank, Peterborough; Kettering free library; additions to Angel hotel, &c., Peterborough; Tower of London (repairs); Burghley House, Stamford (new chimney, gables and repairs), originally built with other stone; restoration of Earl Manvers's church, Thoresby Park, and numerous other churches, originally built with other stone; the Prince Christian Victor Memorial, Windsor.

It is satisfactory to note that almost any quantity can be supplied at short notice and at a very reasonable price. It is being largely used for church building work, for which its features specially recommend it. The proprietors are Messrs. Woodforde & Wing, 37 St. Peter's Street, Stamford.

SANITARY INSPECTORS' ASSOCIATION.

At a meeting of this Association held at the Carpenters' Hall on Saturday, Mr. L. Young, chief sanitary inspector of Battersea, delivered the annual address. He expressed the hope that, at an early date, the obstacles in the way of there being one sanitary inspectors' association only for England and Wales would be overcome, and he added that Sir James Crichton-Browne had consented, at the unanimous wish of the council, to be their president for the ensuing year. The important question of the practical training of candidates for the office of sanitary inspector had, for several years, engaged the attention of the Association, but without, he regretted to

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say, any very encouraging results. At the Sanitary Institute's Congress at Bradford, last July, he suggested that the only satisfactory remedy for the present state of affairs was the recognition by the Local Government Board of the appointment of assistant inspectors. While still of the same opinion, he considered there was also an excellent opportunity for this Association to show its interest in promoting the cause of public health, and improving their status as sanitary inspectors, either by instituting, on its own account, a system of technical and practical training, or by uniting itself for this purpose with the present recognised teaching bodies. The percentage of persons appointed to the office of inspector who entered upon their duties only partly fitted for the work was in this respect considerable. The Council had appealed in vain for representation upon the Examination Board of Inspectors, and also upon that of the Sanitary Institute; but, so far as he was aware, they had never asked the first-named body to appoint a member of this Association as one of its examiners. He had not lost hope that even upon the examination board they might ultimately secure representation, but, as a stepping-stone, they must first take up their position in the training of candidates and secure the appointment of some of their most experienced inspectors as examiners for the Sanitary Inspectors' Examination Board and Sanitary Institute. Referring to the Public Health Bill, he understood it was again to be introduced in the next session of Parliament, and he appealed to all present to do their utmost to induce members of Parliament to support the measure. Among the matters which ought at no distant date to receive the attention of the Association was the proposed amendment of the by-laws under the Public Health (London) Act, and the probable amendment of the London Building Act, both by the London County Council.

A NEW LUNATIC ASYLUM FOR YORKSHIRE.

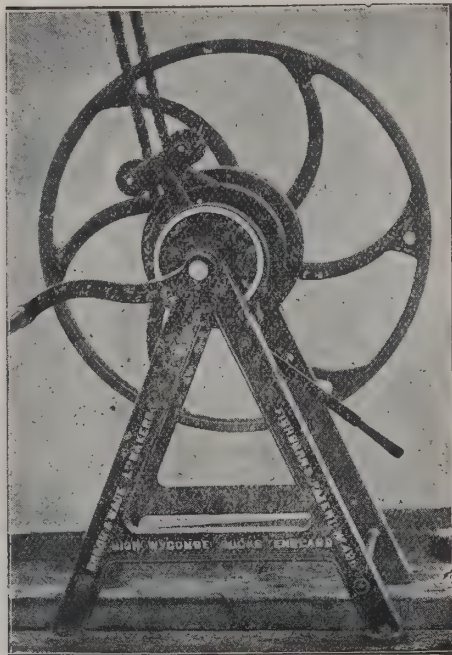
THE York City Corporation are erecting a lunatic asylum at a cost of some 92,000/. It will be situated in the Naburn Road, just outside Fulford. The land purchased by the Corporation as a site comprises 156 acres on the east side of Naburn Road, between Captain Key's Fulford estate and Mr. Harrison's Naburn Lodge estate, and before speaking of the progress that has been made up to the present time, it may be

as well to outline the scheme that has been decided upon which is not generally known by the public. The main wings will cover an area of about 240 yards by 147 yards, the nearest point of the asylum itself being about 100 yards from the road, and access will be gained by a drive. A lodge will be built at the entrance to the drive, and further along the right of the drive, will be the medical superintendent's house, and the chapel will be on the other side. The buildings proper will comprise several large blocks, the centre being the assistant medical officer's block, with wards for male and female patients on either side. The blocks will include wards and quarters for three descriptions of patients—sick and infirm, recent and acute, and epileptic and chronic, with day-rooms, dormitories and some single rooms, as well as accommodation for attendants. In the rear of the assistant medical officers' block and occupying the corner of the site, will be the administrative building. Then there will be the dining and recreation halls, and the various mess-rooms, laundries and other departments necessary to a large establishment. Nearly the whole of the buildings will be in communication by corridors. The administrative parts of the isolation block, which will be 200 yards distant from the ward blocks, will be a permanent building of iron, while the patients' wards of the isolation block will be of galvanised iron.

THE ITALIAN VISIT.

THE City Corporation have decided upon an elaborate scheme of decoration, specially designed by Messrs. Defries & Sons Ltd, for the City streets on the occasion of the reception of the King and Queen of Italy. The whole line of route will be decorated, extending from the east side of Gray's Inn Road and including Holborn Circus and Holborn Viaduct, to the entrance to the City boundary at Gray's Inn Road, increased by the granite obelisks bearing the City arms, there will be erected large floral obelisks, carrying Florentine shields of the arms of Italy and the City. Immediately in front of the fire-station in the centre of the road will be a handsome pedestal surmounted with real chrysanthemums, palms, flowers &c. Special care will be taken in decorating Cheapside, an entirely new scheme of decoration having been prepared for the purpose. Venetian masts will be conspicuous in the absence. A prominent feature in Cheapside will be

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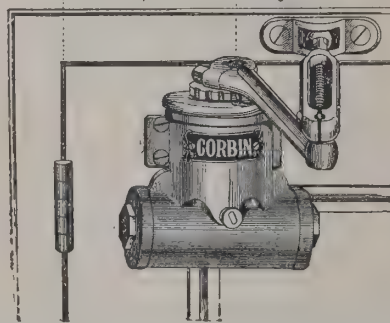


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Painted banners, supported by Venetian streamers 60 feet hanging in graceful festoons, and being caught up to the rings on either side. Whole series of tapestry banners lining the arms of Italy and appropriate mottoes in Italian be exhibited in the same street. Other prominent points the novel features of decoration will be exhibited will be at statue, the junction of Cheapside and King Street, King Street and the Guildhall Yard, Holborn Bars and the crossingresham Street. It is expected that the City will present a rayer and more artistic appearance than it ever has on ous occasions when it has been decorated. Many of the features have been carried out at the suggestion of ount Horncastle, the Chief Commoner, and chairman of special committee deputed to settle upon the decorations of City streets.

THE SIMPLON TUNNEL.

EW weeks ago an alarming telegram appeared in the don papers, says a correspondent of the *Times*, to the t that in consequence of hot springs having been entered in the tunnel the heat was insupportable, and probably the work would have to be abandoned. The er of this telegram little knew of the skill, the persever- and the ready resource of the able engineers directing this t work when he despatched his message. Difficulties of ommon kind have been encountered, but they are all in ess of being solved and satisfactorily solved. The total length of tunnel will be $12\frac{1}{2}$ miles, of which ance $6\frac{1}{2}$ miles have been penetrated on the north or Brigue , $4\frac{1}{2}$ miles on the south or Italian side, leaving only $1\frac{1}{2}$ mile to be executed. Owing to the great height of the mountain ve the tunnel—some 6,000 feet—the pressure is great, and temperature of the rocks and springs of water correspond- y high. The greatest heat which has been encountered is degs. Fahr., but it is now falling as the tunnel progresses hward, and at the present time is 126 degs. Fahr. Were water to be allowed to fall on the workmen, injury would ult. But the very simple expedient is adopted of diluting it a cold water from the hydraulic mains, thus reducing its perature to a comfortable and harmless point. In order to cool the air in which the men are working, an irable system is adopted by which a large volume of fresh cooled by means of high-pressure water spray to some

20 deg. to 25 deg. Fahr. below the tunnel temperature, is sent right up to the working face.

This point in other tunnels is generally foul and oppressive to a degree, but in the case of the Simplon is cool and fresh, and it is due to these excellent precautions that no sickness exists amongst the men. The use of the Brandt drill immediately suppresses all dust, and there has not been a single case of miners' phthisis, although some 3,000 men have been at work for five years.

The advance galleries from Brigue have now passed both the summit of the tunnel and the frontier line between Switzerland and Italy; they are now on the descending gradient, to meet the workmen coming up the corresponding ascending gradient from the south end of the tunnel.

The monthly progress of the northern and southern ends of the advance galleries added together approximates to a quarter of a mile, and consequently it is anticipated that if no further or greater difficulties present themselves a junction will be effected in May or June 1904, with a maximum error in direction of 7 or 8 inches, and trains will be run through by the end of that year.

The organisation of the entire work is beyond praise, and is carried on with military precision. The humane arrangements for the welfare of the men have been described in a former communication, but there is one thing which very forcibly impresses itself on the attention of all visitors, and that is the enthusiasm and alacrity with which the men carry on the work.

In England, unfortunately, many working men are misled by the idea that the quantity of work to be done by the entire nation is a fixed amount, and that therefore no man must do more than he can avoid in order to leave work for others to do; the result being that great waste, both of time and money, occurs, and the cost of work is unduly enhanced. This effectually prevents many enterprises from being entered upon which would give ample employment to all who desire it. The workmen in this tunnel labour under no such delusion, and know that if this work be accomplished quickly, well and economically, other great tunnels will be undertaken. The day of 24 hours is divided into three shifts of eight hours each of actual work, and no man stops work until the corresponding man of the succeeding shift steps into his place. It was most interesting to observe that even the drills did not stop for a second—the incoming men stepped up into their places, laid hold of the various handles and valves before the outgoing men

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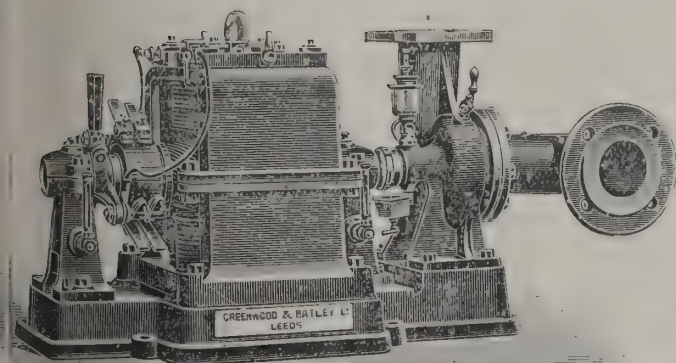
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let go, and the drilling proceeded without intermission. Whatever additional time is required for the train-loads of men to reach the centre of the Alps is allowed for in the time table, as also for the outgoing men to reach the open air, the net result being that eight hours of effective work at the face of the tunnel are secured. The men receive full wages for the eight hours, also a certain payment for time in going and returning, and a bonus in addition if the progress be good.

INSTITUTION OF ELECTRICAL ENGINEERS.

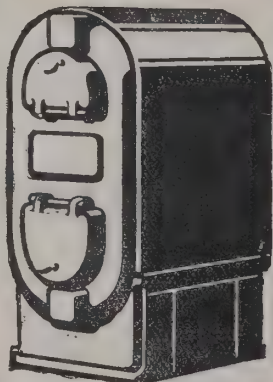
THE second annual dinner of the Glasgow local section of the Institution of Electrical Engineers took place in the Grand Hotel, Glasgow, on the 4th inst. Mr. W. A. Chamen, electrical engineer to the Glasgow Corporation, president of the section, occupied the chair, and he was supported by Messrs. Henry A. Mavor and John M. M. Munro. The loyal and patriotic toasts having been honoured, ex-Provost Wood proposed in felicitous terms the "Lord Provost and Corporation of Glasgow." The Lord Provost, who had a very enthusiastic greeting, acknowledged the toast. We lived, he said, in an electric age, and going on to speak of the electric cars, he remarked on the transformation they had made in Glasgow life. They had resulted in the growth of districts on the outer circumference of the city, and had thus contributed something to the physical well-being of the community. Their rapid transit along the street was a sort of material embodiment of the onward march of the day. We owed that condition of things to the electrical engineer. But his lordship looked to far greater development in the conditions of city life from electrical science. There was, for example, the smoke problem. At times our city was rendered gloomy and oppressive owing to the smoke nuisance, but that evil was, he thought, on the verge of solution. Indeed, he said confidently that the smoke problem ought not to exist; science had demonstrated that it could be settled. The Corporation had taken an onward step in one department of it—the domestic pollution of the atmosphere. They had reduced the rate for heating purposes to the power rate. But more might be done. His Lordship had been told that in the blast-furnaces which fringed the city were hundreds of thousands of power going to waste in the air that could supply electrical energy for heating purposes. If such improvements were carried out the more desirable would the city become as a dwelling-place, and the more, therefore, could its commercial

potentialities be increased. He was a short-visioned man added his Lordship, who complained of the cost. There was an expenditure that could be wise and prudent if it purchased for every citizen what he could not purchase for himself as an individual, and in that region of municipal enterprise his Lordship would ever be found in the ranks of those who advocated advancement.

Mr. W. R. Copland proposed "The Institution of Electrical Engineers," and the toast was acknowledged by Mr. Robert Kaye Gray. He testified to the favour with which the parent institution viewed the development of the local sections. He claimed for the profession of electrical engineers that it was well equipped as any other profession in Great Britain. Other divisions of engineering had to contend against certain disadvantages. It was difficult for those older bodies to free themselves from past practice. Glasgow, he continued, was the cradle of the electrical industry. In this connection he referred to the work of Lord Kelvin, who, he said, had been able to continue his service in various spheres.

Mr. W. G. McMillan, secretary of the Institution, proposed the "Glasgow Local Section." He put the local sections in the relation of colonies to the parent institution, adding that the latter was anxious to do its duty to keep the colonies together, and to assist them in every way. Thus electrical engineers would be banded together in all countries, and the interests of the profession advanced. The Glasgow local section he ranked as one of the strongest in the country; and was that surprising when they remembered the distinguished men who had been connected with it. Among these he mentioned Lord Kelvin, who was the first president of the section and he paid also a warm tribute to Mr. Chamen, the present occupant of the chair. The work of the section was economically and excellently done, and that it was so was due in large measure to the services rendered by Mr. Tidd, the secretary.

Mr. Chamen, who replied, agreed that the local sections of the parent institution were somewhat in the position of the colonies and the mother country, but he pointed out that the work of the sections differed in some respects from that of the parent institution. There were in the sections a large number of the members of a less highly technical kind, and it became the duty therefore of the local sections to encourage the reading of papers of a less technical character than those printed in the Proceedings of the Institution. But if the local sections did no more than keep the members together and



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le them with pleasant evenings, where over a smoke and of coffee they could discuss matters of professional st, they would accomplish a great deal in the way of ag the outlying branches of the great Institution together ncouraging young men to join the sections. This con- d the speech making. Between the speeches songs were r- buted by members of the company, and a very enjoyable eng was passed.

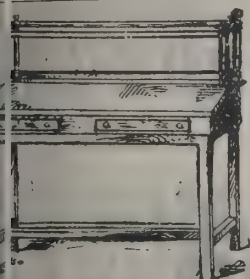
THE SURVEYORS' INSTITUTION.

ALBERT BUCK, president of the Institution, delivered his ng address on Monday evening. One of the subjects which he dealt with were public roads. He could not, he said, thinking that the country was on the eve of great changes. he purposes of haulage, the horse seemed doomed to dis- ur, as in the early railway times, when his days were held numbered. The motor and the traction-engine were e to take possession of our highways, most of which, le enough for traffic of ordinary speed or weight, were ill-adapted for the swifter and heavier forms of locomotion e were apparently imminent. Many of the roads would e to be increased in width. Awkward corners would have rounded off, gradients made easier and road surfaces im- ed. The evidence given before the departmental com- e on "Highway Authorities and Administration," nited by the Local Government Board, emphasised the nence of this question and of the demand for the con- tion of relieving roads at points where the traffic had ne, or threatened to become, so congested as to render oads impossible for the lighter kinds of vehicles. The mileage of main roads in this country (exclusive of those rised in the county boroughs) was 26,598 miles, of which e were 3,819 miles in the urban districts, and consequently e sole control of the urban authorities, and 22,779 miles e rural districts under the control of rural district councils. consequence there was no uniformity of administration o probability of conjoint action. The great North Road London to Edinburgh, for instance, was divided for nistrative purposes among seventy-two authorities who, o possible assumption, would be likely to co-operate for purpose of widening or improving that great artery of e. One was forced to the conclusion that the committee e right in their suggestion that the great highways should

be removed from the control of the present subordinate authorities, and placed under the jurisdiction of county high- way boards, and that certain highways which were of more than county importance should be declared to be "national" roads, maintainable out of Imperial funds. Except by the re- introduction of the system of tolls, which would be intolerable, there seemed no way of meeting a demand for new trunk roads but by the expenditure of Imperial funds or by the imposition of the abandoned "van and wheel tax," to which so much exception was taken when it was proposed as a feature of the Budget some years ago. They were told that there were already 10,000 motor cars on the roads (to say nothing of traction engines), and that 10,000 more were in course of con- struction in this country. If this were so, and he had no doubt it was the case, the improvement and widening of the roads must soon form the subject of comprehensive legislation, for the problem had already become acute in suburban districts, and would rapidly become so all over the country.

THE RAILWAY HARBOUR OF TROON.

THE interests of most of the railway companies are deeply bound up with shipping, and within recent years quite a number of them have not only acquired fleets of passenger- steamers, but are now (says the *Scotsman*) going in for cargo- boats and harbours as well. As far as the first and last-named are concerned, the Glasgow and South-Western Company is no exception. In August 1901 a Bill promoted by the company passed the House of Lords as an unopposed measure, and the harbour of Troon, which had been the property of the succe- sive Dukes of Portland for ninety-six years—having been purchased by William Henry Bentinck, the fourth Duke of Portland, in 1805, from Colonel William Fullarton, the last of a line of Fullarton lairds which could be traced back unb- oken for nearly 600 years—went out of the hands of William John Arthur Cavendish Bentinck, sixth Duke of Portland (the present Duke, who succeeded to it in 1879), into the possession of the Glasgow and South-Western Railway Company. The purchase price was 167,500*l.*, with a toll on exports and imports of $\frac{1}{2}$ *d.* per ton for the first 100,000 tons exceeding 700,000 tons, and after that a toll of $\frac{1}{4}$ *d.* per ton over 800,000 tons. Troon Harbour, which is the safest and most accessible of any of the Ayrshire ports, is formed at the extremity of a



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SILVER MEDAL.



CALCUTTA.

rocky promontory which extends fully a mile into the sea. The rock, before it was touched by art, could be approached by large merchant vessels so near as to enable a crew to land by a plank. Within this creek, sheltered from every wind except the north-west, with ten feet of water at lowest ebb tides, there was ample space for a whole fleet. In the smuggling days many a French and Dutch lugger and Highland wherrie was familiar with this canny cove. From the time of the formation of the harbour up till the year 1870 all the ballast—in those leisurely days taken out in wheelbarrows, the men who did the work also acting as pilots—that came in vessels from all parts of the world was utilised in the making of ground where nothing but rocks previously existed, and in forming a large bank, which stretches along the north-western part of the promontory in the vicinity of the harbour. The Ballast Bank, as it is called, is now a popular promenade, unsurpassed in the west of Scotland, and with attractions equal to the famous Hoe at Plymouth. It is about 700 yards in length, 60 feet above sea-level and from 20 to 30 yards broad. Seats are placed upon its grassy top at suitable distances and along the massive stone wall which, extending from end to end of its base, protects it from the ravages of winter storms, and also serves as a lower promenade. Towards the close of the sixteenth century, when the Clyde between Dumbarton and the city could only float a few smacks, Glasgow sought to purchase the embayed marine space embraced by the bold curvature forming the far-famed natural harbour of Troon and circumjacent property for the erection of quays. One of the Fullartons of those days refused the site, because he thought the making of a pier would have the effect of raising the price of butter and eggs, which he might have occasion to use in his family. A successor, however, who had more public spirit and appreciation of his own interests, obtained a charter from Queen Anne, dated Windsor Castle, August 5, 1707 (exactly a hundred years before anything was actually done), "constituting the port of Troon a free seaport and harbour, with power to lift anchorage and other customs." Colonel William Fullarton, who was born (1754) at Fullarton House, Troon—now the residence of Sir Matthew Arthur, Bart.—and who, during the French war, raised a regiment known as Fullarton's Light Horse and was afterwards Governor of Trinidad, applied to Parliament for sanction to proceed with a great scheme, including a canal from Kilmarnock to Troon, for the development of the place, when—fatal obstacle—means failed him. He was constrained by circumstances in 1805 to sell the

property of his fathers to the fourth Duke of Portland, years previously. The Duke had married Henrietta, daughter of General Scott, through whom he came into possession of the Kilmarnock estates, and a strong incentive to the purchase of Troon was that it was an excellent place for the formation of a harbour as an outlet for the produce from these estates. Three years after taking possession of the Duke commenced a series of vigorous operations, including the erection of a pier 800 feet long nearly at right angles to the rock, to render the place fully available for commerce. The Kilmarnock and Troon Railway—the first in Scotland—was constructed almost concurrently with the harbour, at a cost of 50,000*l.* The company was promoted by the Duke and consisted of the landlords of the different estates through which the railway passed. It was leased from them by the Glasgow and South-Western Railway Company, but became the absolute property of the latter a few years ago. The engine constructed by Stephenson to order after the "Kilmarnock" model was made for the Duke of Portland in 1812 for use upon this tramroad or railway, ten miles long, extending from Kilmarnock to Troon Harbour. Until the advent of steam power the 30-cwt. capacity coal waggons were drawn by horses (mostly supplied by farmers) all the way from the collieries right into the loading hurries, each horse, of which there were quite a number, pulling four waggon-load. The extensive coal-fields the Duke wrought himself, under the management of Mr. Guthrie, a daughter of whom married Lord Oranmore and Browne, whose son still retains the Guthrie's estate of The Mount and other properties in Kilmarnock. These coal-fields were latterly wrought exclusively by Messrs. Archibald Finnie & Sons, of Kilmarnock. But the enterprise of "the good old Duke," the patron of Troon, did not stop here, for, having got the harbour and tramway made, with his ample resources he then started a shipbuilding yard and built vessels to carry the coal to Ireland. These were brigs of small dimensions, and bore names chiefly of a local character. The older people can remember the *Barassie*, *Beattock*, *Cessnock*, *Dundoon*, *Galston*, *Good Intent*, *Kilmarnock* and *Tarbolton*. The Duke, besides, was a yachtsman, and built a number of yachts amongst them being the fore-and-aft schooner *Crown*, a flyer for himself. He also built the *Pantaloon*, a square-rigger of about 300 tons, which he presented to the Government. The historic harbour of Troon, which is now part of the Glasgow and South-Western Railway undertaking, is of

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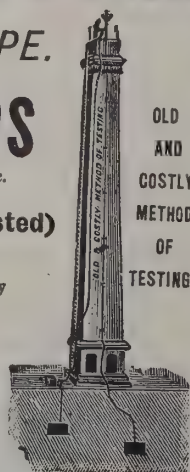
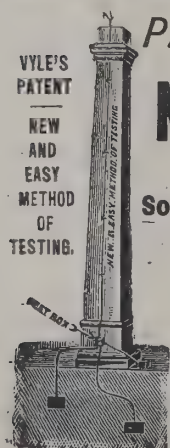
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le extent. The outer harbour has a water area of as, with a depth ranging from 23 feet at high tide to at low tide, and has 4,140 feet of quayage. There is tidal dock, hewn out of the solid rock, with an entrance wide and a depth over the sill at high water of 19 feet. The wall of the dock is 1,100 feet long, and as there is a longside of 20 feet at low water, large vessels are afloat at all stages of the tide. The first steam crane that was used for the shipment of coal in Scotland was erected in the forties at the dock by Messrs. John Yule & Co., of Glasgow. It was worked by a stationary engine with shafting and clutch. There are two graving docks, the larger, opened by the Duke of Portland in June 1899, and which cost 25,000^l, is 365 feet long, 48 feet wide, with a depth of water over the sill at ordinary tides of 16 feet 6 inches; while the smaller dock is 111 feet long and 37 feet wide, with 11 feet of water. Both docks are equipped with modern appliances for the speedy and efficient handling of ships. The inner harbour extends to the east, and is used for the wintering of vessels and storing of cargo. The harbour is provided with seven 30-ton loading cranes, each capable of dealing with 150 to 200 tons of coal or iron, and nine ballast cranes, which can each discharge 100 tons per hour. Since the harbour was taken over the Government have substituted a new tug steamer, specially built for the purpose, for use at Troon, and they are at present expending £100,000 on rebuilding the quay walls, raising the crane foundations, erecting a new 50-ton crane for heavier traffic at the north end, lengthening by 70 feet the ballast quay, and superseding the horse haulage of waggons from the quay to the cranes by the introduction of hydraulic capstans. The chief imports consist of iron ore and limestone. Large quantities of timber, both home and foreign, also enter the harbour. The exports comprise coal, pig-iron, and general merchandise. The districts chiefly served include the coalfields of Hurlford, Galston and Caprington, the ironworks of Dalrymple, Lugar, Muirkirk, Eglinton and Glengarnock, and the extensive ironworks and collieries of Lanark. Within the harbour area is situated the extensive yard of the Glasgow Shipbuilding Company, Ltd., employing five or six hundred men. This yard comprises five launching slips, which have scarcely ever been empty since the yard was leased in 1870. Over one hundred vessels have been launched, many of them magnificent specimens of naval architecture. Close at hand is the sleeper saw-mill, with slip in the inner harbour, of Messrs. Alex. Bruce & Co., who import sleeper blocks in large

quantities from Russia and cut, adze, bore and creosote them on the premises, afterwards despatching them to all quarters. Messrs. Adam Wilson & Son also carry on a large timber trade at the Harbour Sawmills. The managers of the harbour under the Duke of Portland were Mr. John Wilson, Mr. William Wilson, C.E. (son of the foregoing), Captain M'Innes, Captain Maynard, Captain Boland, Mr. James Wood and his son, Mr. Adam Wood. The harbour is now managed from the head offices in Glasgow, and is therefore under the direct supervision of Mr. David Cooper, the general manager, and Mr. Henry Evans, the goods manager, the local superintendent being Mr. William Frew.

With the development of the mineral resources of the immediate neighbourhood, coupled with the well-known efficiency of the Glasgow and South-Western Railway Company's management, a new lease of prosperity may be looked for at this well-situated, safe, and historic harbour.

STAFFORDSHIRE IRON AND STEEL INSTITUTE.

ON Saturday evening Mr. Walter Macfarlane, of Wednesbury, addressing a meeting of the above Institute at Dudley, delivered a lecture entitled "British Improvements in Iron and Steel Making." Mr. Walter Somers (president) occupied the chair. Mr. Macfarlane said that in regard to iron and steel making we were in a good position at present in many respects, and the future was full of hope. The latest advance in pig-iron making had been made by Mr. J. W. Foster, of Darlaston, who was the inventor of a new arrangement for water-cooling the tuyeres. The modern system of hoisting was American, but the fundamental feature of the new method was the travelling skip, which was in use in the famous Low Moor Ironworks a century ago. British iron castings were stronger to-day than formerly, and that district had done its share in carrying forward the improvements. Professor Turner had done work which had won the approval of practical American authorities in iron-founding. In regard to high-blast pig-iron, involving a change in puddling, he would remind them that Mr. Joseph Hall, of Tipton, had made a lasting reputation as the chief pioneer of the new method, which was known as "pig boiling." He hoped something might be done to mark their appreciation of his genius and generalship. In making alloy steels the Britisher had carried his name high. There were certain specialties of British make in the iron trade which continued to

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be unsurpassed. The good qualities of cold-blast Staffordshire pig-iron were appreciated abroad as well as at home, and nothing the world over could beat Staffordshire "treble best" for certain purposes, whilst Yorkshire iron still held its own. Metallurgy as a science had its origin in Britain, and Dr. Percy's work on the subject was the best which any metallurgical authority had given to the world. The question was, "How do we stand now?" In regard to men we stood, he maintained, in a leading position. They had heard much of the superior scientific training of the foreigner, but what, he asked, had been the practical outcome of it all? Much theoretical research with the microscope in examining the structure of iron had been done abroad, but nothing had been done in this direction which could be said to be epoch-making. From first to last in the latest scientific advances we had held our own, and still maintained it. No country competing with us could show such a galaxy of iron and steel men of high reputation, and we had an unsurpassed metallurgical record. How much more we might have accomplished with superior education no mortal could tell. All the newest British improvements had been effected by men who had been carefully trained in theoretical knowledge, and if we were to continue our supremacy as a "brainy" nation we must encourage the best educational system. Technical education was making substantial progress amongst us, and was being on all hands more and more highly appreciated, and in every respect the outlook was decidedly encouraging. There was, it was true, a huge amount of apathetic humanity, but there was also an increasing number of earnest technical students. In regard to the supply of the raw material it was only natural that, in a comparatively small country like this, which for a very long period had been the abode of an iron-producing people, a shortage must be expected. We raised over 12,000,000 tons of iron ore per annum, and imported about 5,000,000 tons. From north to south of the adjoining Continent, however, British enterprise and capital were being brought to bear to insure a continued supply of iron ore. Despite the lamentations of our backwardness in industrial competition, they found that not only did this country lead the way in the production of power-gas on a large scale, but we had to-day the largest steel foundry in the world, the largest steel mill in the world, and the most powerful steel press, which was in the Park Head Works, at Glasgow, and was capable of exerting a pressure of 12,000 tons. In the matter of conveying minerals we were awake, and he was

pleased to say that two of the largest railway companies had last begun to run larger trucks. In respect of improved blowing engines at blast furnaces, there was an important extension of British works. Eleven new blowing engines had been supplied to Midland works in recent years by one firm. Much progress had also been made with the use of charging machines for reheating purposes and rapid strides were being made in electric installations for machinery in steelworks, whilst the Benjamin Talbot and Bertrand Tiel processes were found to be their best developments in British works. Taking quality of other points into consideration, there was every reason to believe that plates were being rolled cheaper in the West of Scotland to-day than in America, even with the large output of American mills. Taking unit for unit, our machinery was distinctly better designed than that in America. In conclusion he said he hoped they would see with him that there was cause to be of good cheer.

Professor Turner said that they as Britishers were proud of the record they had in the iron and steel trades in the last 100 or 150 years. At the same time, they must remember that other people had done a great deal. There was no doubt that they could measure the progress of civilisation of a nation or district by the progress made in metallurgical industries. Whilst he was proud of what we had done in the past, he thought it would be very unwise to shut our eyes to what was being done abroad. When they considered that we were making about 8,000,000 tons of pig-iron in a year, and that in America they were making 20,000,000 tons, it was pretty obvious that however large and well equipped our works were, their works were larger and better equipped. One of the remarkable characteristics of the American was his faculty of taking hold of an idea and improving upon it. In regard to Mr. Macfarlane's lecture, he should like to point out that Mr. Talbot came from that district and was a member of the Institute. Some of the ideas which Mr. Talbot had embodied in his process were obtained in discussion on papers which were read in that room some ten or twelve years ago.

Mr. Tucker referred to the large quantities of ore which were irretrievably lost through careless minding, and Mr. Kirk thought that one of the reasons we did not make the same progress as in America was the lack of co-operation on the part of our workmen.

Messrs. T. Ashton, W. Brooks (vice-president), M. Macfarlane and R. Edwards also took part in the discussion, and a vote of thanks to Mr. Macfarlane concluded the proceedings.

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The Architect.

THE WEEK.

discoveries of M. HOMOLLE at Delphi will appear remarkable if we remember the condition to which a city was reduced. The ancient name was Delphi and the town which occupied the site was known as Delphion. When DODWELL visited the place at the end of the nineteenth century the inhabitants were few, and travellers were so rare, he was regarded as a curiosity. He says:—"They were so much pleased with the fact that every one begged a little bit, and it is difficult to describe the surprise which they manifested when I made use of indiarubber to efface some pencil lines. The children ran away, and said I was the devil." DODWELL impatiently sought the site of the Temple of Apollo, which, as PAUSANIAS said, stood near a theatre, and ought to be easily identified, as theatres were hewn out of the solid rock; but he could discover no positive traces of temple or theatre. "The temple of Apollo," he said, "must be sought for among the humble cottages of Castri." At a distance, near the village, he saw some ancient foundations which he conjectured to be those of the lesche which contained the painted *polygnatus*. Delphi, we are told, was plundered long before the reign of NERO, who carried off 500 statues from the temple. Yet PAUSANIAS was able to find 137 which still remained, and he refers to a great number of others. According to LUCIAN, gifts were sent to Delphi by other peoples besides the Greeks, and he mentions the Phrygians, Lydians, Persians, Assyrians, Romans, Italians and even the Hyperboreans. Indeed, the temple of Apollo was supposed to be an international shrine, a "commune humani generis oraculum." It was not as circular, but the French explorations do not support that theory, and on a coin it is represented as a temple with six columns on the sides and two in the front. Some have thought that the *Apollo Belvedere* is a copy of a bronze statue which stood in the temple. What DODWELL was the general absence of marble fragments, though it must have been largely employed. He found that "several curiosities are no doubt buried in the village, though the soil in general is so thin and stony that great masses cannot be concealed beneath the surface." The French have been able not only to determine the site of the temple but of the theatre, the lesche, the altar, several treasuries, the gates, the Sacred Way and the rock of Apollo.

Apparently nothing can be perfect in this world, it would be unwise to assert that in most things there are no errors. In constructive works they may escape notice. The motion of an engine or a watch is its performance of a function. If the motion is irregular or is suspended, the watch or engine is defective. It does not matter whether the maker holds, or the sum paid to him, or the difficulty of discovering the defect, the irregularity or the suspension is sufficient evidence of imperfection. A house is not perfect if it is of a larger number of pieces than an ordinary house, but there is no such definite test as can be applied to them. A building may be tottering through its foundations for a great number of years, and both owners and occupiers be unaware of the fact. It often happens that new houses are surrendered to the public as complete whilst accessories will be omitted which that is often incredible. The practice of charging a part of the contract amount for a certain time before the house is completed, and that there may be oversights with builders who have not had a long experience. The house is examined by one or more experts without discerning the shortcomings. What we have stated is common to all buildings, and yet it often happens that when judges are annoyed by contrary statements they come to a decision that witnesses on one or other side, or it may be both, are acting dishonestly. A week ago the excellent magistrate at Westminster, de-
hear expert witnesses who were prepared to give

evidence as to whether a certain large building was or was not adapted to serve as a common lodging-house. Mr. SHEIL is reported to have remarked:—"Any one who had been at the Bar for any length of time knew how to appreciate scientific and expert testimony at its proper value. All one had to do was to pay people on one side or the other. They would flatly contradict each other for the sides who retained them." Some years ago an outburst of that kind was quite familiar to those accustomed to attend the Court of the late Vice-Chancellor MALINS. But it was supposed to arise from natural irritability. If there are certain defects in a building which are apparent to a sharp-sighted witness, why should he be forced to conceal them because a respectable but careless or dim-eyed witness on the other side has advanced the contrary? Some witnesses take what is called a broad view of things, and are indifferent to trifles; while others realise that minor defects often grow into serious dangers. It is only necessary to compare the evidence given by medical men with that of architects or surveyors, and it will be found that a universal rule prevails, and that creation's noblest work has its apparent and concealed defects just like a cheap suburban villa. The fault is not with the witnesses, but with the thing examined, and a judge should allow to witnesses in cases relating to the constitution of men and of buildings the right to differ, because it is unavoidable.

THE church of St. Thomas-a-Becket at Winchelsea is by some authorities declared to be the most important example of the Geometrical period in the diocese of Chichester. It is picturesque within as well as without, and the tombs of the ALARDS, who were admirals of the Cinque Ports in the fourteenth century, are exceedingly interesting. The figures resemble those seen in the Temple Church, London. It is now proposed to repair the building, a work which will cost 7,000*l.*; but as it is to be done under the direction of Mr. MICKLETHWAITE, there need be no apprehension of the introduction of incongruities. The works that call for immediate attention are the repair of the roofs and fabric; the removal of a wall inside the church which now cuts in two one of the monuments; the restoration of the original vestry, the walls of which still exist; the repair and preservation of the monuments and their canopies. All old work is to be carefully preserved, new being substituted for the old only in those places where the old has perished or is no longer able to perform the work it has to do. The nave at one time extended all along the churchyard, and what we see is no more than a part of a great building, viz. the chancel and its aisles. Altogether it is a church which appeals to lovers of Mediæval architecture beyond the limits of the parish or of Sussex.

ROBERT BURNS was never above taking a hint from another poet, and his dialogue between the Auld Brig and the New Brig of Ayr is likely to have been inspired by one between the Plainstones and Causeway of FERGUSON. It would be more correct to say that the dialogue is between "The Sprites that owe the Brigs of Ayr preside." The poem was composed at a time when he was suffering great depression, and when his friends were endeavouring to obtain for him an appointment in the Excise. The Kilmarnock edition of his poems had appeared, but he had not as yet made his visit to Edinburgh where his genius was recognised. BURNS contrasts very fairly the characteristics of the Mediæval and the later architecture which he had seen. But the effect of his poem was to keep the old bridge standing. Nearly 120 years have elapsed since the dialogue was written, and again the bridge is exhibiting signs of decay. The Society for the Protection of Ancient Buildings has appealed to the Ayr Town Council to be expeditious in carrying out the works that are necessary. That was no more than one of those formal acts which seem to be intended to show that the Society has still some life in it. The Council did not need such a reminder. Before receiving the letter a special sub-committee had been appointed to deal with the subject, and, indeed, any Scottish burgh would under the circumstances preserve so interesting a memorial.

THE SCOTTISH BOARD OF MANUFACTURES.

THE different treatment which Scotland received from the English Government, if compared with Ireland, was explained by THOMAS CARLYLE as arising from the presence of a hero in one country and the absence of such an exemplar in the other. "If," he said, "the union with England be, in fact, one of Scotland's chief blessings, we thank WALLACE withal that it was not the chief curse. Scotland is not Ireland: no, because brave men rose there and said, 'Behold, ye must not tread us down like slaves, and ye shall not—and cannot!'" The inconsistencies of legislation in respect of trade would by themselves bear out his argument. A number of measures were passed from time to time to prevent any increase of the woollen manufacture in Ireland. Wool was allowed to be exported in a raw state to England, but in the form of cloth it could only be smuggled to France and Spain. The result is that even at the present time it seems impossible to revive the industry, and the greater part of what is known as Irish frieze is, we believe, produced in Germany. In the Treaty of Union between Scotland and England it was agreed that a sum of 2,000*l.* per annum should be applied for the space of seven years towards encouraging and promoting the manufacture of coarse wool in certain counties of Scotland. That sum, which now appears so insignificant, was the foundation of the Board of Manufactures, an important body that, in addition to supporting various industries, has exercised vast influence over the fine arts in Scotland. It is not necessary that we should explain the development of the Board. The first effort was, however, made as far back as 1760, when a drawing academy for manufactures was established in Edinburgh, which has had an interesting history. The Board also acquired in course of time the maintenance and management of the National Gallery and the National Portrait Gallery. The Applied Art School, recently opened mainly through the exertions of Sir R. ROWAND ANDERSON, was affiliated to the School of Art. The Board also exercises control not only over the buildings used for those institutions, but also over the restored Dunblane Cathedral.

There can be no question concerning the excellent work which the Board has done. Before South Kensington introduced its malign system into Edinburgh nearly every Scottish painter from WILKIE to ORCHARDSON had received his training in the Board's art school. But in our time every official body must sooner or later be subjected to scrutiny, and the Board of Manufactures was not to be exempted. Last year a departmental committee was appointed to inquire into the constitution, powers and duties of the Board, with special reference to the administration of the grants made by Parliament for purposes of art in Edinburgh, and to report whether and in what way such administration may be improved. The members consisted of Mr. A. AKERS-DOUGLAS, M.P., Sir JOHN STIRLING-MAXWELL, M.P., Sir WALTER ARMSTRONG, Sir KENNETH JOHN MACKENZIE and Mr. THOMAS RYBURN BUCHANAN.

The Board of Manufactures is composed at present of twenty-four members, nearly all of whom are nobles, baronets or lairds, and there are four vacancies. There used to be two or three representatives of the Royal Scottish Academy on the Board, but since Sir GEORGE REID resigned there is no artist among the members. Recollecting the important influence the Board is supposed to exercise over art, the deficiency is serious. The committee declare that from their own observation, apart from the evidence, the composition of the Board is unsatisfactory. It is too unwieldy a body, the members are not selected with sufficient consideration and their responsibility is indefinite. The National Gallery and National Portrait Gallery are, it is alleged, mismanaged in consequence. The School of Art has ceased to be a success. There has been friction between the Board and the Royal Scottish Academy. But what probably was the most grievous fault on the part of the Board in the eyes of a departmental committee composed of Scotsmen, is that more demands were not made for money from the Treasury. It is considered that grants should have been obtained for the purchase of pictures, and that the hesitation to put forward the claims "amounts to a dereliction of duty in a Board to which the art interests of Scotland were confided."

Undoubtedly a praiseworthy spirit of economy has

marked the action of the Board throughout its history. The Act, as we have said, allowed 2,000*l.* a year. Much money was for some years permitted to accumulate, and in 1817 the surplus reached the sum of 75,000*l.*, including money derived from the sale of ground. Out of this the Royal Institution was erected at a cost of 40,000*l.* Then when powers were obtained to found a National Gallery the Board paid 20,000*l.* towards the building, 3,500*l.* towards the acquisition of the site. Later it was contributed towards the formation of the National Portrait Gallery, and at the present time the Board's income is 36,481*l.* It should also be allowed that the Board is not narrow minded in dealing with what might easily be regarded as rival institutions. For instance, the School of Applied Art could be presumed to be an opponent of the Board's School of Art. Yet in the address delivered on opening by Sir R. ROWAND ANDERSON he was allowed to announce:—"I am glad to say that our hopes of support from the Board have been fully realised. They are now at our aid in the form of accommodation, rent free, and in administering and carrying out the work of the school."

It should not be forgotten that the Board could not resist the influence of circumstances any more than other institutions which have been modified from time to time throughout Great Britain. It was impossible to resist the power of South Kensington. King COLE, with the support of his back, would have annihilated a Board supposed to be legally concerned with woollen manufacture only, if it showed any opposition to his will. The character of the school was altered, and instead of being a historic academy it became merely one among the provincial schools of the Science and Art Department. More remarkable is, that at a time when this school was believed to be devoted to fine art it was more useful in supplying designs for manufactures than when it was part of a system that was supposed to keep the industrial art alone. As evidence of the failure of the South Kensington system, the Scotch Education Department having now the control of art schools are endeavouring to effect changes in order to accomplish the purpose for which the Science and Art School was unfitted.

In other cases inquired into it is obvious that the institutions fostered by the Board have outgrown their original proportions. The buildings, which at their erection were considered to be suitable, are now circumscribed or ill adapted to their use on various accounts. But elsewhere official buildings are altered as necessary without bringing any discredit on those in charge of them. The Art School is without a side light, which was not thought indispensable in old days. The Royal Institution erected by the Board has become too limited in dimensions. The library of the Royal Society has increased and there is a larger attendance at meetings, more accommodation being therefore required. The National Gallery is overcrowded. The Royal Scottish Academy did not establish a life school until after 1850, and as a symmetrical Classic building does not allow of additions, a room over the portico in the front of the building was assigned for the purpose. Necessarily it is "stuffy, small and quite inadequate." There are far more works of art to be exhibited each year and the wall space which was sufficient half a century ago will not serve in our time. The Board, as we have mentioned, aided in establishing a National Portrait Gallery. But there are no funds for its support. The Society of Antiquaries and the Royal Geographical Society are societies that they are not treated equally well with similar societies; but this arises from the influence of tradition. Both societies have grown, and naturally they should be liberally dealt with by the Exchequer. The Board of Manufactures contains an excess of amateurs. But of the witnesses, a designer, said, the members are a biased class of men, perfectly liberal-minded; and if they had been sufficiently or properly reported to, they would have seen where errors were taking place, and would have had the courage, I have no doubt, of their opinions, not to be supposed that the departmental committee discovered anything that can be considered in the least discreditable to the Board. The original purpose of the body is no longer sought after. The efforts of the Board to have the money applied to the

of a technical school will meet with little support. In consequence of the change, the pliancy of the Board in the endeavour to meet new conditions have been remarkable. At the departmental committee have arrived at the conclusion that a radical change is necessary. It is proposed to reconstitute the Board of Manufactures, to reduce numbers, and to transform it into a Board of Trustees. There are to be only fifteen members. The President is to be a member of the Royal Scottish Academy, and there is to be an artist, and there are to be two other Academicians, who are not to follow the same branch of art as the President. The Royal Society, the Society of Antiquaries, the Council and the University of Edinburgh are each to have a representative. The remaining eight members are to be appointed by the Secretary of Scotland. The term of office is to be eight years, and the members to be eligible for re-election. The duties of the Board are to be the administration and management of its accumulated funds, the application of its income from all sources, so far as not specifically disposed of under these recommendations, to such purposes as in the Trustees' opinion would be conducive to the advancement of art in Scotland. Further, the Board will exercise a general supervision over the ultimate control of the National Gallery and the National Portrait Gallery. They are also to continue to maintain Dunblane Cathedral. A new School of Art, as far as possible is to be on the same lines as the Glasgow school, is recommended to be established. It is suggested that the Applied Art School promoted by Sir JAMES ANDERSON should be incorporated with the new school, but remain as long as possible under his control. The constitution of the National Gallery should be assimilated to those of London and Dublin, and an application made for a grant in aid of the purchase of pictures. The recommendations apply to the Portrait Gallery. The donation or acquisition of a new National Gallery, as suggested by Mr. HONEYMAN, is declared to be essential. The endowment of Trustees will contribute 20,000*l.* from the accumulated funds towards its cost. The whole of the building, which is now partly occupied by the National Gallery and partly by the Royal Scottish Academy, is then to be handed over to the Royal Scottish Academy to be used by that body exclusively for art purposes, such as exhibitions of works of art and art education. The Academy, it is said, must fairly be bound at such times as they were not holding their own exhibitions to allow the Society of Scottish Artists and the Scottish Water Colour Society to hold exhibitions in the building. A grant towards the cost of maintenance and upkeep of the building should be made by the Treasury. In return the Academy should convey to the nation the whole of those works of art at present lent and exhibited in the National Gallery and the National Portrait Gallery. The Society of Antiquaries is also to receive in a permanent grant of 200*l.* a year for the purchase of antiquities and 200*l.* a year for the increase of salaries of the museum staff. The historic grant of 2,000*l.* per annum, which by Article XV. of the Treaty of Union, 1706, was to be applied towards encouraging and promoting the manufacture of coarse wool within those shires which produce wool; and that the first 2,000*l.* sterling be paid at Martinmas next, and so yearly at Martinmas, during the years aforesaid, and afterwards the same shall be wholly applied towards the encouraging and promoting the fisheries and such other manufactures and improvements in Scotland as may most conduce to the general good of the United Kingdom," is to be transferred to the consolidated fund. We suppose money advanced under similar exalted circumstances must be supposed to be lying fallow or applied to some other beneficent purpose. But it would be premature for taxpayers rejoiced at the change. Scotland loses 2,000*l.* at the very least the expenditure contemplated will amount to 4,200*l.*, which the departmental committee consider "a moderate demand and one eminently justified by the evidence laid before us." The question, however, is, whether the greater part of the money be expended in Scotland or in Edinburgh alone? At the present time an impartial observer would say the most promising place, through having that mysterious influence which is like good air, is not Edinburgh but Glasgow. It would not be unreasonable

to speak of a Glasgow school. It is no creation of yesterday, for it has been in existence for more than half a century, but officially the commercial capital had to give way to the official capital. Glasgow has been self-reliant, for the greater part of the funds required for the erection of a School of Art has been obtained locally. No doubt for the support of the school as an institution having buildings and masters, and liability for varied expenses, the management is willing to accept contributions from officials. But that school is only one of the agencies at work and through which satisfactory results are obtained. In proposing the Glasgow school for a model the departmental committee are suggesting more self-reliance than was witnessed heretofore in Edinburgh. In that city people have become habituated to look up to the Board of Manufactures as if it were a nursing mother, and there was disappointment because the funds were not equal to all demands. The late reports would, however, appear to indicate that the Edinburgh students are more eager than formerly to take advantage of any opportunities offered to them, and the alterations proposed may therefore lead to the success which is to be desired.

ASIA MINOR AND GREECE.

THE boundaries of the modern States of Europe are so rigidly determined and interference with them is so serious a crime, it is easy to understand why it should be imagined that in ancient days a similar condition of things prevailed. It was impossible to fix divisions with any definiteness unless nature had provided landmarks in the form of mountains, rivers or streams. In the case of small seas there were many contests about lines of demarcation. Anyone who will glance at a map of Greece can see how often claims were likely to arise for possession of cities along the coast of Asia Minor, ranging from *Ærnos* on the north by the plains of Troy to *Halicarnassus* on the south. There is no doubt the Greeks, who were not indisposed to fighting by sea, gained a footing in Asia even if they had no ancient rights to the territory.

One of the consequences has been that, seeing buildings in various parts of Asia Minor which exhibited a close relationship to those in Greece, it was supposed by some authorities that the course of art, like that of empire, was westwards, and that Greek architecture was derived from Asia. On the other hand, if *HERODOTUS* and some early writers are to be credited, the Greeks founded settlements along the coast and erected buildings many of which exceeded in size those which are found in the cities of the islands.

Up to the end of the seventeenth century Western Europeans avoided Asia Minor. Greece itself, in spite of all its historical associations, was an unknown region. There were fewer advantages awaiting those who ventured to visit the lands on the east side of the *Ægean*. Occasionally an English merchant who found himself in *Smyrna* was tempted to make excursions along the coast, but they never extended to any great distance northwards or southwards, and the inland journey seemed more hazardous. *Pococke* was, it is believed, the first Englishman who by pen and pencil endeavoured to suggest there were ruins worth notice. But his description of his travels is not as satisfactory as is desirable. The accounts given were, however, sufficient to excite interest among amateurs in England, and in 1764 the Society of Dilettanti sent out an expedition under the direction of *Dr. Chandler*, and including *Revett* the architect and *Pars* the painter among the staff, in order to prepare descriptions and illustrations of the ruins of *Ionia*. Another expedition was subsequently despatched by the Society under *Sir William Gell*. *John Peter Gandy*, afterwards known as *Deering*, who was a member of Parliament and architect for *Exeter Hall* and other buildings in London, with *Mr. F. Bedford*, also an architect, were members. Among the places visited by them was *Cnidus*, but they had not sufficient means to undertake excavations. The third volume of the "*Ionian Antiquities* and the unedited *Antiquities of Attica*" represented labours of the expedition. About the same time *Captain Beaufort*, R.N., who was a great

geographer, prepared a chart of the coast line showing some of the cities to be found in the neighbourhood. Colonel LEAKE was also a traveller who extended knowledge on the subject, and he had the benefit of some of C. R. COCKERELL'S observations. The necessities of ecclesiastical history were not without their influence in prompting a desire to gain information respecting lands mentioned in the early apostolic records. ARUNDEL, who was British chaplain at Smyrna, for that purpose made several excursions. There were geological problems which also incited HAMILTON and STRICKLAND to undertake explorations. Sir CHARLES FELLOWES'S journeys enriched the British Museum with the Xanthian marbles, and various other travellers were able to convince people that Asia Minor was a less dangerous part of the world than was generally presumed.

The interest aroused by the fruits of Lycian expeditions of FELLOWES inspired the authorities of the British Museum to exert their influence in securing more examples from Asia Minor. The appointment of a vice-consul at Mytilene was obtained for CHARLES NEWTON in order that he might occupy a position that would facilitate his explorations. Lord STRATFORD DE REDCLIFFE was then omnipotent in Constantinople, and he was enthusiastic in promoting the enterprise. NEWTON was ambitious to ascertain where the sepulchre of MAUSOLUS was erected, and came to the conclusion that the site must have been at Budrum, which is on the shore of the Gulf of Cos. In 1855 he visited that place, and he saw enough to warrant him in applying to the home authorities for assistance. A frigate was sent to him with a party of Royal Engineers under Lieutenant MURDOCH SMITH. The operations were commenced, and before long NEWTON was able not only to reveal the plan of the monument but to unearth the pieces of the colossal sculpture which are now to be seen in the British Museum. The figures will convince any sceptic that the descriptions of the old writers which were supposed to be entirely drawn from their imagination were not exaggerated. At the end of 1857 CHARLES NEWTON went to Cnidus. Fortunately he was possessed of the means which were not at GELL'S disposal. He made excavations on the site of the Lion Tomb, the Temple of Venus and the lower theatre. He was happy also in obtaining the services of a most able lieutenant in RICHARD POPPLEWELL PULLAN, the architect, who found the great lion we now see in the British Museum. Evidently Cnidus was a place that deserved to be represented in D Iphi. NEWTON also was most successful at Branchidæ, and was able to secure the seated figures which once lined the Sacred Way.

The Society of Dilettanti were, in consequence of so much success, contemplating the equipment of a third expedition, which would continue the work of CHANDLER and GELL. Mr. PULLAN was requested to undertake the preliminary arrangements. He was able to complete the exploration of the Temple of Bacchus at Teos, the Temple of Apollo Smintheus in the Troad, the Temple of Minerva at Priene and the Temple of Apollo Branchidæ at Miletus. In the course of his journey he "visited the whole coast northward to the Troad from the point that had been reached by Mr. NEWTON; and in this manner from the Gulf of Mendelee to Cape Lectum, on the north side of the Gulf of Adrymitrum, completed a survey of the coasts of Caria, Ionia and Æolia, where we know the finest buildings erected by the Greek colonists formerly existed." Mr. PULLAN was then instructed by the Dilettanti Society to excavate the site of the Temple of Bacchus at Teos. It was not a large structure; the interior dimensions were 31'15 feet by 19'85 feet; the wall was 3'8 feet thick; the columns were Corinthian of Greek character. Several fragments of the architrave were found, but no frieze. A bluish marble obtained in a quarry about three miles from the site was used for the building. Outside the town walls were the remains of a small Roman temple, with cornice, frieze and architrave from one block of stone. There was also a square building, apparently a mausoleum. Parts of a rich Corinthian frieze were found, but no traces of columns and pilasters. The core of the building was of rag-stone, the casing of white marble.

In the period of about forty years which has elapsed since NEWTON, SMITH and PULLAN were engaged in explorations the interest attached to Asia Minor has widened.

The proceedings of the Geographical, Hellenic and Archæological Societies testify to the increased number of travellers who have been attracted to Western Asia. The Americans also have exhibited their usual energy in endeavouring to clear the historic darkness which has enshrouded that part of the world. It is needless to say that there, as elsewhere, the Germans have obtained materials for learned investigations. But in revealing the buildings no people have done more than the French. They have some right to precedence, for it was a Frenchman, PAUL LUCAS, who was the first to suggest to modern Europe that Asia Minor was not to be regarded as the beginning of the Arabian desert. For men who have given so much attention to Classic art as the French architects, the buildings which are in the vicinity of the Ægean must exercise a fascination. It is not always easy to estimate the action and reaction between Ionia and Greece. But whenever Greek architects found themselves in Asia Minor, they appeared to consider they were entitled to show a liberty denied them in their own cities. In proportions, planning, ornamentation, we see variations which must have shocked Greek purists. Whether these variations can always be approved by the logic of architecture we need not inquire. But there is no doubt that imagination was allowed fuller play on the eastern than on the western side of the Ægean. What is novel and always an improvement, and we might suppose that the luxuriant architecture of Rome was inspired by the buildings in which efforts are made to combine characteristics belonging to different races and different periods.

THE ROYAL ACADEMY AND SLADE SCHOOLS

AMONG the witnesses who gave evidence before a departmental committee appointed to inquire into the administration of the Board of Manufactures (Scotland) Mr. Ernest Crofts, R.A., keeper of the Royal Academy, and Professor Frederick Brown, of the Slade School, University College, London. They described the systems adopted in respective schools:—

Mr. Ernest Crofts, R.A.

Mr. A. Akers-Douglas, M.P., Chairman: Will you explain to the committee kindly the constitution of the Royal Academy schools?—As I am not a very good speaker, if I leave this to you and regulations of the Academy schools with you, perhaps that will make it clearer.

Certainly, if you will put it in?—That contains the rules and regulations, and also the management of the schools, except that I might explain one or two terms. I don't understand what a "visitor" means?

In the ordinary sense?—I meant in the academic sense. Yes, I think so.—No visitor is a Royal Academician or associate of the Royal Academy. The masters and the teachers are paid officials, and not members of the Royal Academy, and I am the only official who is a Royal Academician in the schools.

You are the keeper?—Yes; my duties are just to see that the schools and give instruction in what we call an elementary school, which is really not an elementary school as our students, when they come to the Academy, are highly trained.

You do not admit any one who is not highly trained?—In old days the Academy did train students. There was no other place, but now there are such excellent institutions outside, and they receive good training there.

Where do they come from?—South Kensington, where?—All over England and Scotland; we have them in all parts. We think our duty only consists in training the students who are likely to become artists—not technical.

Can you tell us at all the average numbers attending your school?—About 160, that is, including architects and painters and sculptors, male and female.

You have got, of course, ample accommodation for that number?—Yes, a fair accommodation. Of course the schools are not what we should like them to be, but of course the middle and centre of London, and the space is so small that it is an impossibility.

Where are they?—Piccadilly, at the back of the Academy, and they are very much hampered in light by the galleries and them. Our lighting is not so good as the South Kensington schools.

You find considerable difficulty, I understand, from sources with regard to light—the want of light hampers them. Yes; the schools are good enough, but in the dark they are more subject to fogs, I think, in Piccadilly than the

th Kensington. Then we have in the summer a good deal reflected light from the buildings at the back—the schools on the ground floor. They really ought to have been built re the galleries are—higher up; and then we should have ded the reflection of the London University which is at the k. I might say our system of teaching is very bewildering the ordinary student, because each month he receives ruction from a different professor. A Royal Academician gives instruction for one month at a time, and can only instruction once in the year; consequently to a student is not a very capable student, it is most bewildering, but clever one I think it has its advantages.

You have the probationers as well as students, have you?—The probationers are those we admit from their draw-; but then we have to test them because, of course, they get gradually coached up to make very good drawings out-; and, of course, a great deal has been the influence of the ter, and that we have to test.

You have to make them draw?—We have to make them in the Academy; of course there may be a little undue stance outside

s that a preliminary stage to the student? Does everyone ce as a probationary student?—Yes; everyone

And he has to pass?—If he does not pass, we reject him

gether. And if he passes?—Then he enters in the lower school, re he has practically to go through again what he had e outside the school.

With regard to the course of study?—That is very similar e course of study in all art schools, chiefly antique to start , and painting from still life, and then to attend the A demy lectures, which are lectures on anatomy and painting chemistry, as far as it touches on painting. Then when asses the examination he is passed up into what is really a upper school, where he still continues drawing from life, also three days in the week painting from the living model. en he has passed that examination successfully he is passed the upper school, where it is nothing but painting all the and drawing from the nude models in the evening.

Then you have various competitions for prizes and medals? es, I have brought you lists. Annually we have a great y prizes, and biennially we have a gold-medal year, and scholarship of 200*l.* for the painters and 200*l.* for the ptors. It would be as well if I left this document with you. What fund produces that?—That comes out of the Academy ; we receive nothing from anybody.

You receive no grant whatever from Imperial sources?— ; what we did have was the grant of the site—at least, on ase.

I wished to make it clear; that is all.—Yes, we have no ts at all, and the galleries the Academy itself built.

The Academy has never had any grant at all since its idation?—I am not so certain that it did not have 300*l.* in rge III's reign.

Since then it has had nothing at all?—That is so.

As I understand, really the only thing you have from ernment is the site?—Yes.

And the old building of Burlington House?—Yes.

You have that on a long lease?—Yes.

Free entirely?—No, I think there is a peppercorn rent. are on a different footing to the other societies.

Do you pay rates and taxes?—Yes.

And do all repairs?—Yes, everything.

The Royal Academy built all the galleries?—Yes.

Out of their own funds?—Yes; and, of course, the schools free.

Have your funds come largely from bequests?—Some e bequests and some from the exhibitions—mostly from the bitions.

Mostly from receipts at the exhibition?—Yes; we have many bequests from elsewhere, and Turner medals and larships which are awarded to the students.

You do not contribute anything towards the other part?—

And you have free use of the courtyard?—Yes.

It does not belong to you?—No.

There have been suggestions for covering it in. You could do that?—No; our property ceases with the wall and front r.

Were alterations made in the entrance not very long ago? ot recently; not within the last ten years.

I think the entrance to the Academy building has been ed?—I thought you meant the entrance to the schools, to Diploma gallery. There was one doorway, a doorway h led into the Diploma gallery. That was bricked up, and you have to go in the main entrance.

Was that done by the Royal Academy?—Yes.

At their own expense?—Yes.

What does the school cost you; were you going to tell us

?—That, I am afraid, is rather out of my province; but we I be very glad to let you know.

Have you any idea, roughly?—I really should not like to say. That is more the Treasury's business. I am never on that.

Do the students pay fees?—Nothing at all.

It is absolutely free?—Absolutely free. The only thing we expect them to bring are their easels, but even those they do not bring, as we have many left, bequeathed by forme students.

Does the Academician in charge for the month come every day?—No, three days a week. He may come every day if he likes, but three or four times a week is thought to be enough.

Can you tell us the distribution of work between the permanent teachers, the salaried teachers and the visitors? You have a professor of painting, have you not, and a professor of drawing, and so on?—The professor of painting literally takes no part in the school. He simply delivers six lectures

I did not mean the Royal Academician; I meant Stannus?—He was in the modelling, but he is no longer there.

How do you distribute the work between those paid officials and the visitors?—In the upper school the visitors do all the work. It is only in the lower school the teachers do any duty.

The students in the upper school only get the advice of the visitors?—Yes.

There are no teachers there?—Except myself. When the visitors are ill I undertake those duties, but only in the absence of the visitor.

Is there a school of sculpture as well?—Yes, and architecture.

I suppose the visitor does not have anything to do with the lower school?—Nothing at all.

The visitors do the upper school?—Yes, and the paid masters do the under school.

Have you painting and architecture in the lower and upper schools?—Yes. You will find that very well stated in this book.

Will that give an account of the course of teaching?—Yes, it tells you everything. It does not give you the names of the masters, that is the only thing.

You say your probationers are already almost as high as any other school of art in the country can take them?—Yes, really they are very capable when they come there.

What you do is to give them?—The very highest polish—at least it is supposed to be the highest polish—an artist can have. Amongst the various visitors he is sure to meet one who is in sympathy with his style, and that is the advantage of the Academy teaching.

And, of course, the good they do each other?—Yes, amongst themselves too.

Can you give us an account of the accommodation, or plan, or anything by which we could tell the space you require for your 160 students?—I could get our architect to send you a rough one.

We should be glad to have it?—Should I ask Mr. Spiers to come?

We are going to sit for another two days.

I think it would be very valuable to know that. I think a sketch plan would be quite enough?—Yes.

Also showing the mode of lighting. It is a slanting light, is it not?—Yes.

The whole of it is a slanting light, is it not?—Yes, there is hardly any top light; in fact, we have none.

How long do the students stay?—That is all in the book.

It is a regular course?—Yes, five years altogether. Of course they can be sent away at the end of the first three years if they do not show proficiency.

Are the numbers limited?—No. We could still take more students than we have got.

Have you room for more?—Yes. And then there is no compulsion on their attendance: they attend very much as they like, except those that have scholarships, and these we keep a check upon. But otherwise it is very much like a university. They come and go as they like. Of course the good students attend regularly, and the bad ones we are very pleased to be without.

But you have no means of getting rid of them?—We can get rid of them at the end of three years.

But suppose you get a slack student?—He drifts away.

He comes when it pleases him?—Yes.

And you have to let him come for the three years?—Yes.

You have a limit time now?—Three and five years.

It used to be seven?—Yes.

And ultimately?—Unlimited.

A man could stay there all his life?—Yes.

You consider that both side and top lights are essential in a really good place?—Yes.

It would be absurd to build a place for a school without both?—Yes, I am afraid you cannot take our buildings as a sample of a well-lit academy.

Professor Frederick Brown.

You are a professor at the Slade school?—Yes.

Will you give us a description of the practice at that

school?—I will try to do so. You must first understand that the school is essentially what is called a fine art school, that it does not deal with anything apart from the study of the human figure and subjects connected with it. There is no technical instruction of any kind there, except that applied to fine art. The school is composed of men and women studying from the antique and from the life. They commence from the very first by drawing some portion of the human figure, from the cast that is, and continuing till they are considered fairly proficient in giving a general idea of the structure, attitude and proportion of the human figure from the cast. Then at the very earliest moment they are put to draw from the living figure. In some cases they are put up within a month or two of their arrival at the school. In slower cases it is perhaps a question of six months. One very important point of the system of the school is at once, or at least as soon as possible, to put them to draw from an object which is living. I think that is perhaps the note which distinguishes it from all other schools, at any rate in this country, of which I have ever had any experience. The usual system is to keep people drawing from the antique figure for years. I have known them in some cases go on for three years. In my view that is a very childish and stupid thing to do, if I may use strong language. I think it leads them into a mechanical way of drawing, that constant working up of the surface of the cast without any comprehension really of the principles which underlie the construction of the figure, which is the point we make the most of. They should constantly study the movement of the figure and its organism, the way it is built up, and, in fact, get at the principles of the thing before they begin to finish or elaborate at all. The consequence is all the finished work of the school is done at the end and not at the beginning. The life class, of course, is first of all rather a long study of drawing from the figure, sometimes lasting for two or three years, sometimes less, a couple of years perhaps, and then they are allowed to paint. Then, when they have gone through with the painting and have got proficient and we can do no more for them, they are considered fit to start on their own account.

Do you have any test on entry?—None whatever; in fact, we prefer them to know nothing, to have them young.

You take them directly; you can get them?—Yes, it is much better that they should know nothing than come with ideas that are all wrong, which is generally the case.

Especially if he is from another art school?—Yes.

How many pupils have you room for?—Two hundred about, annually, varying a little, one side or the other, sometimes more, sometimes less.

How many years do they stay?—I think a very capable student gets right through in about three years, and gets as much as we can do for him—possibly four years at the extreme in the case of an able student.

How are your students divided between men and women?—All life classes, of course, are separate. There is only one large antique room, which is a common room to both sexes.

I suppose your building makes it necessary there should be a certain proportion between them. What sort of proportion?—No, we do not maintain any kind of proportion. Of course, we always accept men students when they come. Sometimes it has been necessary to limit the number of women, but there is no fixed proportion between the two. We have got so much accommodation that we desire to fill the accommodation.

You have never filled the men's accommodation?—Not so full as it might be.

And the women, I suppose, are generally overflowing?—The women are overflowing rather, yes. I think we average about fifty men, sometimes sixty. The women, of course, make up the remainder, a total of about 200.

Are there any studentships?—There are six scholarships, four of which are running every year. The scholarship is for two years. I think it has a very slight value—about 35 $\frac{1}{2}$ l. The amount of prizes is not more than 70 $\frac{1}{2}$ l. in all, in addition to the scholarships—about 70 $\frac{1}{2}$ l. worth of prizes.

The school is supported by fees?—Entirely, except that there is a small endowment.

Is there for the school?—No, for the chair only, not for the school.

For the professor?—Yes. I believe there is a very small sum of money for meeting odd expenses, but it is very slight. I have never been able to get more than 10 $\frac{1}{2}$ l. a year for that purpose.

You do not get anything from any grant of any kind?—No.

You do not attempt to earn anything?—No.

You simply go by the fees?—Entirely.

What time do your students stay with you?—The best of them stay about four years. That is a very complete course for a student.

Taken from the very beginning?—Taken from the very beginning.

And practically they all come from the very beginning?—

Not all, of course. It is a mere preference that they should come and not have ideas which we have to get rid of.

I suppose most of them do come on from other places?—Yes.

Very few of them you get at the beginning?—We get a number of young people who come direct from the ordinary school at the age of fifteen, sixteen, seventeen and so on, a very fair number. I should think at least fifty or sixty, perhaps, out of the total. But, of course, a large number come from other schools.

Can you tell us the amount of the fees per annum?—The sessional fee is 18 guineas. That means three terms of three months each.

Are there any extras or anything?—The anatomy lecture, I think, one and a half guineas for the course extra.

If you have a student come in simply to learn to paint, has to pay a fee of 18 guineas and provide his materials?—Yes, his materials, but not such materials, easels, for instance; but paint, brushes, paper and all that of thing he has to provide. But materials which you provide, of course, we provide—easels, stools and that sort of thing.

Then about the buildings; you have a certain top light?—We have side lights mainly.

They are high side lights?—They are fairly high, and consider they are the best, much superior to top lights, provided they are sufficiently high.

The side light in your life school is very high, I remember?—Yes, but every room has a side light. In the case of the lower life-room, it also extends obliquely into the room a little, but not much. It is practically a vertical light.

You think a very high light is a *sine qua non*?—Yes, not a top light. A top light is objectionable in many respects. I think a high vertical light is the most desirable form of light.

Would you say that anybody who said that a school could be perfectly lighted from the top was making a mistake?—I think so.

Then the teaching; how is that done?—The teaching throughout the school is carried on by all the masters—to say, the work is not divided up, at least with an exception which I will explain directly. The teacher who teaches the advanced life class also teaches in the elementary class; we consider that a most important thing that the same man or at all events a man of the same capacity, should teach beginners as well as advanced students. I think that is a desirable and important feature in the teaching of a school.

You have more than one—you have an alternative teachers, do you not?—I have a staff of three people from lecturers; they are really artists working outside; they come to the school on certain days of the week—some of them come three days a week and one one day.

It is a modification of the visitors?—Yes, practically.

Have you any permanent salaried teachers who stay all the time and do nothing else but teach?—No, I am not there myself the whole time, but when I am not there the staff is there, so that the school has always some one there during the work—at least two of our staff are always present.

You have not a school of architecture?—No.

It is only painting and sculpture?—It is painting and sculpture at the present moment. We have given up our school of architecture.

You have three teachers of painting, three visitors?—A staff, consisting of three people and myself, do all that is to be done; only in one or two cases—for instance, in one case one of my teachers comes exclusively for painting. After he has done his work with the painting, he assists with the sculpture and so on.

Any student comes under them all?—Yes; at different times he comes under all the teachers.

For all purposes, from the beginning of his course to the end?—Yes. At least that does not apply to the teacher who comes to teach the painting, but he goes round the other drawing classes too when he has time. But as regards the staff, you might call the staff, three parts of the staff are constantly in teaching the whole school from beginning to end.

Will you tell us the names?—Mr. P. Wilson Stead, Henry Tonks and Mr. W. W. Russell. Then there are two courses, lecturers—lecturers on perspective and on anatomy.

The Westminster Council have asked the Common Council to support the following resolution:—In view of the damage to health and property caused by smoke, the London County Council be urged to undertake inquiry into all the methods of cooking, so as to ascertain whether there is any form of apparatus which is smokeless and at the same time practical and economical for general use."

MANCHESTER SOCIETY OF ARCHITECTS.

PAPER on "Modern Domestic Architecture" was read before the above Society on November 12 by Mr. Alfred Orbert, who said that the advance during recent years in art of architecture had been greatest in domestic work, had been largely influenced by the feeling that modern architecture must be founded more on sound and straightforward construction, and the suitable treatment of materials, on the forms of buildings erected to fulfil the requirements of some bygone century, although careful study of old buildings is a necessity to every architect. Noting as points as to the choice of materials and methods of construction, stress was laid on the advantages of solid construction of floors, &c., and details given of some varieties of solid concrete or wooden floors. A double cavity wall was mentioned probably having some advantages. Speaking of various treatments of wall surfaces, half-timber work, when used merely casing in front of a brick wall, was condemned as being a less and more or less perishable deception. The aspect planning of the chief rooms, and of the house as a whole, was briefly commented on, and illustrated by examples of plans by Mr. Norman Shaw and others. Referring to the general treatment, it was insisted that the scheme must be actually realised as a combination of materials of certain colours and textures, not merely as a pleasing arrangement of colours on paper, and that local material should generally be used. While moulded brick is a useful material, terra-cotta was thought to be quite unsuitable for country houses. The remainder of the paper consisted of comments on lantern slides showing over fifty views and plans of good modern domestic work by leading architects.

After a few words by Mr. J. W. Beaumont, the president, a vote of thanks to the lecturer was proposed by Mr. W. A. E. and seconded by Mr. J. S. Hodgson.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

MEETING of the Institute of Architects was held on Monday evening last, Mr. John Slater, B.A., vice-president, in the chair.

The Hon. Secretary announced the death of Mr. Silvanus T. J. T. HOMOLLE, director of the French School at Athens, elected Fellow in 1893.

M. J. T. HOMOLLE, director of the French School at Athens, read a paper on

The Treasury of Cnidus and Ionian Art at Delphi.

M. Homolle, in his introduction to the description of the excavations at Delphi, paid a tribute to the memory of the late Mr. F. C. Penrose, and he thanked the members electing him as a corresponding member. In the choice of this subject he wished to associate the work of English archaeologists and architects who had by their continuous efforts collected together in the British Museum valuable fragments of the monuments of Asiatic Greece, and who had sagaciously interpreted their meaning as to be enabled to substitute them in the original forms. By the aid of drawings, by M. Tournaire he would briefly describe the sanctuary of Apollo. The Treasury of Cnidus was situated by the Sacred Way in the enclosure of the Temple. It was a type of Ionian architecture of the sixth century, B.C., and exemplified the richness and originality, all the vigour and beauty of the period. In order to give an idea of the discoveries at Delphi and to locate the position of the Treasury, M. Homolle described the plan of Delphi and its approaches, and especially a view of the site and its monuments as restored. The Treasury of Cnidus, he said, was found in complete ruin, and its restoration presented was carried out from the collection of fragments found under the debris. Many of the sculptured fragments were deposited at a distance from the site, and might perhaps belong to other monuments. The style was, however, the same throughout. To justify the interpretation attempted of the original monument, lantern views and photographs of the fragments were shown upon a screen, and the relation of each part and the motif of the ornamentation carefully considered. During the progress of the excavation the details of seven temples were discovered, and the value of the find could be appreciated when it was known that in the restoration of the Treasury of Cnidus they had brought to light Greek work which was of greater antiquity and beauty than the Temple of Jupiter at Olympia. It was a monument which gave new importance to Ionian art at Delphi, and in general to the history of ancient art. The plan of the Treasury was that of a temple in antis, measuring 30 by 8 m. 80. The restoration began with the entablature. They discovered details of a frieze and bands of ornamentation which greatly helped the work. The relation of the ornament to the frieze was believed to be true, because never a part of a figure in the frieze encroached upon the detail of the ornamentation had been cut away to make it. In all cases the several parts were connected together by reason of the relationship they evidently bore to

each other. In this way the architraves were placed in position, the height of the monument being suggested by the discovery of a caryatide with its base. The base was found in three parts, but its character was apparent since a representation of a short column was found in a portion of the frieze they had excavated. The casement of the door was suggested by a fragment of sculptured moulding, and the lower portions of the monument were thus completed in one whole. The richness and the extent of the decoration of the Treasury were most remarkable, for when the space did not admit of sculpture, painting was introduced. There was a uniform motif throughout the entire monument, varied by an appropriate adaptation of the different architectural details to the office which they served, carried out with admirable execution, full of vigour and possessing great decorative dignity, and giving a unique character to the monument. The Treasury of Cnidus, like some Greek monuments, did not follow a general rule in its position. It faced the west, but could be seen from all points of view. The sculptural frieze was continued round the four sides, that on the west front representing the "Apotheosis of Hercules;" the south, the "Rape of the Daughters of Leukippos;" the east, the "Contest between Greeks and Trojans round the Body of Euphorbos;" and the north, the "Fight of the Giants." In style and technique the bas-reliefs formed two groups. The treatment was either angular or soft, flat or round. The proportion and form of the figures were archaic, and the style was that of the sixth century. The figures were short and heavy, and the treatment and the groups were evidently subjected to a rigorous rule of symmetry, the grouping showing a corresponding number of figures on each side of the principal one, and the attitudes being analogous. They would be found, however, sometimes wanting in unity. The portion of the frieze showing the combat between the Greeks and Trojans before the assembled gods was a notable example. In the treatment of the figures could be observed an influence like that seen in the black figures painted on vases. The pediment showed the "Contest between Apollo and Hercules for the tripod of Delphi." In conclusion, M. Homolle said the name of the monument was arrived at by the discovery of inscriptions found on it, and by an implicit allusion to the monument in the writings of Pausanias. In conclusion, the Treasury was declared to be Ionian in spirit and execution, having an exuberant richness, a vigour that was somewhat heavy, originality of invention and marvellous execution. Details of the polychromy were illustrated by water-colour drawings by M. de Fonseca, and which represented the coloured ornaments, friezes and figures. The colours were red, white and blue. Metal was sometimes substituted for marble.

Dr. ALEXANDER S. MURRAY, who proposed a vote of thanks for the paper, said he need not assure the meeting of the great compliment M. Homolle had paid them in coming all the way from Athens to give a description of the most charming Greek building ever seen, with a fascinating argument for its relationship to Ionian art. He would rather call attention to their great obligation to him, who from the beginning to the end had been the life and spirit of the excavations at Delphi, which had produced results never equalled, and, in conclusion, he cordially wished that M. Homolle might be able to finish his task with all the success that had attended his first labours.

Mr. G. MACMILLAN, who seconded the vote of thanks, said he most cordially echoed all that Dr. Murray had said concerning the lucid and eloquent description, not only of the general plan and site of Delphi, but, in particular, of the excellent monument. Perhaps he would be allowed also to congratulate the Institute on their brilliant success in having M. Homolle to give a first account of his great work, and he could only feel sorry that the paper had not been given to the Hellenic Society. He hoped, however, that as the Society next year completed its fiftieth anniversary, M. Homolle would be persuaded to make a second visit to London and lecture upon another point in his work.

Dr. A. J. EVANS said only those who had been to Delphi could thoroughly realise the magnitude of the work carried out there. They felt that in Delphi had been discovered the beginnings of a Greek religion and an influence which had affected the whole of the civilised world. The work of excavation at Delphi had entailed the expenditure of vast sums of money, and the conduct of most difficult negotiations with a very difficult Government, which, however, appreciated the results obtained, and they could only the more admire the work M. Homolle had carried out and the great public spirit of his Government.

Mr. J. L. MYRES and Sir L. ALMA TADEMA, R.A., supported the motion.

The CHAIRMAN, in conveying the thanks of the meeting to M. Homolle, said that several years ago the Institute had been honoured by M. Schliemann, the celebrated explorer of the ruins of Ilium, and now they were proud to be able to offer a hearty welcome and thanks to the revealer and reconstructor of a building that was of supreme interest to the architect.

NOTES AND COMMENTS.

THE report of the Royal Scottish Academy refers to one subject which is worth attention by those who have charge of public galleries and museums. Lady SIEMENS bequeathed a portrait by RAE BURN to the Academy, which was to be delivered free of Government duty. The Inland Revenue authorities in England exacted payment from the executor of estate duty and legacy duty on the value of the portrait. The Finance Act of 1894, however, empowers the Treasury to remit the estate duty or any other duty leviable in respect of such portraits, prints, books, manuscripts, works of art or scientific collections as appear to the Treasury to be of national, scientific or historic interest, and to be given or bequeathed for national purposes. By the Act 39 George II. cap. 73, legacies of prints, pictures, statues and other specific articles given or bequeathed to or in trust for any body corporate, and not for the purposes of sale, are exempted from certain duties imposed on legacies. The provisions of the Acts were brought by the Council of the Academy under the notice of the executor, who claimed repayment of the duties that had been exacted in respect of the bequest. The claim was allowed. This establishes a principle which may be of importance in relation to any future legacies, more especially if the bequests should not be made free of duty. The part of the report relating to the library says that the aggregate attendance (185) shows a considerable diminution on that of the past three years, though it is well over that of many previous sessions. As in past, and especially in quite recent years, the attendance has been mostly of students or of those who have recently passed through the Academy's class. The bulk of the works lent out have been borrowed by students, and it is pleasing to be able to add that such volumes have been returned in good condition and within reasonable time. Mr. and Mrs. CARNEGIE have endowed the Academy with gold bonds of the United States Steel Corporation to the amount of 12,000 dollars, for the purpose of providing scholarships to enable students of the Academy's life school to study for a time abroad and to visit the great art centres.

THE competition of façades in Paris is an advantage for architects, and consequently the more often there are records of them the greater will be the gain to those who design as well as to those who possess the properties. It suggests the extent of the interest taken in the subject when the French journal *La Nature*, which is supposed to be devoted wholly to science, published an article on the competition. The article was illustrated. A reproduction from a photograph of one of the successful buildings did not satisfy the architect, M. LEGRIEL, and accordingly an action was instituted against the journal. There is a difficulty in finding a basis for such a claim, and it was therefore charged that the reproduction was a forgery. The tribunal dismissed the case. It was laid down by the judge that everybody had the right to reproduce a public way, and consequently the houses which were to be found alongside; moreover, a critic of art had the right to give evidence in his article by views which became graphic information and corresponded with literary quotation. Whenever there was an abuse the judge could intervene if called on. The case, we suppose, was experimental, and it has been decided in favour of the principle of encouraging whatever affords information to the public.

THERE are some landscape painters who do not believe they can do justice to themselves or to their art by occasional visits to the country. London is no doubt a pleasant abode for an artist, but it is exasperating to be in the midst of the turmoil at a time when the fields are inviting and skies are showing themselves under delightful aspects. One of the painters who for over thirty years had preferred to establish his home amidst the quiet attractions of Sussex was Mr. A. F. GRACE, who was buried on Saturday last at Amberley. He lived at Steyning, which still retains a good deal of evidence of its antiquity. Last year he exhibited a water colour of the High Street in the

Royal Academy. He had removed to Steyning from Amberley. He was an Academy student and won the Turner Medal. He caught the spirit of the Sussex landscape and was able to suggest the true appearance of the Downs. During a great part of his life he suffered from illness and in painting he found a solace, but for over year he was unable to use his hand. Under the circumstances death was a merciful release, for he must have suffered at his inability to represent what was around him.

THE "Luther of Architecture," as his countrymen use to term KARL FRIEDRICH SCHINKEL, died in October 1841, and his reputation is supported by selecting subjects of a hazardous kind for the prize bearing his name. The Architects' Union of Berlin do not propose anything of a Château-en-Espagne class. They take requirements of an everyday kind, and which can only be met by designs that possess practicable qualities. As the preparation of designs requires time as well as careful study, the subjects for 1905 were arranged on Friday last. The first is a museum of architectural sculpture. The site assigned is on adjoining the technical school in the Hardenbergstrasse, Berlin. The museum will not only be supposed to form part of a group with the existing buildings, but it is to become suggestive of the whole history of architecture and sculpture. The successful competitor must possess not merely encyclopædic knowledge, but will have to be skilful in representing details of all styles. A second subject is a bridge which will convey the Rhine-Elbe Canal over the river Weser. As the site is supposed to be in the vicinity of Minden, the possibility of harmony with the building will have to be considered. The third subject will be for an engine building in connection with the railway station on the Savignyplatz, Berlin. It will be allowed that the subjects afford excellent tests of constructive skill as well as designing power. They are, moreover, not too much above such commissions as any architect might have to undertake.

AMONG the French painters who were recognised as Individualists, and were therefore difficult to classify, CAMILLE PISSARRO held a prominent place. By birth West Indian, he was accepted in France as a true native. He studied under COROT and for a time he carried on the master's principles. In 1859 he exhibited a scene at Montmorency and followed it with others, in which the scenery on the banks of the Marne was utilised. But he became acquainted with the Impressionists, and not even COROT's influence could prevent a change in PISSARRO's treatment. The dreamlike representations of the country were superseded by visions of cities and towns, as if the mission of the landscape painter was to come nearer to humanity than was possible in the fields, where trees and clouds offered rival fascinations. Paris, Rouen and other French cities were shown in a manner which was derived from no earlier master. PISSARRO was not afraid to attack London, and one of his most remarkable paintings is a view of the railway bridge at Charing Cross. There was no artist in Paris who was more beloved, and he deserved to be, for PISSARRO could be considered as an honorary professor whose skill and experience were always at the service of younger men who were feeling their way and believe there was much to be known which was not taught in the academies.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: NAVE, LOOKING EAST.

BIRKBECK BANK, ENTRANCE HALL.

DESIGN FOR PROPOSED CONSUMPTIVE SANATORIUM.

HOUSES, WINCHMORE HILL.

BREWERY HALL, NEWCASTLE-ON-TYNE.

THE SOCIETY OF ARCHITECTS.

first meeting of the session 1903-4 was held at St. James's Hall, Piccadilly, W., on Thursday, November 19.

The late Mr. Silvanus Trevail.

President, Mr. WALTER THOMAS, in opening the proceedings, said the beginning of the session had been clouded by the death of their late president, Mr. Silvanus Trevail. The news had come as a great shock, and the circumstances under which so useful a life had been suddenly ended was a matter for the deepest regret to the Society, which he had been connected for eighteen years, and no less to the senior architectural body, the Royal Institute of Architects, with which Mr. Trevail had been associated as a Fellow for ten years.

Vote of condolence to the relatives was unanimously passed. During the evening the following gentlemen were elected members and studentship:—

Honorary Membership.—Past President Colonel Ellison. *For Membership.*—Franklin Joseph Bellamy, Herbert Burnett Brown, Percy Martin du Feu, Samuel deade Edmunds, William Longfield Hill, Herbert Hillier, Aubrey Burton Houchin, William Herbert Rowland Lloyd Jones, Charles Mitchell, William John Rams, George Meek, William Henden Winder. *For Studentship.*—Clive Ewart Ardley, William Heather Evans, Scott Mackintosh, Joseph Peascod, Oliver George Herbert Longstaffe Webb, Evelyn Shirreffs, Isaac Simpson, John Stalker, James Stewardson.

President's Address.

I select a man to the office of President is to bestow upon him the highest honour which it is in the power of the members of the Society to confer, and to place upon him many responsibilities, not the least of which is the preparation of a presidential address.

Let me say at once that I greatly appreciate the honour conferred upon me; not merely from a personal point of view, but as representative, as it were, of that large body of country architects which is the backbone of the Society, and to whose support it is largely due that the Society holds its position in the architectural world.

The result of the existence of so many architectural societies is that about this time of year there is somewhat of a glut of presidential addresses covering much the same ground, so that it becomes a matter of difficulty to prevent repetition, though, on the other hand, one may perhaps learn to avoid it.

I have very few remarks which I shall address to you to-night, but as far as possible with the practical side of our profession in mind, I shall more particularly with the various questions taken up by the Society, and indicating some of the directions in which the Society should extend its sphere of utility, for the welfare of the profession is surely a member's first care, seeing that the stronger the Society the more advantages it will be able to give him. I am fortunate in coming into office at a time when the Society is in so prosperous a condition, a state of things for which I have to thank those who in the early days of difficulty stood by and supported it.

The Society has arrived at a stage of its existence when its sphere of utility and influence has been demonstrated beyond doubt, and when it might well essay to stand alone, not only in regard to such matters of general interest as registration, but also to questions which more particularly affect the members, such as a scale of charges, a form of contract, articles of association, conditions under which alone a member will come into the Society.

I shall now first deal with one or two matters of general interest.

Architectural Education.

Nothing has done more to promote the advancement of architectural education in this country of late years than the gradual development of schools of architecture and the institution of departments of architecture in connection with the universities of London and Manchester, the former being the first of the kind in this country, and the latter owing its existence largely, I think, to the efforts of the Manchester Society of Architects. The allied societies afford facilities for gaining knowledge, the Leeds and Yorkshire Society being perhaps the most successful. And I trust before long the University of Aberystwyth, which will have its school of architecture, will have my hearty support if established.

The new School of Architecture in London in connection with the Architectural Association has just completed a most successful first year's work, and is deserving of the hearty support of the profession; its curriculum is unique and its

scheme admirable, providing as it does a means whereby a man may test his adaptability for the profession before binding himself down for a term of years, thus enabling him to withdraw in good time if he finds that his abilities are such as would have better scope in some other profession.

The great fault of the usual system of pupillage to my mind is that in many cases a youth is bound down for a term of years, only to find at the end that he has mistaken his vocation and wasted time and money.

In Ireland also this question is receiving consideration, but after all, these praiseworthy efforts to raise the standard of architectural education do not much more than touch the fringe of the profession, for the reason that the system is a voluntary one, and until schools of architecture are State supported, or, in other words, a system of statutory education is established, it is hopeless to expect that more than a small proportion of students will avail themselves of the advantages now open to them.

A system of compulsory education would do good in two ways—it would show to the intending student exactly the course of study which he must necessarily take if he ever aspires to be more than a subordinate, and so would enable him to shape his studies from the first with a definite object in view, while the mere fact of a certain standard being set up, which all must reach, would tend to stop the ever-increasing stream of incapables who are now attracted to the profession by the fact of its being open to all.

This question naturally brings one to a matter in which the Society is particularly interested, viz.:—

Statutory Registration.

Does it not seem to be not only common sense, but common justice, that a man who has entered the profession by legitimate means—that is, by spending his time and money in properly fitting himself for its duties and responsibilities—should be protected against the bogus practitioner whose only claim to the title of architect is the fact that it appears on his door-plate?

The principle of registration is one against which a valid objection has never been made; it is only when it becomes a question of carrying into effect that principle that objections are raised on certain points by those who are so bigoted and prejudiced as to be unable to consider the matter from any point of view other than their own narrow one, and who endeavour to obtain a cheap popularity by the easy way of indiscriminate condemnation of a measure of the clauses of which it is evident they know nothing at all.

Very little to my mind is gained by controversy, but much may be accomplished by persistent and continued effort towards a definite end. No amount of argument can get over the fact that the profession is practically solid on the principle of registration, and when it comes to fighting out the details, the common-sense of the majority must win.

It is not my wish or intention on this occasion to go deeply into the *pros* and *cons* of the question, but I should just like to take one point. If I understand our opponents rightly, their main objection to the Bill is based on the assumption that it will be the means of indiscriminately registering all and sundry without question, and that thereby the evil which they admit now exists will be increased; this only shows what irresponsible statements can be made and what inflated nonsense is talked in the hope of stemming the tide.

It is true that Parliament will not pass any measure which does not protect properly vested interests, and quite rightly, but that is a very different thing from registering indiscriminately.

The Bill provides for registering only those who can prove to the satisfaction of the General Council that they were before a stated date and are still actually practising architecture, the General Council being composed of a body of architects in the nomination of whom the R.I.B.A. has the preponderating influence, and the choice of who shall be registered rests entirely with the General Council, which might be supposed capable of properly adjudicating on the claims placed before it.

The President of one of the allied societies recently said in effect that an imperfect Bill was better than no Bill; this is perfectly true, because the least that a Bill would do would be to stop admission to the profession except by legitimate means, and for that reason alone it would deserve every support.

The position of an objector who is already a member of any architectural body is an untenable one, because he has already admitted his agreement with the principle by voluntarily registering himself, and that objector forgets that though he may to a certain extent protect himself by so doing, yet so far as the public are concerned he cannot prevent those persons he may consider unqualified from inserting their names alongside of his in the public directories and other lists, so that he is to all intents and purposes compelled to submit to be classed in the public eye with all and sundry who may care to assume the title of architect, so that he at present suffers the indignities

which he pretends to fear would be the result of a Registration Bill.

Every man has a right to his opinion, and if there are a few who are genuinely satisfied with the present state of affairs or who are unable to express an opinion one way or the other, there are very many others who are not content and who will agitate until they get what they want.

It is understood that the architectural societies generally are in favour of registration, and that some of them have urged the R.I.B.A. to take the matter up. That is as it should be. The senior body is the right one to take the lead in this, but because it does not do so that is no reason why others should not, and the support that the Society has lately received shows that it is recognised that it is not fighting for its own hand, but in response to a generally expressed feeling in the profession that the time has come when the matter should be taken up in earnest.

The tendency of the times is towards federation, and in matters architectural there is the same feeling and desire for consolidation and for some strong central authority to control the whole.

Straws show which way the wind blows, and recent events in Ireland and elsewhere make it plain that the senior body is acting against its own interests in not fairly and squarely facing the question of registration. It is encouraging to find the President of the R.I.B.A. making registration the principal theme of his address, and to have his assurance that the Royal Institute is in sympathy with every effort to raise the status of architecture and architects in this country, which of course includes the registration movement; but it is evident that the only practical way of obtaining the desired end, viz. by Parliamentary powers, will not be sought by the Institute until it has tried every other possible scheme.

The proposal to form a Board of Architectural Education, if carried out, may be useful in focussing and controlling the efforts of the various schools of architecture throughout the country, but it will do nothing at all to remedy the grievances which it is admitted exist in the practice of architecture.

As usual, the Institute fears to definitely pledge itself one way or the other on the question, though it admits that the large body of opinion in favour of compulsory registration cannot and must not be ignored. The Institute is apparently on the horns of a dilemma; anxious to propitiate those few leaders who object, and at the same time knowing that the general body of practitioners must be reckoned with, it proposes a middle course—that of a scheme of voluntary education, which, however good and desirable in itself, will be unable from its very nature to deal effectually with the question.

Such a scheme will not at all appeal to practical men, who are aware that nothing less than statutory powers will enable any authority to deal effectively with such an important question as the education and consequent necessary registration of architects.

The present situation may be summed up in a few words. It is admitted that grievances exist which should be remedied; the question is how? Very many of us know and say that there is but one practical way, while a few others are anxious to try various schemes before accepting the inevitable; but let those who think they can by any means effectually hinder progress in this matter remember the legend of the Saxon king who was taken down to the seashore and told what a clever fellow he was. He showed his advisers however that he could not stop the advancing waves, and if our opponents care to see a parable in that, the advancing water is the tide of progress which they can no more stop than could the wise old king the waves.

Public Improvements and Building Restrictions.

There must necessarily be certain restrictions and conditions imposed upon those who propose to erect buildings, but one would naturally think that when these conditions emanate from the landowner who is presumably anxious to dispose of his sites, that they would be of such a character as to encourage rather than put off an intending buyer. The opposite seems to have been the case in the Holborn to Strand improvements.

Those who have read the conditions of sale will see at once that they are of a character calculated to make the boldest hesitate. The decision on any point afterwards arising is in the hands of the Council's architect, from which there is no appeal. The objection is not a personal one to the architect as such, but to the principle which places so much power in the hands of an official.

There must be something wrong when the opportunity to secure sites in so valuable a centre fails to attract purchasers. I think the conditions should at any rate be subject to an arbitration, in case of dispute.

This is a question not only for lessees but for architects who have to advise their clients who propose to take sites. If there is no reference to an arbitrator in case of a dispute, a client may be mulcted in a large additional expenditure he never contemplated, and which may bring him to ruin.

Conditions of Contract.

It is satisfactory to find that after negotiations extending over eight years a form of conditions of contract has been arrived at between the R.I.B.A. and the Institute of Building, which contract defines as definitely as may be the relative positions and responsibilities of the building owner, the architect and the contractor.

Architectural Competitions.

It is a sign of the times that a few architects should be obliged to form themselves into a Competition Referee Society with the object of "blacklisting" competitions with conditions of which they do not agree, and they have done good work in this way; but why was it left to them to take up? Here again is shown the want of the strong hand in the present system of putting out designs to competition in which has come to stay, and it is not to the credit of the profession as a whole that, in spite of protests and requests, architects should not compete in certain instances, there are always found some who will disregard such requests, and must lower those who enter in the eyes of the promoters themselves to find that there are men willing to quote terms which they will undertake the work in the event of their being successful. Such practices want putting down with a strong hand; but who is to do it? Were there a statutory authority it could absolutely control these matters by making it a question of professional conduct. Promoters would then quickly see that it was waste of time to come before the profession with an invitation to compete, the conditions of which were not in accordance with professional usage.

Assessor as Joint Architect.

There is a matter in connection with the Liverpool Cathedral competition which I think has not received the attention it deserves, and that is the appointment of the assessor to act as joint architect with the author of the selected design. To maintain that the principle is an entirely wrong one is opposed to the best interests of the profession, and I consider the attention of the profession should be called to it, and steps should be taken, say by the Competition Reform Society, to bring the matter to the notice of those in authority. In the competition for the Liverpool Pierhead Baths and Tramways Offices, which in the first instance proved a failure, there were found six or seven firms of architects to enter in a second competition for baths only, without any assessor being appointed or any premium offered. Then there was a competition for the housing of the poor upon the site known as the Hornsby Street area, Scotland Road—another failure—the work being afterwards carried out by the Corporation's own officials. Surely this state of things can only have one result, and that is to drag the profession through the mire. If the profession does not respect itself, what can it expect from the public and public bodies? You cannot find any other profession that would submit to this sort of treatment in the architectural profession does. I am glad to say that the firms of architects who act in this way are getting fewer every year, and the sooner they are wiped out the better for the profession.

Having expressed my disapproval of certain things, I must give credit when credit is due. The Liverpool City Council and the citizens have done their share to advance architecture and public improvements.

Liverpool Cathedral.

One of the most important works of modern times within the cathedral it is proposed to erect in Liverpool, the proportions of which are quite equal to any of the ancient cathedral buildings of England. In fact, the two towers are probably be higher than any church or cathedral tower in the British Isles. His Majesty the King has recognised the importance of the work by intimating his willingness to lay the foundation-stone in the spring. The area of land covered by the buildings without cloisters will be about 10,200 square yards, a greater area than which only one or two, if any, cathedrals in England occupy. The committee has been exceedingly well in accepting the decision of the referees in the competition recently held. It had a precedent for appointing so young an architect as Mr Gilbert Scott, for Mr. H. Elmes was about the same age when he won the competition for St. George's Hall, Liverpool. This leads me to say that I hope that a memorial to Elmes will before long be erected at St. George's Hall.

But the cathedral is not the only great building that Liverpool is about to erect. The Liverpool Dock Board has recently had a competition and a very satisfactory conclusion was come to when they accepted the designs of a local firm of architects. The Liverpool Corporation has completed and opened a new technical school built from the designs of a London architect. The Royal Insurance Company has recently erected a magnificent pile of buildings of the most modern construction. Then there is the new Church House in the

st. The banks and the large steamship companies and
men appear to find their own offices and shops too small;
e old buildings are being pulled down and palatial new
ions taking their place, amongst them being new offices for
Alfred Jones.

he city to which I belong has always been in the fore-
I might almost say has led public opinion with regard to
questions for improving the conditions under which the
ring classes have to live. The housing question has been
a up in an enthusiastic spirit and made a special study of
e housing committee and the Council. Although many
able schemes have been brought to a satisfactory com-
on in the past, it is only a few days ago that a further
me was inaugurated by H.R.H. Princess Louise to erect
ers' dwellings at a cost of 150,000/.

he Liverpool School Board, which has now ceased to
ave made a particular study through their various
jects of the highest standing in Liverpool of school build-
and the most recent one erected, Birchfield Road school,
suppose as complete an elementary school building as will
be erected.

Architects and the Education Act.

Whilst speaking of elementary education I would par-
ticularly like to draw the attention of architects to their
tion under the new Education Act. Most of the committees
formed of sub-committees of city councillors or county
councillors or urban district councils. Now most of these
lemen seem to think the persons they ought to employ as
itects and surveyors for their future new buildings are their
surveyors, land surveyors, county surveyors, road surveyors
other gentlemen whose particular qualifications are more of
nature of land stewards, bridge-masters and road surveyors
architects. Now there are gentlemen in our profession
during the last thirty years have made a particular study
chool building, and it appears to me that valuable expe-
ce that they have gained during that period will be lost to
community if the principle I have just indicated is per-
ed in. Most of the county and city surveyors have as much
k as they can possibly personally attend to, and they have
in the past no practical or personal experience of school
ding. Therefore it is very important that we, as the
ety of Architects, should bring before the notice of these
ous authorities the importance of appointing architects of
rience in school construction to look after the supervision
their schools in the future, and not leave them in inex-
perienced hands, with results that will mean disaster and
eased rates.

Ancient Lights.

A question in which the Society of Architects is particularly
rested is that of "Ancient Lights," which is to form a subject
discussion at our next meeting.

The Bill which has been drafted by the joint committee of
R.I.B.A. and the Surveyors' Institution does not seem to
much more than take the matter out of the hands of the
ayers to put it into those of the surveyors, so that the benefits
the building owner are not increased—rather the opposite in
e cases.

The Future of the Society

Turning now to matters which more particularly affect the
mediate needs of the Society and its members, I need only
r you to the report presented at the last meeting and the
ance sheet which has been put before you for evidence that
Society is in a thoroughly sound position and entitled to
k forward with some confidence to considerably extending
scope within the immediate future.

It is within the province of every member to assist the
ociety in developing its resources to the utmost extent; its
wth and influence depend on individual effort, and no
ortunity should be lost of making the Society fully repre-
tative, particularly of that important section of the profession
which it especially appeals, viz the provincial practitioner,
o has more difficulties to contend with in his endeavours to
ourably carry out his professional duties than perhaps the
tropolitan architect has any conception of. Particularly is
the case with the architect in the smaller towns, where
haps the scope is not great and where he has to meet en-
achment on his legitimate sphere of practice.

Membership in any corporate body not only confers certain
vileges on those who gain admittance, but it also entails
on them certain obligations, one of the greatest of which is
t of forwarding in every possible way the aims and objects
of which that body was founded. Especially is this the case
in a young and growing Society such as ours, which actively
es up questions it believes to be for the general good in a
y which no other architectural society has attempted.

It speaks well for the Society that, in spite of r perhaps
ause of the institution of a stiff entrance examination and
er tests as qualifications for membership, our numbers go
steadily increasing; but there is yet great scope in this

direction, and it should be the duty and pleasure of every
member to recommend for membership those whom he knows
to be fully qualified, and so to enlarge the influence of the
Society, and by this means show his practical interest in its
welfare.

THE RHIND LECTURES.

THE Rhind Lectures, which are delivered in Edinburgh
generally treat of subjects relating to a very remote age.
This year the course is devoted to "Scotland in the Time of
Queen Mary," and the lecturer is Mr. P. Hume Brown, M.A.,
LL.D., Fraser Professor of Ancient Scottish History and
Palaeography.

In his opening lecture it was pointed out, says the
Scotsman, that the title of this course might suggest expecta-
tions which were doomed to disappointment. Who could
think of the times of Queen Mary without thinking of her as
the central figure to whom all contemporary persons, events
and circumstances are but the setting in which she worked out
her destiny? It was her dramatic story that had made the
sixteenth century the one period of our annals that had
commanded the attention of the world. Yet it had to be
remembered that the period of Mary Stuart's reign possesses a
larger interest than her individual character and fortunes. In
strictest truth it might be said that it was the most momentous
period in the history of the Scottish people. It saw the begin-
nings of a new society, the birth of new national ideals, the first
distinct awakening of the nation to a sense of its own destinies.
This development was not bound up with the existence of
Mary Stuart, and apart from her the period of her reign
presented a field of interest at once wider and more important
than the incidents of her personal career. Questions of religion
and politics would be left out of account in the lectures as
subjects that had been so often and so voluminously treated
and as inappropriate to the present occasion. The subject of
the course therefore would be the physical, the social and
economic aspects of Scotland in the time of Queen Mary.
In studying any period in the history of a nation the question
we first naturally asked was:—What were the physical condi-
tion and aspect of the country in which its people lived their
lives and performed the actions which it is the business of the
historian to chronicle? In the case of a period so remote
as the sixteenth century the question could be answered
neither so definitely nor so comprehensively as we could
wish. No contemporary had such a knowledge of his
native country as would have enabled him to present
a picture of it as a whole. By piecing together the
different descriptions of native historians, however, and from
the notes of foreign visitors and casual references in public
and private documents, we were enabled to form a tolerably precise
notion of the general appearance of Scotland in the time of
Mary. There was one peculiarity in the appearance of the
country which struck all foreign visitors, from Æneas Sylvius
in the fifteenth century to Dr. Johnson in the eighteenth—the
general absence of timber in every part of the country through
which they travelled. The disappearance of timber in Scotland
had been a gradual process, which we could trace in the
successive statutes passed for its preservation. Writing in
1617, the year of James VI.'s visit to his native kingdom,
Sir Anthony Weldon declared that Judas could not have found
a tree in Scotland on which to hang himself. But this
was only one of the senseless gibes of that splenetic southron.
It was true that throughout the southern half of the country
wood was so scarce as to give its distinctive character to the
landscape, but even in the time of Mary, trees were not so
absolutely non-existent as Weldon would have us believe.
Successive Acts of Parliament had made it compulsory for
landlords to rear plantations in the immediate neighbourhood
of their seats, and we had the testimony of visitors that such
plantations were frequently to be seen, especially in Fife and
the Lothians. Besides the general absence of wood in the
Lowlands, there were other features in the landscape which dis-
tinguished the Scotland of the sixteenth century from the
Scotland of to-day. Everywhere there were numerous mosses,
lochans, and even lochs which have long since disappeared,
and the disappearance of which had materially altered the
general aspect of the country. It was in consequence of the
numerous mosses and waters in the flat country that the slopes
of the hills were so generally cultivated by the Scots—a custom
which the southern visitors regarded as one of the peculiarities
of our remarkable country. Another peculiarity which struck the
English visitor to Scotland in the latter half of the sixteenth cen-
tury was the total absence of enclosures or fences throughout the
length and breadth of the country. We should be greatly
mistaken if we imagined the Scotland of Queen Mary to have
been a land of swamps and stony wildernesses, which knew not
the diligent hand of man. Even by the reign of David I, we
know that the process of bringing the land under cultivation
had been strenuously begun, and from his day onward legisla-

tion and private enterprise had gone hand in hand in prosecuting the good work. It was unlucky for Scotland that some of its most productive districts adjoined its "old enemy of England." Crossing the Tweed, the invading host could at once begin its work of devastation, for the Merse, though excelled in fertility by certain other parts of the country, reared abundant crops of oats and barley. When the enemy chose to enter the country by Teviotdale rather than the Merse a still richer spoil awaited him, as he could then overrun the cultivated lands of the great abbeys of Kelso, Jedburgh and Melrose. But it was when the invader made his way into Lothian that he could satisfy his rapacity to the full, since, according to contemporary testimony, it was "the chief of the provinces of Scotland by the plentifulness of its ground and by the decking and apparelling of its houses and the fairness of their building." In Tweeddale the number of sheep that fed on its hills extorted the admiration of strangers, single sheep-owners possessing as many as five hundred or even a thousand. Nithsdale was another of the fertile districts in the south of Scotland that presented a tempting spoil for the invader. Galloway was not a county where an English army found luxuriant quarters, but it filled its place in the national economy by supplying the Lowlands with cattle and ponies and eels. The district of Kyle, in Ayrshire, is described even in the fifteenth century as "that country plentiful and fair," and Clydesdale was named "the paradise of Scotland." Fife, according to the testimony of natives and strangers, was a veritable Land of Goshen—Mary of Lorraine declaring that she had nowhere else seen "so many good faces in so little room." From the earliest period of which we have record the Carse of Gowrie had been cultivated like a garden, and had been called "the youngest sister of Piedmont." To the fertility of Angus and the Mearns there is concurrent testimony, at least from the fifteenth century. But of all parts of the country it was Moray that had the greatest name for the fecundity of its soil and its high cultivation, and when strangers visited Scotland they were told that they must go to Moray to see what the country could produce. From a contemporary description of the western islands their present inhabitants might be justified in regarding the sixteenth century as the golden age of their country. From the general survey that had been given it might be inferred that the most fertile parts of the country now under cultivation were largely under cultivation in the time of Mary. The principal crops reared were oats, barley, wheat, hemp and lint. English visitors were impressed by the fact that Scotland was a corn-growing country. Fruits had been reared from the early Middle Ages in Scotland, but this had been mainly in connection with the religious houses. At the close of the sixteenth century a friendly observer had said "that of flowers or fruit there are little or none in Scotland," and it was not till the close of the following century that fruit-growing became a more general industry.

II.

Having described the general appearance of Scotland, Mr. Brown said they would now glance at the villages and towns—specially noting the peculiarities that struck the traveller from other countries. A Pomeranian noble who visited Scotland in the sixteenth century had noted that "the Scottish villages looked very poor, the houses having stone walls not as high as a man, upon which the roofs were erected and covered with sod." Another visitor about the same period described a typical abode in a Scottish village as built of "one course of stones, another of sods of earth, and with a door made of wicker rods." Englishmen spoke contemptuously of the houses in Scottish villages, but the Spaniards, who visited England in the reign of Mary Tudor, spoke with equal contempt of the houses of the English peasantry, which they described as being made of "sticks and dirt." The Spaniards had expressed their surprise that the English peasant, who lived in such a wretched hovel, could afford to feed so well, and we had a similar testimony from foreigners as to the fare of the agricultural labourer in Scotland. Satisfactory evidence would seem to show that the condition of the Scottish peasantry in the time of Mary compared favourably with that of the same class in France and Germany. The towns of Scotland appeared to have made a more favourable impression on strangers than the villages. One peculiarity of Scottish towns had struck all strangers—the absence of walls of defence. Native writers had explained their absence by saying that the Scots were too brave a nation to need them, but this flattering explanation was not borne out by facts. The real reason for the absence of walls in Scotland was the expense of constructing and maintaining them. Perth was the only town in Scotland that possessed defences after the manner of continental cities. As some bulwarks were necessary, however, both for fiscal purposes and purposes of defence, the Scottish towns had to be content with dykes instead of walls, which, however, but inefficiently served their object. Generally they were of the

most rickety description, and were constantly under repair. After Flodden a hasty attempt was made to surround Edinburgh with a stronger line of defence than it had hitherto possessed, but all through the sixteenth century there were renewed efforts to construct a wall that would effectually serve the desired purpose, but the town records showed that the work was never satisfactorily accomplished. The best known description of Scottish towns in the sixteenth century was that of Pedro de Ayala, the representative of Ferdinand and Isabella at the Court of James V. Ayala's description, however, must be taken with some reserve. Thus it was not strictly true that all the houses in Scottish towns were built of hewn stone, nor was it true that they were generally provided with glass windows. From such descriptions as we possessed of Scottish towns in the time of Mary it seemed that some of them had not improved in appearance since her day. Glasgow, which held only the eleventh rank in point of taxable value, was generally considered the most beautiful of all the Scottish towns, while Edinburgh impressed the stranger as the most striking and peculiar. It was its length, spaciousness and cleanness of the thoroughfare extending from Holyrood to the Castle that specially arrested his attention, but he also admired the "plain and fruitful fields of corn" to the north and south of the city, and Holyrood was abounding with "hares, conies and deer." On the other hand, the inhabitants of the city were described as a "sluttish, idle and slothful people." It was impossible to determine with precision the population of the whole country, or of its different towns. We should probably not be far from the mark, however, in estimating the whole population at about 500,000. Edinburgh might have contained about 30,000 inhabitants, Aberdeen at the close of the sixteenth century had about 4,000, at the same date the adult population of Glasgow was 10,250. We had more exact data for determining the relative wealth and national importance of the towns. From successive tables of taxation drawn up in Mary's reign we ascertain the contributions from the different burghs, and from the evidence we could arrange the principal towns in the following order:—Edinburgh, Dundee, Aberdeen, Perth, St. Andrew and Haddington, Cupar-Fife and Montrose, Stirling, Glasgow, Brechin, Dumfries, Inverness and Linlithgow. We left out Dundee, Aberdeen and Perth, Edinburgh contributed as much as all the other towns taken together. In Mary's reign the clergy contributed a half, the burghs a third, and the burgh a fifth to the national taxation. Owing to the nature of the country, communication between the different parts of Scotland was attended with greater difficulties than elsewhere. From the early Middle Ages, however, many public highways had existed. Highways ran from Berwick to Inverness, and from Glasgow through Ayr, passing through Lanark to Edinburgh. The domains, lay and secular, lay the obligation of the towns and necessitas, which involved the maintenance of roads, bridges and fortifications. But this obligation had always been perfectly fulfilled, with the result that in Scotland, as in other countries, the roads were impassable at certain seasons of the year. Yet an English visitor to Scotland had said that the highways there were "tolerably good, which was the greatest comfort a traveller met in that country." The building of bridges was considered an even more pious work than the making of roads, and it was by ecclesiastics that the most important bridges were erected. It was incumbent on neighbouring proprietors to build and maintain bridges as well as to make and repair roads, but this obligation was only perfunctorily fulfilled, with the result that most of the bridges in the country were in permanent disrepair. One of the most knavish classes in the community were the ferrymen, against whom, in Scotland as in other countries, the Legislature had passed laws to protect the lieges from their extortion. Parliament did its best to encourage the establishment of hostels, but for two reasons its enactments had not much effect. Travellers were few, and when Scotsmen did travel they were the habit of taking up their quarters with their kinsfolk. One of the great wanderers of the time were the beggars, who must have made up little less than a fourth or a fifth of the population, and who, from the terms of the various statutes directed against them, might be compared to an invading host taking free quarters in an enemy's country. It had to be remembered, however, that the "plague of beggars" was not confined to Scotland; in England the "valiant beggar" was as free and as formidable a personage as the "sturdy beggar" of Scotland. Travel by sea was attended by still greater dangers and discomforts than by land. The rascality of custom-house officers, the squalor aboard the boat, and the terror of pirates, as Erasmus had testified, made a crossing to the Continent a nightmare to haunt the memory. Even in times of general peace the seas swarmed with pirates, and a vessel at all times was a veritable running of the gauntlet. When the Earl of Bothwell, after casting his last die at Cardross, betook himself to the trade of pirate, he was but following a common and profitable calling of his time.

III.

In his third lecture Professor Hume Brown said they would take a closer glimpse of the conditions under which Mary's subjects lived their lives and carried through the revolution which involved such a complete breach with the old and changed the destinies of the kingdom. It was in the reign of Mary that the most intense life of the nation was concentrated, it was by the towns that the breach with the old religion was mainly effected. It was to the life of the towns, therefore, that attention would for the most part be directed in the coming lectures of the course. A glance, however, must be taken of the conditions of life in the country, at the various stages of society who made up its inhabitants, and at any new developments that distinguished the reign of Mary. The great lord of the sixteenth century still kept up most of the customs and accomplishments of his ancestors, but he had acquired some other things and accomplishments besides. The spread of education followed the revival of learning had affected the nobility as well as other classes of the community. A Scottish noble of the sixteenth century, and especially of its latter half, could no longer glory in the ignorance of a Bell-the-Cat, and, in fact, the lords who played a leading part in the reign of Mary generally possessed all the attainments requisite for the new statecraft and diplomacy. Most of them still continued to live in the grim abodes of their ancestors, but they had begun to deck their apartments, to polish their tables, and to adorn their persons in a fashion which had been unknown to their ancestors; and the same change had passed over the manners of the lesser barons and gentry. But the most notable change in the upper classes was to be found in their increasing desire for a more social life which had satisfied their fathers. It now became a common thing for baron and laird, and even bishop, to take up their residence in the nearest village or burgh and settle there with their household for a considerable portion of the year. The legislature vainly endeavoured to check this custom, to the continuance of which they must partly ascribe the genial relations which subsequently subsisted between the different social classes in the country. An important change had to be noted in the condition of the tenants of the greater and lesser barons at the beginning of the sixteenth century John Major had expressed his regret that the landlords would not let their lands in perpetuity, but by that date this practice had already begun, and in Mary's reign it had become general. Though hindered by some disadvantages, the tenure by feu-farm was generally in the interest of the landlord and tenant. Secure in their holdings, all that was wanting to the farmers as a class was improved husbandry, but the day was yet far off when improved methods of tillage were to convert the inferiority of the soil into a stimulus for enterprise and skill. In Sir David Lindsay's "Satire of the Three Estates" we had a vivid sketch of the class of cottars in the portrayal of pauper. From that description we were led to believe that but for the extortions of their superiors the cottars as a class contrived to live with a comfortable amount on their single field with their one horse and three or four cows. Still, the condition of the poorer tillers of the soil was such that they had begun to look with longing eyes to the towns, and by the period of Mary's reign the immigration from country to town had already begun. The towns in the time of Mary, however, did not throw open their arms to all and sundry, but guarded themselves by conditions which kept outsiders at arm's length. What these conditions were would afterwards be described, but meantime they might be realised what a Scottish town in the time of Mary was like. In this attempt it must of course be only the general idea they could have before them. Even under the rigid uniformity imposed by Mediaeval conceptions of society and individual there was abundant scope for national and even racial differentiation. In approaching any town they should be within its precincts when still at some distance from the town itself, for it was a peculiarity of Scottish as distinguished from English towns that they owned a considerable extent of land in their immediate neighbourhood. At any time between sunrise and sunset they would see the numbers of cattle and sheep browsing on the town common—the one detachment under the charge of the town herdsman, the other under that of his fellow, the shepherd. In the case of larger communities one herd was found insufficient to look after the whole stock. In the moss, which was likewise the town property, men and women might be seen at work digging and stacking peats for the general supply in the coming winter, and in the town warren and fishings there would be similar signs of activity. Passing through the midst of the "town acres" they should arrive at the town gate, where, as likely as not, they should find its guardians asleep. It would be early morning when they set foot in the town, their ears would be greeted by the sound of the "swesch," or drum, which summoned the inhabitants to their daily avocations. If their ears were thus pleasantly greeted, it would be otherwise with their senses of sight and smell, for except it were a Sunday morning there would be pungent exhalations

from the multitudinous middens and the equally numerous pig-styes. As they entered the town they should have a vivid impression that it was in a general state of dilapidation, though it had to be noted that in many English towns of the period the same state of things prevailed. Among the edifices that would specially attract their attention would be the parish church with its burying-ground, the latter being the favourite haunt of all the town beggars, the general grazing-ground, the place into which superabundant refuse could most readily be shot. At an earlier period the church had been not only the centre of religious life, but the centre of the social, civic and political life as well. Owing to the erection of tolbooths, however, the church had ceased to be the common meeting-place for the transaction of business, public and private, though it was still frequented more "for malice and mischief than for God's service." Progress through the streets of the town would be attended with considerable difficulties, at once from the numerous dust-heaps, the roving swine and the spacious gutter, sufficiently broad and deep to form the common sewer of the community. A striking feature in the vista of the street would be the numerous projections from the main buildings, consisting of outside stairs and the wooden shops of the various tradespeople. Two prominent objects would not fail to attract their attention—the town cross and the tron or weighing-beam, the one the symbol of the spiritual, the other of the material life of the inhabitants. The tolbooth would also call for note, for by the time of Mary tolbooths were to be found in all the more important Scottish burghs, and, like the churches of the Middle Ages, were put to curiously miscellaneous uses. Behind the main street they should discover a succession of houses with the invariable forestairs, and behind each the yard or garden, in which flourished the universal "kale," occasionally a little corn and even a solitary tree. Progress through the town had its risks by day, but by night these risks were considerably increased by the feeble illumination even of the principal thoroughfares. It was a stringent regulation that every booth and forestairs should be lighted with a lamp, and that every passenger after nightfall should carry a light on pain of being housed in the Netherhole; but these regulations were systematically disregarded. As a general rule, however, after ten o'clock of a winter's night the solitude of the streets was only broken by the tramp of the watch as they went their rounds through the slumbering town.

HISTORIC HOUSES.

THE historical records and buildings committee of the London County Council report that they have had under further consideration the question of indicating by means of memorial tablets houses of historical interest in London, and that they considered the following three houses worthy of commemoration, namely—(1) No. 56 Devonshire Street, Portland Place, a residence of Sir J. Herschel, the astronomer; (2) No. 1 Devonshire Terrace, Portland Place, a residence of Charles Dickens; and (3) No. 12 Clarges Street, Piccadilly, a residence of Edmund Kean, the actor. They had carefully verified the facts connected with the houses in question, and had also in each case obtained the necessary consent of the ground landlords and the lessees to the erection of the memorial tablets. They accordingly recommend that the three tablets be immediately placed in position.

ARCHITECTURAL ASSOCIATION OF IRELAND.

A VISIT by the members of this Association was paid on the 16th inst. to the new nurses' home in connection with Cork Street hospital. A very fair muster of members turned up for the occasion, including Mr. C. H. Ashworth (the president) and Mr. J. H. Webb (the hon. secretary of the visits committee). The visitors were received by the architect to the building (Mr. W. M. Mitchell, R.H.A.), who, having exhibited the drawings and made a brief explanatory statement, afterwards conducted them through it, pointing out the various objects of interest therein. The new home is very advantageously situated opposite the hospital, with Cork Street intervening. The main front enjoys a sunny aspect, overlooking a lawn of considerable extent bordered by trees, which was formerly used as the burying-ground of the Society of Friends. No interments, however, have taken place there for nearly half a century, and it will shortly be transformed into a verdant garden for the rest and refreshment of the inmates after their arduous duties at the hospital. Accommodation is provided in the building for about fifty nurses, each having a separate bedroom, while large, airy day-rooms occupy the ground storey. The floors, partitions, &c., are fireproof throughout, and an external wrought-iron staircase is provided for emergencies. The entire building is

heated by hot water, and electric lighting has been adopted. The sanitary wing, which is connected with the main building only by a corridor having cross ventilation, is fitted with the most approved type of baths, lavatory basins, &c. The building and sanitary contractors respectively are Messrs H. & J. Martin and Mr. H. MacGarvey, both of whom have given great satisfaction, while Mr. Hynes, the clerk of works, efficiently discharged the duties of his office. The hospital committee will require a further sum of 3,000*l.* to enable them to discharge the debt which will be incurred by the erection and furnishing of this building. We trust there will be no difficulty experienced in obtaining the necessary funds for this purpose.

NEW NATIONAL GALLERY, EDINBURGH.

ALTHOUGH not embodied in their report, the Treasury committee which has just reported on art matters in Scotland had under consideration the question of a site for the suggested new National Gallery. One site which, it is understood, was spoken of is that occupied by the Royal High School, at the foot of Calton Hill; and it is understood that inquiries were made as to the adaptability of the school buildings to the purposes of a National Gallery. These, it is believed, were satisfactory. The matter was not carried further than inquiry, but it is understood that members of the Board of Manufactures and the Treasury committee had before them the result of measurements made by Mr Hippolyte Blanc, R.S.A., of both the High School and the present National Gallery buildings at the Mound. It appears that the superficial floor space of the whole building at the Mound in which the National Gallery and the Royal Scottish Academy are housed is 12,490 feet, while the floor area of the main buildings of the Royal High School, with its fine central hall, amounts to 13,914 feet. The gymnasium recently built has a floor space of 8,896 superficial feet, so that between them the floor space is 22,810 superficial feet, as against 12,490 for the National and Royal Scottish Academy Galleries, an increase of over 9,000 feet. There are also at the Royal High School other buildings, which give an additional area of 2,346 feet, which might be suitable for minor exhibitions; and there are possibilities of extension of the main building, without in any way destroying its beautiful architectural features, which would give 3,000 to 4,000 additional superficial feet of space. Built in 1829 from designs by Thomas Hamilton, the High School has always been considered one of the most perfect Classical edifices in the country, so that from an artistic point of view the buildings on their splendid situation would be perfectly suitable for a National Gallery of the arts. The Royal High School, which was originally the property of the Corporation, is now vested in the School Board; and should anything come of the proposal, which it is evident will be discussed, to acquire it for a National Gallery, the educational interests which it now serves would, of course, have to be duly considered and conserved.

THE LATE PROFESSOR THURSTON.

ONE of the authorities on the strength of materials whose conclusions were accepted in Europe was Robert H. Thurston, who died suddenly on the 25th ult. The circumstances were particularly sad. It was his sixty-fourth birthday and his wife had arranged an informal dinner to celebrate the occasion, to which Andrew D. White, Dean Hufcut, Joseph C. Hendrix and Professor Hewett were invited. While waiting for these old friends and fellow-workers for the good of Cornell, he suddenly fell asleep and never awoke, for heart failure carried him away almost instantaneously.

Dr. Thurston, according to the *Engineering Record*, came from a family prominent in mechanical work in New England. Soon after graduating from Brown University in 1859, he entered the service of his father's firm, Thurston, Green & Co., of Providence, and there obtained that intimate practical knowledge of engine building which distinguished him throughout his life. On the outbreak of the civil war he joined the engineering branch of the navy and served with such distinction that at its close he was appointed professor of natural philosophy at the Naval Academy, where he remained until June 1871.

In that year he was called to the chair of engineering at Stevens Institute of Technology, where the late Dr. Morton was gathering together a small group of eminent men, which has probably never been excelled since. Stevens Institute became a training school for professors as well as students, and the work Dr. Thurston did there soon made him famous. Not only did he turn out students well grounded in those subjects which he taught, but he also, through his abundant energy, attracted the attention of manufacturers throughout the country to the important work the school was carrying on. A demand soon arose for graduates of the school, which was largely due to his

business shrewdness in advertising, in a legitimate way, what was being done. During this period he also found time to write many papers and to serve on the United States Scientific Commission to the Vienna International Exhibition of 1873, the United States Commission to investigate the cause of boiler explosions and a similar commission to test metals.

In 1885 he severed his connection with Stevens Institute to become the director of Sibley College at Cornell University. Hon. Andrew D. White, president of the university, at that time, has made the following statement concerning Dr. Thurston's connection with the College:—"Up to that time everything had been tentative; there had been in that department excellent professors and thoroughly good instructors, but a College of Mechanical Arts was, in those days, an entirely new thing. What the demands upon it were to be no one could say; it was all an experiment. There were differences of opinion as regarded both the theory of such an institution and the practice which it was to adopt. There was much uncertainty and even discouragement in the Board of Trustees regarding it when, discussing the matter with Professor Thurston, then of the Stevens Institute at Hoboken, I found he was willing to come to us and accept the whole responsibility of Sibley College provided the proper power and support were given him. He was immediately called to the position and his first meeting with the Trustees greatly encouraged us all. Mr. Hiram Sibley, who had already shown himself very generous to the College, made increasing donations; men eminent in mechanical engineering throughout the country began to take an interest in it; a large number of the foremost of them came and delivered lectures; the student body grew steadily and rapidly; the faculty was increased in numbers to meet the new demand and the prosperity which thus began has been continued from that day to this. While giving full honour to his associates, it is not too much to say that this wonderful result which we now see has been due mainly to Dr. Thurston's power of organisation, his knowledge of the whole field to be covered, his skill as a teacher, and a certain power which he developed in a remarkable degree to prevent or allay all friction and difficulties between departments and individuals. In addition to these qualities should be mentioned the high standing in his profession which enabled him to enlist its leaders in the work of Sibley College, and his amazing ability in work, which was a perpetual surprise to all."

When Dr. Thurston took hold of Sibley College it had a register of sixty students, to-day it has nearly a thousand. It is doubtful if such a record has ever been made by any technical school which confines its courses of instruction to mechanical and electrical branches solely. Dr. Thurston reports to the university president concerning the needs of the College were startling at times, owing to the absolute freedom with which he criticised the way the Trustees supported it. It is in this fearlessness that is doubtless to be found the secret of his great success in securing the co-operation of the governors of the university. No one can read these reports without feeling absolutely certain that the man who wrote them was thinking wholly of his College and not at all of self. Dr. Thurston has been accused of pushing himself to the front, but this is not true; while he occupied a foremost place in many gatherings of engineers and of business men, he did so solely as the representative of a great mechanical college.

The remarkable literary output achieved by Dr. Thurston has caused astonishment to those acquainted with his work in other directions. His "Materials of Engineering," "History of the Steam Engine," "Manual of Steam Boilers" and "Manual of the Steam Engine" are probably his most notable works, but his books number about twenty volumes and his papers before technical societies and in the scientific press are nearly three hundred in number. One reason for this remarkable fertility in literary work is to be found in the methodical habits of Dr. Thurston. His daily work moved with the precision of a machine. He spent so much time over each day that at his home certain hours were devoted to writing, and as he early learned the use of a typewriting machine and was able to turn out copy at a far faster rate than with a pen, he was able to accomplish what many men would consider impossible.

He invented many pieces of apparatus, introduced improvements in the steam engine and conducted elaborate research work for which special machines had to be designed. He was one of the pioneer investigators of the properties of alloys, and his studies of friction and lubrication are known everywhere. His appreciation of the importance of experimental investigation in engineering subjects led to the organisation in 1872 of the now famous engineering research laboratory of the College. His knowledge in the department of steam engineering won for him many years ago an international reputation. While thus busily engaged in professional work both for the College and of a national character, he found time to perform the duties of a true citizen. He was an alderman of Ithaca for many years, and only recently resigned his membership in the Ward Board for that city. No one ever came to him for advice who was turned away without receiving the best thought of a great

ind. Although of small stature physically, Dr. Thurston was noticeable in any gathering for the remarkable energy which his appearance clearly indicated. He was a born leader, and the engineering profession has great reason to be thankful that the quality of leadership was exercised for its good, rather than in some other field.

It is proposed to commemorate his works at Cornell in a fitting manner. President Schurman has indicated its nature follows:—"His last letter to me—written on October 20—was the subject of a large and costly new hall or laboratory for Sibley College, now greatly overcrowded. I propose that the university undertake the erection of this memorial to our much-remembered friend. The building should be called Thurston Hall." In view of all the good work done by this eminent engineer and broad-spirited citizen, it is to be hoped that not only Cornell graduates but also the many men and corporations who have received the benefit of his advice will unite in making his building a structure worthy of the man honoured.

A RELIC OF OLD LIVERPOOL.

DURING the excavations which are now taking place at the upper end of South Castle Street, near Redcross Street, a portion of a large vault built into the solid rock has been laid bare. The close proximity to the site of the Castle of Liverpool naturally at first suggested to those in charge of the work, says the *Liverpool Courier*, that this vault might have formed at one time part of the cellars of the Castle. Not wishing to destroy any important traces of ancient Liverpool, the city engineer (Mr. Brodie) made inquiries on the subject, and entered into communication with Mr. W. Fergusson Irvine, of Liverpool, hon. secretary of the Historic Society of Lancashire and Cheshire, to whom we are indebted for the following interesting information:—

The vault in question, Mr. Irvine points out, lies too far south to have formed part of the old Castle cellars; in fact, the southern edge of the moat ran across Derby Square probably 10 or 12 yards to the north of the present excavation. An examination of Perry's map of Liverpool (1769) shows that at that date the fish market was located on the site of this discovery, and in its centre stood a structure known for many years as Tarleton's Obelisk. This obelisk was a sort of glorified town's pump put there during the year in which John Tarleton was mayor (1764), and at his suggestion, for the purpose of keeping a constant supply of water for scouring and flushing the fish market and stalls.

In "Gregson's Fragments" (Harland's edition, p. 160) an account is given of this pump, and the statement is made that the cistern which supplied the pump was fed by the rain-water collected on the roof of St. George's Church. It is obvious that such an intermittent source of supply would necessitate considerable storage capacity, so that it is not surprising to find that this cistern, which is now being unearthed, is a large one. Only a portion has been excavated, but there are indications that as much more still lies buried under the roadway opposite Old Castle Buildings. If confirmation were needed of this explanation of the original use to which the structure was put, it is found in the fact that the city engineer reports finding at the base of the central pier of masonry an outlet from the tank running up the centre of the pier, and evidently communicating with an iron pipe still *in situ*, which was no doubt the original suction pipe of the pump.

Though the discovery is not of great importance, it is interesting to know of this relic of Liverpool in the days when the town was dependent upon such curious devices as this in order to supplement the totally inadequate water supply derived from wells and local springs. To all interested in the relics of the old city it will no doubt be a welcome item of news that a suggestion from the Historic Society to mark the site of some portion of the old Castle in a permanent manner has been favourably received by the City Council, and the question of the way in which this can best be done is now receiving consideration.

The German Ambassador sent a letter to the housing committee of the Liverpool Corporation, intimating that the Kaiser had noted the visit to Liverpool of the Princess Louise to lay the foundation-stone of a block of municipal dwellings for the poor. The letter proceeded:—"His Majesty, taking a great interest in similar projects, has commanded me to ask the proper authorities kindly to let him have, if possible, some designs or plans of the buildings. Under these circumstances I should be greatly obliged if you could assist me in the matter." The committee have agreed to forward plans and other documents illustrative of the scheme now in progress in Liverpool, the cost of which is estimated at 150,000.

TESSERÆ.

Richard Fox, Bishop of Winchester.

THE work of Wykeham and Waynflete in Winchester Cathedral was continued by Bishop Fox. He added to the fund established by Cardinal Beaufort, and determined to give a new exterior structure to the choir of Winchester Cathedral. Britton conceives that the works erected by him are the two turrets of the eastern extremity of the presbytery of Winchester Cathedral, with the magnificent window between them and the whole of the ornamental wall over it, terminating with an elegant tabernacle ornamented by the pelican, his favourite emblem, and containing his statue in stone, &c. His own chantry is a masterpiece of its kind. Of the architectural works of this bishop, Dr. Milner, his biographer, says we cannot fail in particular of admiring the vast but well-proportioned and ornamented arched windows which surround the eastern part of the cathedral at Winchester and give light to this sanctuary; the bold and airy flying buttresses that stretch over the side aisles support the upper walls; the rich open battlements which surmount these walls, and the elegant sweep that contracts them to the size of the great eastern window; the two gorgeous canopies which crown the extreme turrets, and the profusion of elegant carved work that covers the whole east front, tapering up to a point where we view the breathing statue of the pious founder, resting upon his chosen emblem, the pelican. In a word, neglected and mutilated as this work has been during the course of three centuries, it still warrants us to assert that, if the whole cathedral had been finished in the style of this portion of it, the whole island, and perhaps all Europe, could not have exhibited a Gothic structure to equal it. Britton seems to think that this prelate built Bath and Wells cathedrals. There is a singular passage in Speed, which seems to transfer the credit of the design of King Henry VII.'s Chapel to the King himself and Bishop Fox. After speaking of the Savoy Hospital and the six religious houses built by Henry VII., he says:—"Of his (Henry VII.'s) building also was Richmond Palace (built in the Burgundian style, according to Dallaway) and that most beautiful peee, the chapel at Westminster, which forms of more curious and exquisite building he and Bishop Fox (as it is reported) learned in France, and thence brought with them to England." This peculiar architecture (the Burgundian) was effectually promoted by Henry VII., whose enormous wealth enabled him to undertake the most sumptuous buildings; and in most instances his avarice directed that they should not be paid for till after his death. By his executors, in the early part of his son's reign, the chapels of Westminster, King's College, Cambridge, and Windsor were completed. King Henry VIII. contributed nothing. Bishop Fox died in 1528.

The Ancient Theatre.

Goethe has observed that the ancients were to the moderns what a remarkably clever and intelligent child is compared with an adult of common understanding. Superior as his intuitive faculties may be, he is, and must be, inferior to the man in knowledge, for a few grains sown in the most fertile soil will not produce an abundant harvest. This childish inexperience manifests itself to us in almost all that the ancients have left us. Let us examine their theatres, for instance, and how ill do we there find the means adapted to the end? So long, indeed, as the drama was considered rather a popular religious solemnity than a scenic representation of real life, the utter want of anything like illusion could not have been prejudicial, imitation being entirely out of the question; but invention and improvement in dramatic exhibition certainly did not keep pace with the advance of the drama itself—that is, in a literary point of view, for in other respects its progress was exceedingly limited, and the business of the scene continued to be confined almost to monologues and dialogues that would either send an English audience to sleep or rouse them so vehemently that the manager would be apprehensive of his house falling about his ears. Without having recourse to translations of the Grecian tragedians, the mere English reader may derive a tolerable idea of this—we had almost said somniferous—form of the drama from Milton's "Comus" or Johnson's "Irene." When an audience could tolerate a chronicle from the mouth of an actor by way of exposition of the story of the piece, they might easily put up with other incongruities by wholesale, and be content to draw very largely upon their imagination to furnish out all the accessories indispensable to scenic effect. It has been asserted by some that the ancients were not unacquainted with the use of theatrical mechanism and stage properties, yet, although their pieces occasionally required something of the kind, we may fairly doubt whether they had made even a tolerable degree of proficiency in scenic decoration, it being evident that the stage was not at all adapted to change of scenery in any part of it. It is probable, therefore, that the *Deus ex machina* was only a fellow let down in a sort of basket by ropes, which might be sufficiently substantial without thereby diminishing the illusion.

or offending the eyes of the spectator. Illusion, in fact, must have been entirely out of the question where the performance was by daylight and in the open air, and when above and beyond the scene the audience could view the actual trees and hills, or other objects surrounding the theatre. There does not appear to have been the least attention paid to what may be called the background and perspective of the picture; while the casualties of daylight, and the impossibility of preventing some part of the stage being obscured by shadow, must have tended very materially to destroy the illusion, and would have rendered painted scenery inapplicable, even had its management been understood. Palladio's Olympic Theatre at Vicenza has been extolled as a perfect model of an ancient one: it certainly exhibits all the inconvenience and defects of its prototype, and is so far an argument decidedly in favour of the superior contrivance shown in a modern playhouse. Nevertheless, in speaking of the stage and permanent scene of columns, the Italian's biographers and critics have indulged in the most hyperbolic praise, and actually seemed at a loss for superlatives to express their admiration. The sad and sober truth is that this piece of decoration, whether designed by Palladio himself or by Scamozzi, is quite a burlesque of architecture, a mass of unmeaning nonsense and bad taste.

Sixteenth-century Barge-boards.

Wooden gables were usually more profusely ornamented than those of stone, from which they likewise differ materially in more than one respect, for in the latter mode of construction the upper edges of the gable rise above the roof, so as to form a slightly elevated ridge; and the face of the gable has seldom more ornament than one or two series of inclined mouldings resembling those employed for string-courses. Here, on the contrary, the edge of the roof rests upon the sloping sides of the barge-boards or gable-boards, as they are indifferently termed, which form a deep projecting border, and the face of which is entirely filled with carving, either forming some architectural pattern or representing foliage, grotesque figures of animals and other whimsical shapes. Sometimes these gable-boards were worked into a species of perforated tracery, and the lower or inner edges, instead of being straight, were indented in various ways, either by divers combinations of foils and cusps or by a continuous wavy line, by which means a richer and more decided effect was produced, together with an air of considerably greater lightness and delicacy. Although not a universal, the pinnacle was a common ornament of the wooden gable, and this was not unfrequently prolonged downwards till it formed a kind of pendant. In France this part of the gable assumed altogether a different character, for there it was by no means unusual to form a vertical post descending from the apex where the gable-boards unite, bearing the same relation to them that the king-post of a roof does to the principal rafters. This was again intersected by a transverse horizontal piece, giving it the appearance of a cross, the upright part of which was ornamented with a figure in alto or mezzo relievo, above the intersection of the two pieces, and sometimes with a second figure or other carved work below. The faces both of the tie-beams and upright studs were also occasionally enriched in a variety of ways, although they were frequently left plain even when the gable-boards were remarkably rich, or else the former alone were ornamented, while the studs were either left plain or suppressed. It frequently happens, too, that neither tie-beams nor studs appear externally.

GENERAL.

Mr. W. C. Manning, of Newmarket, has been instructed to take out quantities and prepare a specification upon which a contract may be taken for the erection of a new stand at the Brighton race course. The total cost will probably be about £3,000.

The Governors of St. Bartholomew-the-Less will make an application to Parliament in the ensuing session for an Act authorising them to pull down the church of St. Bartholomew-the-Less and "to build over and use" its site and also that of the adjoining burial-ground. The church in monastic times served as a chapel to the hospital.

The King has sent a donation of 10*l* towards the fund being raised to complete the payment due on the work of the restoration of St. Mary's Church, Swaffham Prior, Cambridge-shire. The church was reopened for service a year ago.

The Jury in the Concours de Façades in Paris commenced on Thursday their examination of the 104 buildings submitted for the competition. The members consist of four architects, MM. Pascal and Charles Girault (members of the Institute Bouvard et Sauger) and five municipal councillors, MM. Ernest Caron, Froment-Meurice, Quentin-Bauchart, Ballière and Chérix.

Chichester Market Cross, which is being restored as a memorial of the Coronation of King Edward, will soon resume its normal appearance. Some difficulty is being found in obtaining a clock dial in harmony with the structure and yet distinct.

A Statue of Cervantes is to be erected in Paris, and application has been made for a site in the Champs-Élysées.

The Candidates for the vacant chair in the Académie des Beaux-Arts comprise M. Mounet-Sully, the tragedian; M. Clauss, architect; M. Comte, former director of civil buildings; M. Charles Normand, archaeologist; Dr. Richer, sculptor, medallist and physician; M. Berger, director of the Exhibition of 1889; M. Leygues, former Minister of Fine Arts; M. Bouchot, conservator of the department of engravings at the National Library.

The London County Council, for the purpose of the early reconstruction on the conduit system of electrical traction of the first 22½ miles of the Council's northern tramways and for lines in the south, are going to invite tenders for 12,500 tons of rails, conductor tees, fastenings, &c., at an estimated cost of 90,000*l*. An estimate of 13,850*l*. for the purpose of constructing new termini at Tooting has been agreed to.

Messrs. Dorman, Long & Co., Ltd., manufacturers of steel joists, &c., have announced a profit of 57,476*l*. for the past year.

Herr Kamillo Sitte, an architect and writer on art topics in Vienna, died on Monday, in his sixtieth year. He was the author of the work entitled "The Construction of Cities upon Artistic Lines," which has been translated into French and English.

A New senior mixed school was opened on Monday at West Hampstead for the accommodation of 450 boys and girls in the higher standards, together with a special school for about sixty mentally defective children. The buildings have cost about 18,000*l*. and the site nearly 10,000*l*. Messrs. Lawrance & Sons, the contractors, completed the buildings several weeks within the time allowed by the contract. The designs were prepared by Mr. Bailey, the architect to the London School Board, and the work has been carried out under the supervision of Mr. Westcott, the Board's clerk of works.

Messrs. Clayton & Black, architects and surveyors, have removed from 152 North Street to 10 Prince Albert Street, Brighton.

M. Raffaelli is holding an exhibition in Paris of his works, chiefly landscapes, executed by his new process of solid oil-colours. His invention is exemplified by other artists, among whom are MM. Steinlen, Fritz Thaulau, Chéret, &c.

The International Art Exhibition in Venice has been closed. It was visited by about 405,000 people, and the purchases amounted to 375,000 lire.

The Place formed by the Rues Auber and Scribe, on the west side of the Paris Opera House, is henceforth to be known as the Place Charles Garnier, and it will indicate the position of the architect's memorial.

The Canadian Club, of Toronto, has during the past five years placed inscribed bronze tablets on ancient buildings or their successors which possess any historical value.

Dr. Grenfell stated at the last meeting of the Egypt Exploration Fund that another ten years or so would probably see the end of excavations in Egypt for papyri, and indeed of excavations in Upper Egypt altogether. The chances of accidental and sporadic finds would remain indefinitely, but no excavations were worth undertaking, even if they were practicable, unless there was a reasonable prospect of finding something important. The Egyptian Delta, from Cairo to the Mediterranean, was too damp for the preservation of papyri.

The Wesleyan Chapel Building Fund have acquired thirty sites for building in and near London. Seven churches are about to be commenced. The Stepney Hall will cost 46,000*l*.

An Exhibition of repoussé work in silver will be open next week in the Quest Gallery, New Bond Street. The collection includes bowls, loving and wine cups, rose-water dishes, confetti boxes, mugs, as well as many smaller pieces.

A Bill has passed the Danish legislature for the restoration of the castle of Christiansborg, which was destroyed by fire in 1884.

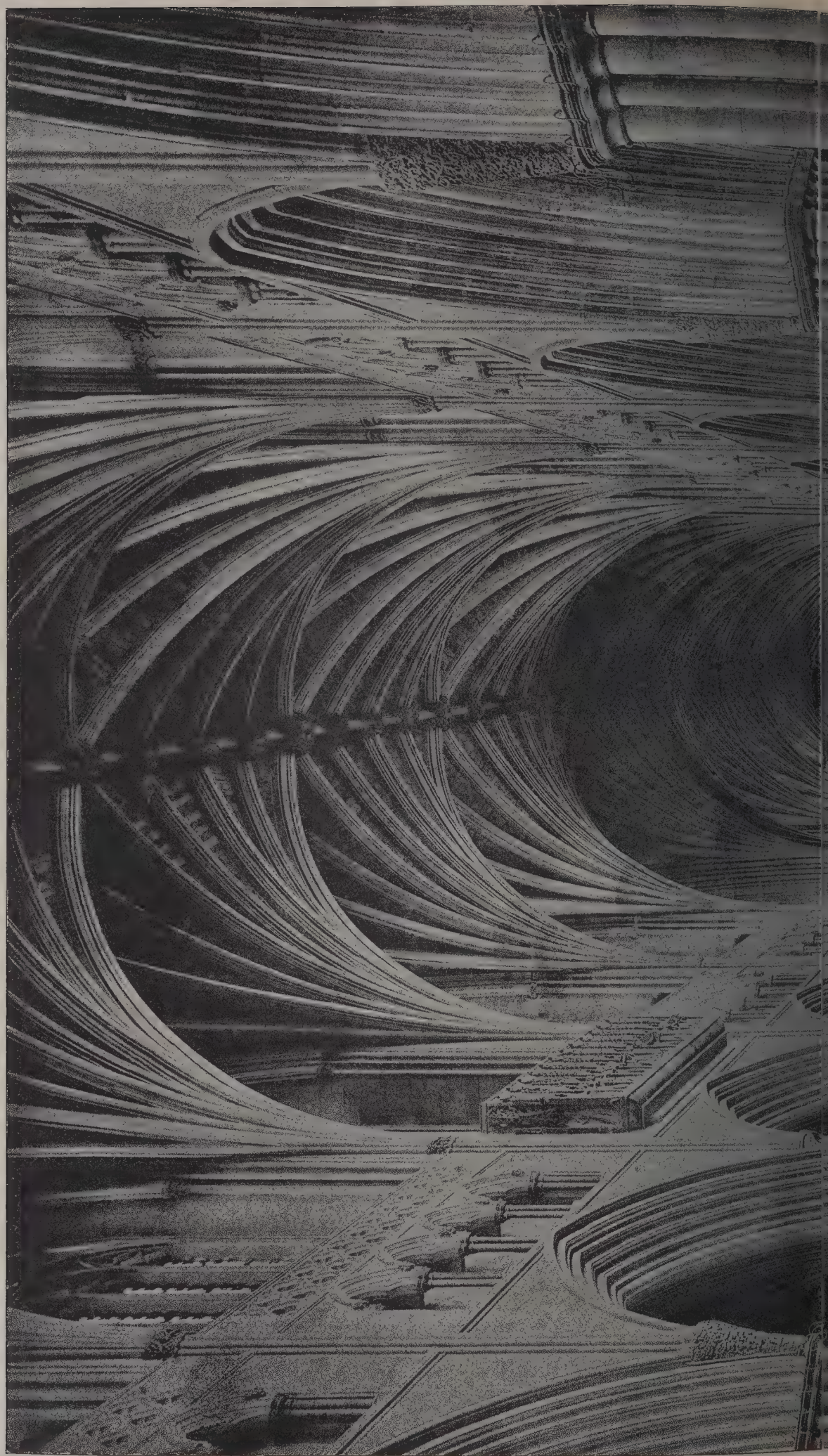
Sheriff Guthrie, of Glasgow, in a recent judgment in a builder's claim, said "it might not perhaps be wise in all cases for owners of property to put themselves entirely into the hands of their architect, but if they did so, they had themselves to blame, and if the architect had exceeded his powers in dealing with contractors who had been allowed, as in this case, to suppose that his powers were unlimited, the remedy was against him and not against the innocent contractor."

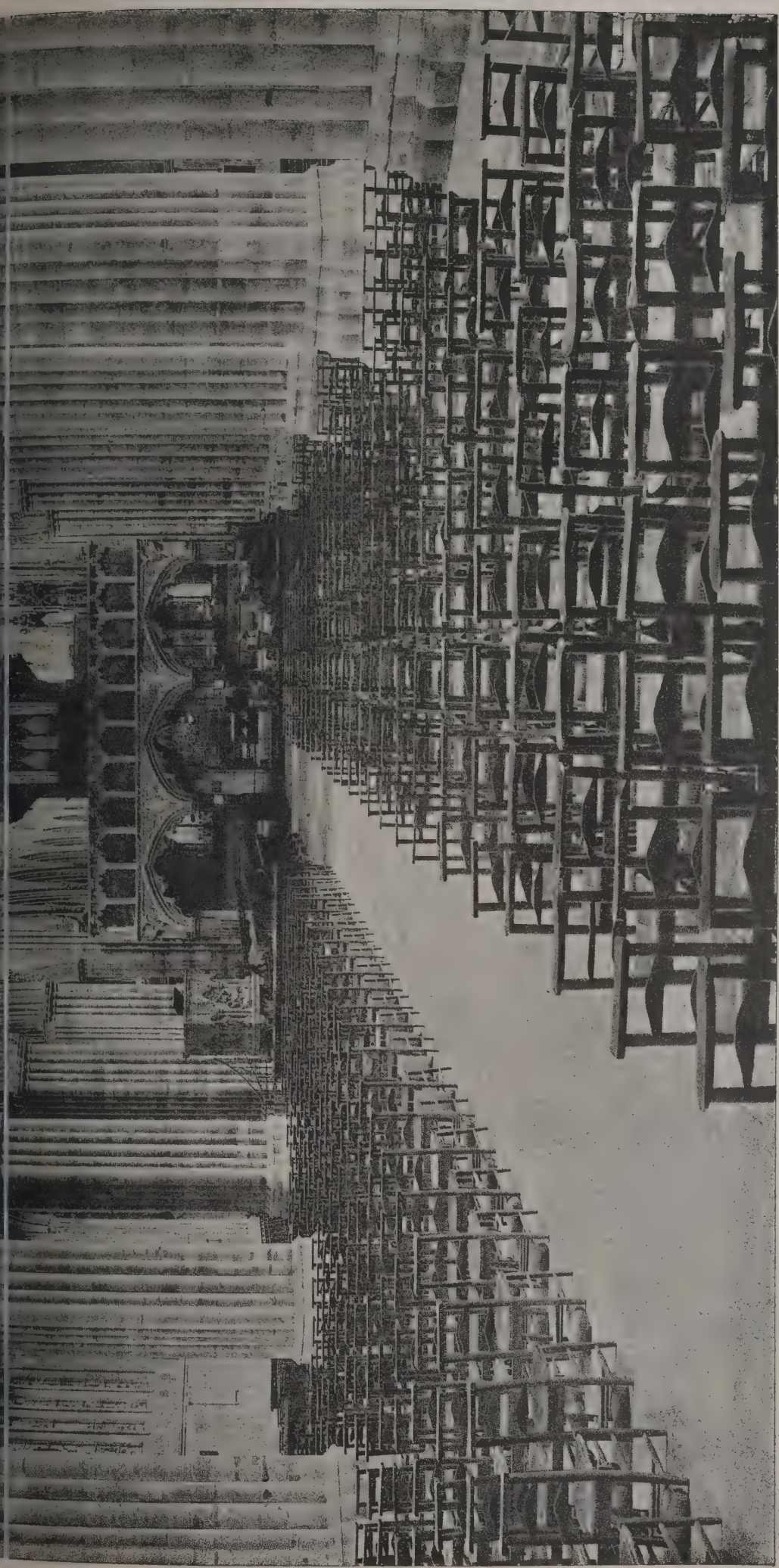
Mr. George Evans, surveyor, late of Adelphi House, 10 Duke Street, W.C., announces his removal to 24 Hazlitt Road, West Kensington, W.

Houses, Winchmore Hill.
William A. Burr, M.S.A. Archt.
65 Chancery Lane W.C.



The Architect, Nov. 20th 1903.





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CATHEDRAL SERIES, No. 472.—EXETER: NAVE LOOKING E.



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BREWRIES HALL, NEWCASTLE-ON-TYNE.

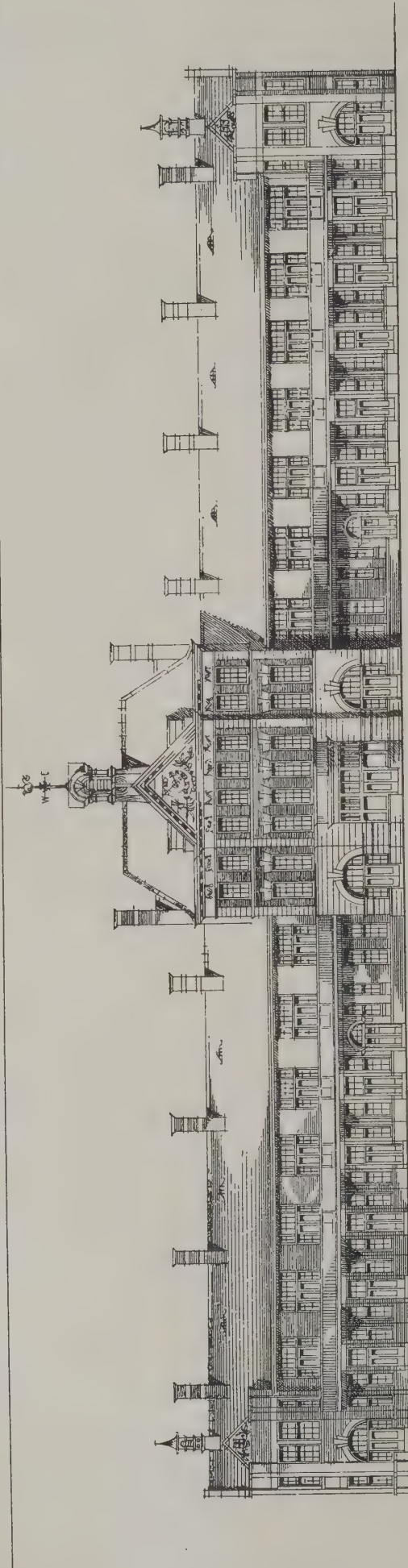
J. OSWALD, Architect.



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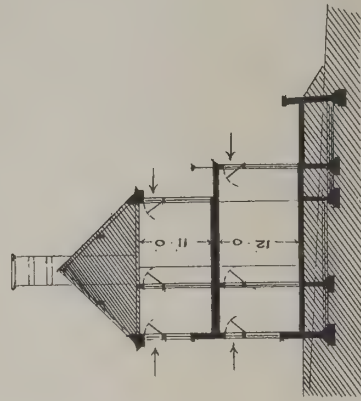


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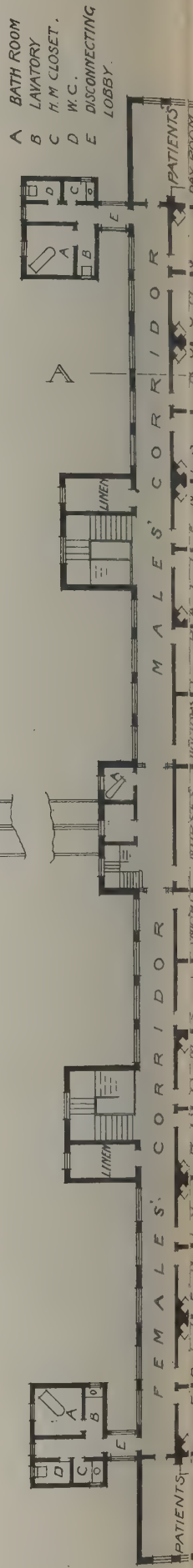


SOUTH ELEVATION

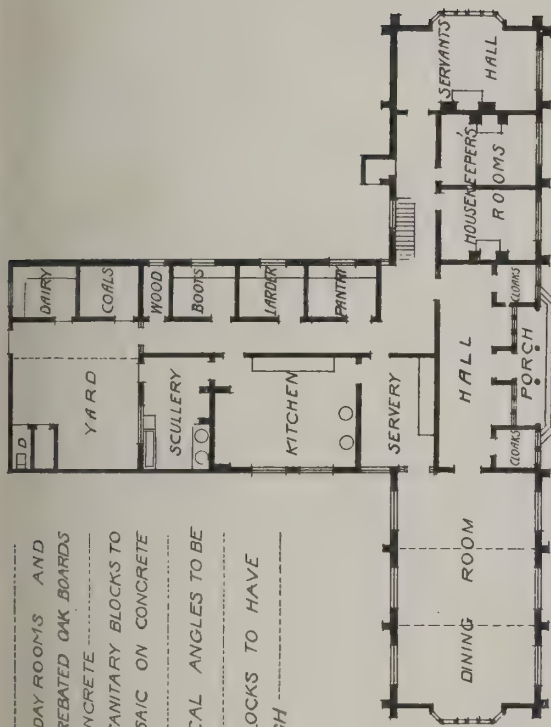
DESIGN FOR PROPOSED CONSUMPTIVE SANATORIUM.



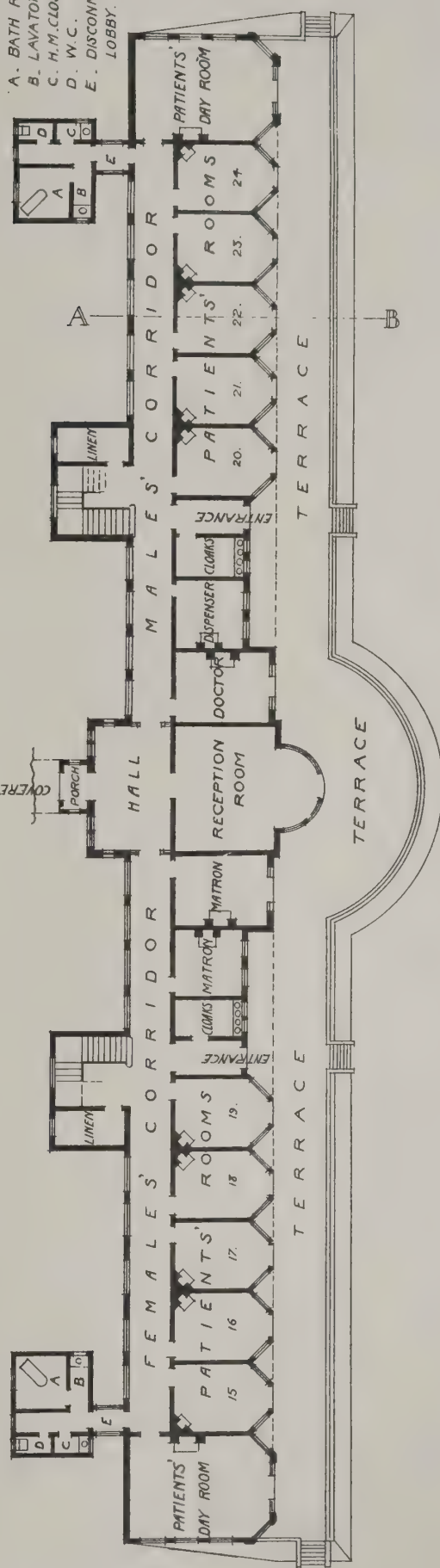
SECTION A-B.



- ALL FLOORS TO BE SOLID
- FLOORS OF PATIENTS ROOMS, DAY ROOMS AND DINING ROOMS TO BE POLISHED REBATED OAK BOARDS
- SECRET NAILED TO BREEZE CONCRETE
- FLOORS OF CORRIDORS AND SANITARY BLOCKS TO BE EXECUTED IN RANDOM MOSAIC ON CONCRETE BED
- ALL HORIZONTAL AND VERTICAL ANGLES TO BE ROUNDED
- CORRIDORS AND SANITARY BLOCKS TO HAVE GLAZED TILE DADO 5'-0" HIGH



- A. BATH ROOM.
- B. LAVATORY.
- C. H.M. CLOSET.
- D. W.C.
- E. DISCONNECTING LOBBY.



GROUND PLAN.

Scale in Feet.



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Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

authors of signed articles and papers read in public must necessarily be held responsible for their contents.

communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

BRAY.—Nov. 30.—The committee of Bray Pavilion and Fern Gardens invite plans for proposed pavilion and winter gardens at Bray. First prize, 30*l*.; second prize, 15*l*.; third prize, 10*l*.; with three prizes of 5*l*. 5*s*. each. Messrs. Frank Peel, Edw. Lee and P. Macdonnell, hon. secretaries, Town Hall, Bray.

ERDINGTON.—Feb. 1.—The Urban District Council general committee invite designs for new council house and library buildings, to be erected at the junction of Mason and Orphanage Roads, Erdington. Premiums of 50*l*. 30*l*. and 10*l*. will be awarded for the designs placed first, second and third respectively. Mr. Herbert H. Humphries, district engineer and surveyor, Public Hall, Erdington, Birmingham.

LONDON.—Dec. 16.—The Lambeth Borough Council are invited to erect a public library, with residence for librarian, in the Fern Hill ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for a public library, with residence for librarian, in the Fern Hill ward of the borough to Mr. H. J. Smith, town clerk, Lambeth Town Hall, Kennington Green; by 12 noon on December 16. General information as to the extent and

nature of the accommodation required in the proposed library and residence can be obtained on application to the town clerk.

SCOTLAND.—Dec. 7.—The Elgin Landward School Board invite competitive plans and estimates for the erection of school buildings at New Elgin capable of accommodating about 340 pupils. Mr. Hugh Stewart, clerk to the Board, Elgin.

SELLY OAK.—Dec. 7.—Competitive plans and designs are invited for public baths at Selly Oak, near Birmingham. Full particulars of the site for the proposed baths, limit of maximum expenditure, &c., with copies of sketch plans showing the accommodation required, &c., may be obtained on application to the Urban District Council's surveyor, Mr. A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l*. returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

ALLINGTON.—For rebuilding the Old inn, Allington, Wilts. Messrs. John Harding & Sons, architects, Salisbury.

ALNWICK.—Nov. 25.—For the erection of a dwelling-house in Swansfield Park Road, Alnwick. Mr. Temple Wilson, architect, Alnwick.

BATLEY.—Nov. 30.—For the erection of a refuse destructor at the electrical-generating station, New Ing Fields. Mr. J. H. Craik, town clerk, Town Hall, Batley.

BIRKDALE.—Dec. 4.—For the erection of a hospital, with the necessary isolation houses, administration block and other outbuildings at Birkdale, Lancs. Mr. J. F. Keeley, clerk to the Urban District Council, Town Hall, Birkdale.

BIRMINGHAM.—Nov. 30.—For the erection of waiting-room and car-shed to accommodate eight cars, &c. Mr. A. W. Cross, surveyor, 23 Valentine Road, King's Heath, near Birmingham.

BIRMINGHAM.—Dec. 14.—For the erection of the superstructure, internal finishings, &c., of the new university buildings at Bournbrook. Messrs. Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

BISHOP AUCKLAND.—For the erection of boundary walls, gates, making footpaths, &c., to new cemetery, Evenwood. Messrs. Pegg & Farrow, architects, 7 Market Place, Barnard Castle.

BISHOP AUCKLAND.—Dec. 2.—For the erection of a new branch co-operative store at Evenwood. Mr. F. H. Livesay, architect, Bishop Auckland.

BRIGHTON.—Dec. 1.—For renewing the sanitary appliances and other work connected therewith in the main building of the workhouse, Elm Grove. Mr. H. S. Reed, Parochial Offices, Princes Street.

BRISTOL.—Dec. 16.—For alterations and repairs to the workhouse at Clutton. Mr. W. F. Bird, architect, Midsomer Norton, Somerset.

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PROBLEMS

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CONSETT.—Nov. 24.—For the erection of eight dwelling-houses in Garden Street and Clarendon Street, Consett. Mr. E. Huntley, secretary, Consett Co-operative Society, Ltd., Newmarket Street, Consett.

DODWORTH.—Nov. 28.—For the construction of a brick culvert through or under land near Keresforth Road, Dodworth, Yorks. Mr. George Strutt, surveyor, High Street, Dodworth.

DROXFORD.—Nov. 23.—For repairs in the master's office at the workhouse. Mr. Francis Clark, clerk to Guardians, Bishop's Waltham, Hants.

DURHAM.—Dec. 1.—For alterations and repairs of dwelling-house at Heworth. Mr. H. Miller, architect, Council Buildings, Felling, Durham.

EASTBOURNE.—Nov. 26.—For the erection of a fire-station in Grove Road, Eastbourne. Mr. H. W. Fovargue, town clerk, Town Hall, Eastbourne.

EVESHAM.—Nov. 26.—For the erection of a building at the gasworks, Evesham, for the reception of a sulphate of ammonia plant. Mr. Thomas A. Cox, town clerk, Evesham.

FINCHLEY.—Nov. 25.—For the erection of a small cottage, lavatories, &c, at the recreation ground, Long Lane, Finchley. Mr. E. H. Lister, clerk, Council Offices, Church End, Finchley.

FULHAM.—Nov. 25.—For terra-cotta bandstand to be erected in the South Park. Mr. Francis Wood, borough engineer, Town Hall, Fulham, S.W.

GALLOWES PLAIN.—Dec. 11.—For alterations and additional buildings and incidental works connected therewith at the isolation hospital, Gallows Plain, near Hertford. Mr. Geo. H. Gisby, clerk, Ware, Herts.

GREENWICH.—Nov. 30.—For the erection of a mortuary with post-mortem room, &c, between Lamb Lane and Church Passage, Greenwich. Mr. Alfred Roberts, architect, 18 Nelson Street, Greenwich, S.E.

HALIFAX.—Nov. 30.—For alterations to premises in Commercial Street and Old Cock Yard. Mr. Thos. Kershaw, architect, Lancs. and Yorks. Bank Chambers, Halifax.

HALTWHISTLE.—Dec. 9.—For the erection of Board-room and offices for the Guardians. Mr. John M. Clark, surveyor, Haltwhistle.

HEWORTH.—Dec. 1.—For alterations and repairs of dwelling-house at Heworth, Durham. Mr. H. Miller, architect, Council Buildings, Felling, Durham.

HORWICH.—Nov. 25.—For the construction of a storage reservoir at Marklands, catchwater reservoir on Wildersmoor, the laying of cast-iron pipes, also the construction of sewers, with manholes, &c. Mr. Peter Taverner, clerk to Urban District Council, Council Offices, Horwich, Lancs.

IPSWICH.—Nov. 30.—For the erection of a new out-patients department at the Ipswich and East Suffolk Hospital (Dr. Bartlett's gift). Mr. John S. Corder, architect, Wimbourne House, Ipswich.

IRELAND.—Nov. 24.—For the erection of coastguard and signal stations at Aranmore, county Donegal. Specification can be seen at the District Office of Public Works, Londonderry.

IRELAND.—Dec. 12.—For the erection of a church at Murroe, co. Limerick. The Very Rev. J. J. Duan, Murroe.

KEIGHLEY.—Nov. 23.—For additions and alterations at Eastwood schools. Mr. Wilson Bailey, architect, Tanfield Buildings, Market Street, Bradford.

KNARESBOROUGH.—Nov. 28.—For the construction of a purifier-house and lime shed. Mr. J. E. Walker, surveyor, Town Hall, Knareborough.

LICHFIELD.—Nov. 27.—For the taking-down of the old houses, stables, walls and outbuildings in Upper St. John Street (the site of the proposed workmen's dwellings). Mr. Emerson Brooke, city surveyor, Stowe Street Depot, Lichfield.

LIVERPOOL.—Nov. 25.—For the erection of the district post office at Bootle, Liverpool, for the Commissioners of H.M. Works and Public Buildings. H.M. Office of Works, General Post Office, Liverpool.

MORLEY.—For the erection of St. Francis's Church and school, Morley. Rev. F. Mitchell, Westfield Road, Morley.

NOTTINGHAM.—Nov. 27.—For the erection of a plant-house at the workhouse, Bagthorpe, Nottingham. Mr. G. Muncaster Howard, clerk.

PENWITHICK.—Nov. 24.—For the erection of new Sunday school buildings at Penwithick Stents, St. Austell, Cornwall. Mr. William J. Jenkins, architect, Bodmin.

PLYMOUTH.—Dec. 1.—For the erection of warehouses on Trinity pier, Great Western Docks, Plymouth, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

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TELEGRAMS: "KRULLETER / LONDON". TELEPHONE: P.O. CENTRAL N° 4622.

POPLAR—Dec. 3.—For the erection of library buildings at Cubitt Town, Poplar. Mr. C. H. Norton, architect, 14 Bedford Row, W.C.

PORTISHEAD—For the erection of buildings in connection with the Nautical school, Portishead, Bristol (training-ship *Formidable*). Mr. Edward Gabriel, architect, 42 Old Broad Street, London, E.C.

RADCLIFFE—Nov. 30.—For the erection of butcher's premises and manager's house at Radcliffe. Mr. J. G. Crone, architect, 26 Cloth Market, Newcastle-upon-Tyne.

ROCHESTER—Nov. 23.—For alterations to the centre tower of Rochester Cathedral. Mr. C. Hodgson Fowler, architect, The College, Durham.

SCOTLAND—Nov. 23.—For the erection of enclosing walls and forming a new cemetery at Newmachar. Mr. William Buxton, architect, 84 Union Street, Aberdeen.

SCOTLAND—Nov. 23.—For the erection of a villa in Forreath Avenue, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SCOTLAND—Nov. 27.—For the erection of the proposed new generating station and tramcar shed at Kilmarnock. Mr. Robert Blackwood, burgh surveyor, Market Bridge, Kilmarnock.

SCOTLAND—Dec. 1.—For the erection of a stone lifeboat house and stone and concrete slip upon the quay near the site of the existing lifeboat house in the harbour of Anstruther, in the county of Fife. Mr. W. T. Douglas, architect, 15 Victoria Street, S.W.

SHEFFIELD—Nov. 23.—For the erection of sale-shops and artisans' dwellings on surplus land in Snig Hill. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SHEFFIELD—Dec. 1.—For the erection of a maternity hospital at the workhouse. Mr. J. R. Wigfull, architect, 14 Parade Chambers, East Parade, Sheffield.

STRETFORD—For reflooring the Stretford Wesleyan day school, Edge Lane. Mr. W. A. Rushworth, 1,283 Chester Road, Stretford.

SUNDERLAND—Nov. 24.—For the erection of offices near the Wheatsheaf tramway dépôt. Mr. F. E. Coates, architect, 41 Fawcett Street, Sunderland.

SWADLINCOTE—Nov. 25.—For the erection of a boundary wall 319 feet long by 6 feet high, with necessary foundations. Mr. W. A. Musson, clerk to the Urban District Council, Swadlincote, Burton-on-Trent.

SWANAGE—Nov. 30.—For the construction of a retaining wall along Shore Road, Swanage, Dorset. Mr. Thomas Randall, town clerk, Town Hall, Swanage.

THORNHILL—Nov. 23.—For pulling-down and rebuilding boundary walls and other works in Savile Road, Savile Town. Mr. S. W. Parker, surveyor, Council Offices, Thornhill, Yorks.

TOTTENHAM—Nov. 23.—For the erection of an infant department for 600, cookery-room and caretaker's residence, and alterations to the existing departments at the Lancasterian schools, Church Road. Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Strand, W.C.

WALES—Nov. 23.—For (a) rebuilding wall in front of Bethel chapel, Glyn-Neath; (b) repairing churchyard wall. Mr. J. Stanley Thomas, secretary, Stanley House, Glyn-Neath.

WALES—Nov. 23.—For extension of the intermediate school at Porth, Glamorgan. Mr. T. Mansel Franklen, clerk, County Council Offices, Westgate Street, Cardiff.

WALES—Nov. 23.—For rebuilding the Rum Punccheon and adjoining premises, Waterloo Street and Orange Street, Swansea. Mr. Henry C. Portsmouth, architect, 6 Fisher Street, Swansea.

WALES—Nov. 25.—For excavating and levelling the site and building retaining walls of the proposed Park hotel, Glandwr Road, Abertillery. Mr. Geo. Kenshole, architect, Station Road, Bargoed.

WALES—Nov. 26.—For the erection of two business premises at Pengam. Mr. Davies, Coal Hole inn, Gellihaaf, Maesycwmmr.

WALES—Nov. 26.—For rebuilding 59 High Street, Merthyr. Mr. C. M. Davies, 112 High Street, Merthyr Tydfil.

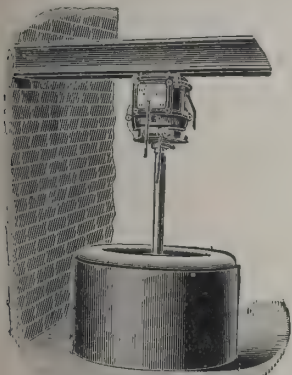
WALES—Nov. 26.—For the erection of a school for 250 infants at Edwardsville, Treharris, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect, Aberdare.

WALES—Nov. 28.—For the erection of an hotel and thirty-one cottages at Merthyr Vale. Mr. T. Roderick, architect, Glebe Land, Merthyr Tydfil.

WALES—Nov. 30.—For the erection of a gymnasium in connection with the county school, Bethel Road, Carnarvon. Mr. Ronald Lloyd Jones, county architect, 14 Market Street, Carnarvon.

WALES—Dec. 1.—For the erection of a waiting-room, &c., at Victoria station, near Ebbw Vale, Monmouthshire, for the

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WALES.—Dec. 3.—For the erection of a librarian's house adjoining the library, Cymmer, Porth. Mr. William Thomas, secretary.

WALTHAM ABBEY.—Nov. 27.—For the erection of public buildings on site in Waltham Abbey. Mr. W. T. Streather, surveyor, Highbridge Street, Waltham Abbey.

WARGRAVE.—Nov. 23.—For the erection of a cottage and an engine-house at Wargrave, Berks. Mr. W. G. A. Hambling, architect, Queen's Road, Reading.

WHITCHURCH.—For the erection of Alexandra Temperance hotel, High Street, Whitchurch, Shropshire. Mr. Walter Webb, architect, Bargates, Whitchurch.

WREXHAM.—For the erection of show-room, stores and new fittings to offices of the Wrexham Gaslight Company, Salop Road. Mr. M. J. Gummow, architect, Wrexham.

HEALTH AND DRAINAGE.

SOME few years since some successful experiments were made with the Merryweather hydraulic flusher in the sewers at Mile End and St. Martin's-in-the-Fields, London, as well as at Liverpool, Eccles and other places in the country. A recent article in the *Daily Telegraph* on "The Health of London" contains figures which prove that the heavy rains of this year have had a remarkable effect on health by keeping the sewers well flushed, and thus doing the work which the invention referred to was designed to accomplish. The late Mr. Walker, the eminent surveyor of St. Martin's, was of opinion that there is no more efficient way of cleansing the tops of the sewers than by the Merryweather plan. This system only requires water under pressure to be led into the sewer by hose pipe and distributed by means of a perforated tube on wheels, which is drawn through from manhole to manhole in a simple manner. The powerful jets thoroughly cleanse all parts of the pipe or culvert, and speedily discover cracks in brickwork or pipes, faults which are often responsible for the discharge of sewer gas into house or roadways. The record rains of this year are not likely to be repeated, and some such system as that described will have to be adopted sooner or later by our local authorities to keep our drainage system in proper order.

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R. Ballard	972	0	0
W. H. Wheeler	952	10	0
Nowell & Co.	952	0	0
A. C. Soan	940	0	0
Killingback & Co.	921	0	0
R. W. Swaker	914	10	0
H. MORECROFT, Acton Green (accepted)	793	0	0

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J. Jackson	3,069	5	0
W. B. Glenney	2,780	15	10
W. Iles	2,720	0	0
Parsons & Parsons	2,699	19	5
W. Manders	2,667	18	4
W. Peters & Co.	2,651	0	11
G. J. ANDERSON, North Street, Poplar, E. (accepted)	2,558	5	11

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W. E. Blake	£4,579	0	0
Wilson & Co.	4,226	12	8
J. S. Ambrose	4,188	2	10
E. Pike	4,129	0	0
J. Dickson	3,924	8	5
J. C. Payne	3,747	5	0
G. M. Callender & Co.	3,597	4	1
E. Harris	3,489	7	0
Hawking & Best	3,266	18	2
J. C. LANG, Liskeard (accepted)	3,169	13	2
M. Bridgman	3,142	0	3

BRICKENDON.

For the erection of a bridge and piling at Brickendon. Mr. J. W. BLOIS, surveyor, St. Elmo, Fanshawe Street, Bengoe, Hertford.

W. H. Henshaw	£98	0	0
A. Scales	90	0	0
E. KEMP, Rainham Road, Hertford (accepted)	70	0	0

CHELMSFORD.

For sewers and river crossing. Mr. CUTHBERT BROWN, C.E., engineer.

G. G. RAVNER, Croydon (accepted)	£2,346	10	5
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CHORLEY.

For the construction of a steel roof, with louvre ventilator, at the refuse destructor works, Stump Lane. GILBERT, THOMPSON & Co, Victoria Buildings, Temple Row, Birmingham (accepted).

CORNWALL.

For reconstructing the workhouse infirmary, building new wards, industrial trainer's room, mortuary, bath-rooms, &c., and for carrying-out a system of drainage at the workhouse, St. Columb, Cornwall. Messrs. J. ENNOR & SONS, architects, Newquay.

W. S. Tippet	£2,725	0	0
C. Payne	2,630	0	0
C. Carrivick, Newquay	2,035	0	0
W. Hooper, drainage	320	0	0
J. Perberthy, Newquay, sanitary fittings	185	0	0

* Provisionally accepted.

DARENTH.

For sanitary and other works at the asylum, Kent.

H. Munn & Son	£16,380	0	0
M. Batchelor	11,285	0	0
Gardner & Hazell	10,561	0	0
Vigor & Co.	10,440	0	0
T. H. Hayes & Co.	10,266	15	2
J. Lonsdale	9,200	0	0
Doulton & Co., Ltd.	9,080	0	0
W. Titmas & Sons	7,621	0	0
T. Cole	7,335	0	0
Enness Bros.	7,179	0	0
A. H. INNS, 36 Camomile Street, Bishops-gate, E.C. (accepted)	7,039	0	0
W. O. Collingwood (withdrawn)	6,750	0	0

ENFIELD.

For street works in St. Andrew's Road, Fyfield Road and River Front. Mr. RICHARD COLLINS, surveyor.

Accepted tenders.

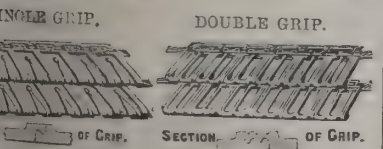
G. J. Anderson, for St. Andrew's Road, £630, and Fyfield Road, £530; T. Rowley, jun, River Front, £368 15s.

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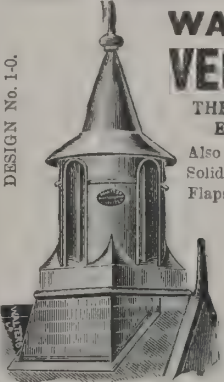
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FARNBOROUGH.

For sewerage works, with manholes, &c., Farnborough, Hants.
Mr. J. E. HARGREAVES, surveyor.
W H. WHEELER (*accepted*) £255 18 5.

GREENWICH.

For the erection of new dépôt buildings, Blackheath.
F J. GORHAM, Greenwich (*accepted*) £4,230 0 0

HANLEY.

For (1) erection of a sixteen-bed pavilion and two single-bed wards; (2) additions and alterations to administrative block; (3) additions and alterations to boiler and engine-house, &c.; (4) additions to covered ways; (5) erection of two cottages, near hospital; (6 and 7) provision of a Lancashire boiler and steam fittings and appliances; (8) provision of a cooking apparatus; (9) additions to electric light; (10) furnishing of eighteen-bed pavilion and additions to administrative block; (11) drapery; (12) ironmongery; (13) bedsteads; (14) crockery; (15) painting the whole of the present buildings of the Hanley, Stoke and Fenton joint hospital. Mr. ELIJAH JONES, architect, Albion Street, Hanley

Accepted tenders.

J Bagnall, King Street, Fenton, Stoke-on-Trent
(Contracts Nos. 1 to 5) £5,816 0 0
W. Hill, Ltd, Fenton, Stoke-on-Trent (6 and 7) 500 0 0
W. Summerscales & Sons, Ltd., Keighley (8) 249 12 6
G. A. Steinthal, Cooper Street, Manchester (9) 484 15 6
W. S. Sherratt, Waterloo Road, Burslem (10) 260 0 0
G. Fleet & Co, Stoke-on-Trent (11) 175 5 10
J. C. Schoefield, Piccadilly, Hanley (12) 79 1 9
J. C. Schoefield, Piccadilly, Hanley (13) 65 17 10
G. Fleet & Co (14) 8 5 0
R. Birchall & Son, Hanley (15) 330 0 0

ILFRACOMBE.

For excavating and filling embanked roads and dry stone walling between the village of Challacombe and Wistland Pound, Kentisbury.
J ALDERMAN, Wick House, Kentisbury, near Barnstaple (*accepted*) £570 0 0

IRELAND.

For sinking, lining and pump-fitting to new wells at Bluebe and Ballyfermott, South Dublin. Mr. T. J. BYRNE, surveyor, 1 James's Street, Dublin.

Accepted tenders.

J. Grace, 124 Coombe, Dublin, for Bluebell.
P. Healy, Leixlip, Dublin, for Ballyfermott.

ISLE OF WIGHT.

For an extension to sewer at Arthur's Hill, Shanklin.
W. PHILLIPS (*accepted*) £232 0 0
For the erection of a fence-wall at the town yard, Shanklin
J. MATTHEWS (*accepted*) £49 10 0

LEEDS.

For carting and laying complete a 9-inch water main, about two miles long, from the Wortley district to Beeston.
T. YOUNG & CO., Wakefield (*accepted*) £598 0 6
For the erection of a range of urinals at Woodhouse Ridge.
J RICHARDSON, Leeds (*accepted*) £85 13 0
For cleaning down, painting, &c, the detectives' offices at the town hall
T. E. KNOWLES, Beeston Road (*accepted*) £13 15 0
For cleaning down, painting, &c., at the Holbeck cemetery.
T. G. TOWERS, Leeds (*accepted*) £45 12 0

LONDON SCHOOL BOARD.

For enlargement of Essendine Road school, Maida Hill.
G. S. S. Williams & Son £6,970 0 0
C. F. Kearley 6,852 0 0
J. Simpson & Son 6,804 0 0
Johnson & Co. 6,763 0 0
Marchant & Hirst 6,729 0 0
H. Wall & Co. 6,657 0 0
W M Dabbs & Son 6,642 0 0
G. Neal 6,595 0 0
Rice & Son 6,549 0 0
McCormick & Sons 6,424 0 0
Patman & Fotheringham, Ltd. 6,283 0 0
Stevens Bros. 6,256 0 0
Treasure & Son 6,127 0 0
General Builders, Ltd.* 6,074 0 0

* Recommended for acceptance.

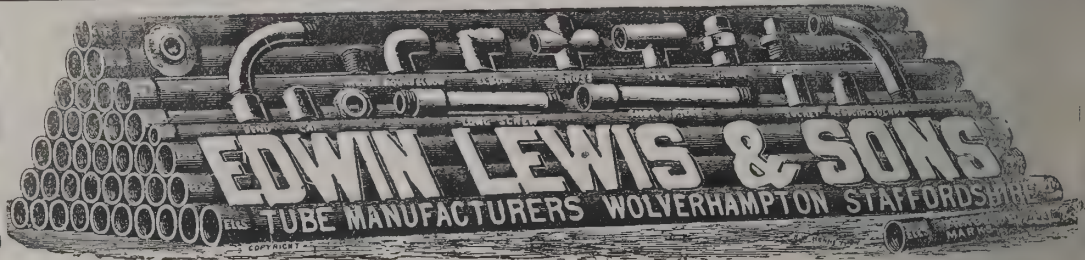
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LONDON SCHOOL BOARD—continued.

or the erection of higher-grade school and improvement of existing graded school, Mina Road, Old Kent Road.

J. Grover & Son	£18,354	o	o
Martin, Wells & Co., Ltd.	18,100	o	o
J. Marsland & Sons	18,017	o	o
J. Greenwood, Ltd.	17,985	o	o
Johnson & Co.	17,953	o	o
W. King & Son	17,900	o	o
Clarke & Bracey	17,852	o	o
E. Lawrence & Sons	17,562	o	o
Lathey Bros.	17,519	o	o
Stimpson & Co.	17,490	o	o
J. Carmichael	17,439	o	o
J. & M. Patrick	17,304	o	o
Treasure & Son	17,048	o	o
L. H. & R. Roberts	16,998	o	o
J. Garrett & Son	16,977	o	o
Thomas & Edge	16,328	o	o
W. Smith & Son	16,058	o	o
W. J. Mitchell & Son	16,020	o	o
F & H. F. Higgs	15,917	o	o
W. Downs *	15,739	o	o

* Recommended for acceptance.

LONDON.

or various works to hospitals, &c.

orthern hospital—Demolition of temporary wards 18 and 19.

R. Iles, Ltd.	£153	o	o
A. Monk	150	o	o
W. Marshall	130	o	o
E. W. Laurence	130	o	o
H. Stuart	125	o	o
R. Harding & Son	108	o	o
T. Cole	105	o	o
Davis & Co.	95	o	o
W. J. Lewcock	90	12	o
Gardner & Hazell	84	o	o
J. Ashton	47	10	o
W. DOWNTON & Co, Neville Yard, Neville Road, Kilburn (accepted)	43	o	o

LONDON—continued.

Grove hospital.—Completion of boundary wall.

Cropley Bros., Ltd.	£498	o	o
A. C. Soan	490	o	o
Gardner & Hazell	477	o	o
H. Kent	416	o	o
W J Coleman & Co.	406	o	o
Enness Bros.	357	o	o
E. Wall	350	o	o
T. COLE, Barnsbury, N. (accepted)	323	o	o

Leavesden asylum—Alterations to windows.

J. Hill & Co.	1,560	o	o
E. Spencer & Co.	1,220	o	o
M. Pearson	1,175	o	o
Howard & Co.	968	o	o
R. Iles, Ltd.	887	10	o
H. Martin	810	o	o
J. P. White	782	o	o
Gardner & Hazell	763	o	o
J. S. Kimberley	744	10	o
W. Moss & Sons, Ltd.	695	15	11
G. & J. Waterman	664	o	o
W. Sampson	660	10	o
Parkstone Steam Joinery Co.	650	o	o
King & Co.	597	10	o
T. Robinson	596	9	o
Enness Bros.	566	o	o
E. Chamberlain	500	o	o
G. WIGGS, 90 and 92 St. Albans Road, Watford (accepted)	463	o	o

PLYMOUTH.

For the supply and fitting of a 30-feet length of $\frac{1}{4}$ -inch steel boiler tube to the existing cast-iron funnel at the boiler-house of the workhouse.

Willoughby Bros.	£45	o	o
Ellacott & Sons	44	15	o
Wiley & Co.	41	o	o
BICKLE Co., Millbay Docks, Plymouth (accepted)	34	5	o
Willoughby Bros., cast-iron firebars, 7s. 6d. per cwt.			

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ROCHDALE.

For the erection of the first portion of the Church of the Good Shepherd. Mr. E. H. LINGEN BARKER, architect, Hereford		
Hatch & Son	£3,784	0 0
Ashworth & Woolfenden	3,190	0 0
G. F. Halliday	3,050	0 0
W. Hopkins	2,999	0 0
G. F. Endersby	2,965	0 0
Nicholl & Son	2,942	0 0
T. PICKLES, Luddenden Foot (accepted)	2,620	0 0
G. H. Eastwood	2,615	0 0

STOKE-ON-TRENT.

For paving work at the cottage homes.		
A. BULLOCK, Stoke-on-Trent (accepted)	£386	17 7
For repairs to Franklyn's farm.		
MEIKLEJOHN & SON, Stoke (accepted)	£134	0 0

STREET.

For the construction of a high-level service reservoir (capacity 150,000 gallons) and other works. Mr. A. P. I. COTTRELL, engineer, 28 Baldwin Street, Bristol.		
D. Dunthorne	£1,278	10 0
J. Hatherley	1,257	10 0
Wright & Son	1,240	0 0
A. Wills & Son	1,220	0 0
S. Ambrose	1,190	0 0
F. HUISE, Street (accepted)	973	4 11

TOOTING GRAVENEY.

For the erection on the Sellincourt Road site, Mellison Road, of two iron buildings to be removed from West Hill site, Wandsworth.		
T. Cruwys	£1,195	0 0
A. Leather	1,183	0 0
F. Smith & Co.	1,024	0 0
T. J. Hawkins & Co.	999	0 0
Humphreys, Ltd.	997	0 0
J. McManus	985	0 0
Croggan & Co.	980	0 0
W. Harbrow*	940	0 0
Mitson & Harrison	808	0 0

* Recommended for acceptance.

WALES.

For the erection of an infants' school at Maindy, near Cardiff. Mr. G. E. HALLIDAY, architect, 14 High Street, Cardiff.		
A. W. Cadwallader	£2,993	12 0
W. Cox	2,547	10 0
Lattey & Co.	2,464	4 8
Blacker Bros.	2,434	0 0
C. C. DUNN, Cardiff (accepted)	2,346	13 7
For additions to the Nantyglo school. Mr. R. L. ROBERTS, architect, Abercarn.		
Smith Bros.	£1,060	0 0
W. Jenkins	1,020	0 0
J. Jenkins	969	0 0
J. T. MORGAN & SON, Nantyglo (accepted)	963	12 0
For sewerage works, with manholes, &c., in Mill Road, Llanishen, Llandaff. Mr. JAMES HOLDEN, engineer, Llandaff Chambers, 35 St. Mary Street, Cardiff.		
T. R. Williams	£70	18 0
E. REES, The Elms, Whitchurch (accepted)	68	10 0

WEST NORWOOD.

For repairs and redecoration at the school infirmary.		
Woollaston Bros.	£1,964	0 0
B. Bristow & Sons	1,790	0 0
McArthur	1,500	0 0
Dawson, Swainston & Co.	1,185	10 0
R. E. Williams & Son	1,160	0 0
H. C. Horswill	999	0 0
E. A. Hough	971	0 0
H & G. Mallett	947	0 0
Vigor & Co.	896	0 0
G. Jennings, Ltd.	890	0 0
Harvey, Coney & Co.	850	0 0
Nixon & Son	850	0 0
Leonard & Mason	845	0 0
W. T. Harris	820	0 0
Hammond & Son	768	0 0
W. A. King	723	0 0
H. Bragg & Sons	721	0 0
W. Young	715	0 0
Excelsior Painting Co.	675	0 0
F. W. Hardy	630	0 0
E. MILLS, Westcombe Hill, Blackheath (accepted)	532	10 0

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WESTMINSTER.

or the reconstruction of slipper baths at the Marshall Street establishment, including the provision and fixing of new baths, valves and supply pipes, also new floor and sanitary work. Mr. J. W. BRADLEY, engineer.

Stubbs-Alexander, Ltd.	£5,977	0	0
Harding & Son.	5,900	0	0
Patman & Fotheringham.	4,753	0	0
Davis & Bennett	4,600	0	0
Sabey & Son	4,600	0	0
Hall, Beddall & Co.	4,420	0	0
J. Ferguson & Co.	4,350	0	0
B. E. Nightingale	4,057	0	0
DOULTON & Co., Ltd. (accepted)	3,980	0	0

Electric lighting.

Slatter & Co.	273	0	0
Bolding & Son.	256	0	0
Laing, Wharton & Co.	237	0	0
A. H. WOOD (accepted)	228	0	0

WEASENHAM.

or alterations and additions to Weasenham Hall, Norfolk, for the Right Hon the Earl of Leicester, K.G. Mr. C. SMEDLEY BECK, architect, Norwich. Quantities by Mr. A. J. CHAMBERS, Norwich.

R. Dye	£11,435	0	0
J. S. Smith & Son	11,065	0	0
G. Riches	10,795	0	0
J. Youngs & Son	10,780	0	0
W. H. Brown	10,759	0	0
Mussellwhite & Sapp	10,670	0	0
G. E. HAWES & SONS, Norwich (accepted)	9,999	0	0

WINDSOR.

or the erection of a shop and dwelling-house in the St. Leonard's Road, Windsor. Mr. PERCY H. GROVE, architect, 14 Alma Road, Windsor.

H. Burfoot & Son	£1,080	0	0
A. H. Reavell	998	0	0
W. Bishop	935	10	0
Butcher & Hendry	900	0	0
D. Dowsett & Son	879	16	0
T. SLAUGHTER, Windsor (accepted)	868	0	0
J. H. R. Atkins	820	0	0
G. Chesswas	799	10	0

WOOLWICH.

For adaptation of premises for centres for physically and mentally defective and blind children at Powis Street school.

J. Smith & Sons, Ltd.	£4,210	0	0
E. Proctor & Son	4,170	0	0
Johnson & Co.	4,099	0	0
W. J. Mitchell & Son	4,087	0	0
J. & C. Bowyer.	3,986	0	0
Lathey Bros	3,930	0	0
Holliday & Greenwood, Ltd.	3,915	0	0
T. D. Leng	3,778	0	0
E. Triggs	3,671	0	0
Thomas & Edge	3,628	0	0
H. Groves	3,592	0	0
E. P. Bulled & Co.*	3,477	0	0

* Recommended for acceptance.

BUILDING AND BUILDERS.

NEW Primitive Methodist premises, to cost 3,000l., are to be built in Memorial Road, Walkden, to supersede a mission-hall school.

THE Local Government Board have held an inquiry concerning the proposal to borrow 2,000l. for acquiring a portion of the Gyllingdhane estate at Falmouth for a carriage drive.

EXTENSIVE repairs are about to be carried out at Atherton parish church, which has become seriously damaged by coal-mining operations underneath. Over 1,000l. is required for the work of restoration.

RAPID progress has lately been made with the work of promenade widening at Blackpool. Over 500 men are employed and the expenditure is now averaging over 1,500l. a week.

MR. UNDER-SHERIFF BURCHELL and a special jury having sat to hear a claim by Mr. W. E. Brown and Mrs. Rowe, the freeholders of 2½ acres of land adjoining Brixton prison required by the Home Office for the extension of that institution, a verdict by consent was given for 7,550l.

THE Norwich city coroner (Mr. R. W. Ladell) held an inquiry last week at Lakenham Terrace, City Road, as to the death of Mr. John Downing, aged 74, of the firm of J. Downing & Sons, builders and contractors, who suddenly expired on the

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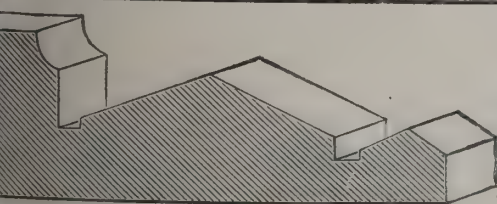
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6th inst. A verdict of "Death from natural causes" was returned.

AT Winsford Mr. M. K. North, Local Government inspector, held an inquiry into the application of the Urban Council to borrow £1,100 for the extension of the water supply at Bradford Wood, for widening and the improvement of Dingle Lane, and for a sewerage scheme for Ways Green. There was no opposition.

A PROJECT is on foot to renovate the interior of the parish church of Olney, Bucks, a church that is inseparately associated with the memory of the poet Cowper and the Rev. John Newton. The scheme of renovation includes reflooring and reseating, the removal of a gallery and repairs to the fabric. The total cost will exceed £1,300.

THE foundation-stone of Christ Church, Broadheath, Worcester, was laid on the 6th inst. The church, which will cost about £3,050, is being erected from designs by Mr. C. Ford Whitcombe, in red sandstone, and fronts the Martley Road. It will consist of a nave and chancel, with a tower at the west end and an ambulatory at the south side, which will easily allow of extension. It will seat about 210.

DR. MANBY, Local Government Board inspector, held an inquiry at Omskirk respecting an application by the joint Hospital Board for sanction to borrow £300 to defray the cost of the erection of a caretaker's cottage adjoining the infectious hospital and 80c for the furnishing of the nurse's rooms in the administration block. It was stated that the loans were required for forty years.

THE housing of the working classes committee of the London County Council recommend that the tender of Messrs Kirk & Randall, amounting to £17,884, be accepted for the erection of Vallette Buildings, Jerusalem Square, Hackney. The total estimate is £19,200. The buildings are to be erected for the accommodation of persons of the working-classes displaced by the Mare Street improvement. They will consist of one block of five-storey buildings and will provide accommodation for 416 persons in 39 tenements of two rooms, 34 tenements of three rooms and 7 tenements of four rooms, and according to the terms of the rehousing scheme approved by the Home Secretary, they must be completed by May 8, 1905.

THE Ayr District Lunacy Board have selected a design for the proposed new hospital at their asylum. Twenty designs were submitted for the work, and were reported upon by Mr. Sydney Mitchell, architect, Edinburgh, as assessor. The

Board offered three prizes of £75, £50, and £25. The assessor placed the designs as follows:—First prize, Mr. John Arthur, 131 West Regent Street, Glasgow; second prize, Mr. J. K. Hunter, architect, Ayr; third prize, Mr. John B. Wilson, 92 Bath Street, Glasgow. After carefully considering the designs in view of the measurer's report, the Board have selected the design presented by Mr. John B. Wilson.

THE Royal Waterloo Hospital for Children and Women, Waterloo Bridge Road, S.E., which was founded in the reign of George III., is now in course of reconstruction, reorganisation and enlargement. The Board are in hopes of establishing cots, and, if possible, entire wards to be supported by various public bodies. Owing to the fact that the new Union Jack Club will shortly be erected in the immediate vicinity, they hope to establish a military ward, with the assistance of the various London corps. The name and regimental crest of each regiment to be fixed at the head of each cot, and devoted to the sick children and wives of the rank and file; 630 shillings, or 30 guineas annually, will support a cot, or the capital sum of 1,000 guineas. Already one individual has generously promised to endow a cot on condition that five others will do the same.

MR. F. H. TULLOCH, Local Government Board inspector, held an inquiry at the public buildings, Oldbury, into the application by the Oldbury Urban District Council for sanction to borrow £620 for the purchase of a piece of land in Dudley Road for the purpose of a tip in connection with the sewage disposal works, and £1,650 for the purchase of three shops in Freeth Street, with a view to extending the public buildings. Mr. W. Shakespeare (clerk to the Council) explained that the public buildings were erected in 1890, and at that time the accommodation was sufficient for the requirements of the town. Since then the staff of the Council in the various departments had greatly increased, and the Council had recently become, under the new Education Act, the local educational authority. It was necessary that the offices should be increased, as many of the officials were compelled, through lack of accommodation, to utilise the committee-rooms as offices. Evidence was given by Mr. T. H. Shipton (surveyor), who spoke of the details of the scheme.

THE London and North-Western Railway Company have under consideration a scheme for the enlargement of their Manchester Exchange station, which occupies so important a site opposite the Manchester Cathedral, just across the banks

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- HOUSES, WINCHMORE HILL.
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VARIETIES.

THE Archbishop of Canterbury recently dedicated the tower, clock and bells of the parish church of Beckenham, thus completing one of the finest modern churches in the diocese.

ST. JOHN'S CHURCH, Leeds, which was erected in the year 1631 and following years, has just been restored. The cost was 1,500*l*.

THE ceremony of opening the Lyveden ward of the Lady Margaret hospital, Bromley, Kent, was performed by Julia Lady Lyveden.

THE fine new church erected by the Wesleyans on Chorley Old Road, Bolton, was formally opened on the 11th inst. The building is of an entirely new character so far as Bolton is concerned, the mosque design being adopted, and it is lighted by electricity

A NEW church in the Early English style of architecture, designed to accommodate 450 worshippers, was dedicated on the 6th inst. at Elland, Yorkshire. The site was given by Lord Savile. The scheme has cost about 12,000*l*., and when completed the total outlay will have been 15,000*l*.

THE fine mosque at Larissa, which stood near the bridge over the Peneios, and was such a familiar object to all who were in that part of Thessaly during the Greco-Turkish war, has been destroyed by an accidental fire. The most picturesque relic of the Turkish period in Greece has thus disappeared

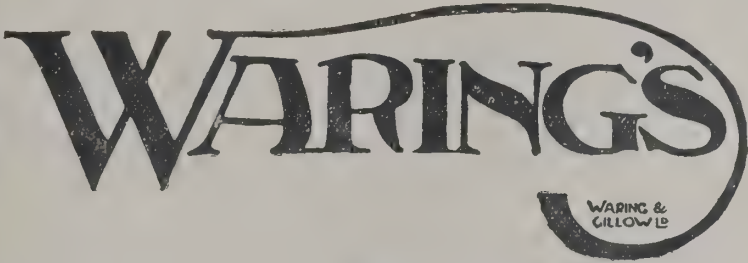
THE London County Council having again asked the St. Pancras Borough Council to give its consent to the construction of tramways along Tottenham Court Road to form a junction with the existing Hampstead Road tramways, a proposal will be made at the local Council's next meeting to accede to the request of the County Council.

AN overhead travelling bridge and electric tramway is to be erected to connect Portsmouth with Hayling Island. The span will be 500 feet, with a carrying capacity of 60 tons, and the whole will be worked by electricity. The scheme is estimated to cost over 60,000*l*. Mr. Kennedy, a Glasgow contractor, has agreed to carry out the whole contract and be responsible for the capital.

THE Hounslow town hall will shortly be offered for sale. Built thirty years ago by public subscription, it was afterwards acquired by a company known as the Town Hall Company. It has been used by the Heston and Isleworth District Council

the Irwell, and consequently in Salford. It is proposed to bring the front of the station forward and nearer to the river bank. The plan will involve the demolition of much of the old property between the station as it now stands and the river, and will be a great improvement to the district. The extension will perhaps renew the interest in a scheme which was discarded in the city not long ago. The suggestion was then made that the whole of the river opposite the Exchange station and the cathedral might be covered over and made into a piece of ornamental ground. This would no doubt add to the dignity of that part of the city. There are now three ways of approach to the station. The principal is from a point nearly opposite the Cromwell monument, which leads to the sloping bridge across the river. The second is from Chapel Street, near the end of Blackfriars Street, up a slight incline along the whole length of the station on the Chapel Street side. The third is at the east end of the station, and was provided a few years ago as a more convenient means of access from Bughton and Strangeways. The station now covers an area of 12,000 square yards, and this will be largely added to.

THE Engineering Standards Committee have appointed Messrs. Crosby Lockwood & Son, of 7 Stationers' Hall Court, E.C.4, as official publishers to the committee. All the reports and specifications published by the committee may be had from the official publishers to the committee or direct from the offices of the committee, 28 Victoria Street, Westminster.



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as offices since the formation of that body, but they have recently decided to build more commodious premises, and in twelve months' time the hall will be empty. The company, in view of this contingency, have decided to wind up and sell their property.

IN connection with the recent competition of the Paviers' Company for essays on the question of the provision of street subways, to allow gas mains and water pipes to be laid without tearing up the roadway, an exhibition will be held at the Guildhall on Monday next of the drawings sent in. The three prizes of 100, 30 and 20 guineas were won respectively by Mr. R. M. Parkinson (Peterborough), Mr. A. J. Price (Lytham), and Mr. F. M. Royle (Nottingham). The exhibition will remain open during the week.

THE discovery of a sedilia of the Perpendicular period in the south wall of the church chancel, Walton-on-Thames, is being investigated under the careful supervision of Mr. A. E. Gough. The sedilia, which is of grey stone and measures 4 feet high by 2 feet wide, is situated between the aumbry previously discovered and the piscina, but is not nearly as ancient as the former, which is of very crude workmanship of early style, and may not be as modern as the latter, which is partly of freestone. The three niches form a very picturesque group, and are of much archaeological interest, owing to the different periods of their construction, and the marks and inscriptions cut in the seat and sides of the sedilia.

THE strike of the Penrhyn quarrymen, which has lasted over three years, was terminated at the close of the past week. Although all the men were not out during that period, it has cost the district the sum of 364,000*l.* in wages alone. Prior to the strike, which commenced in October 1900, scarcely any slates were imported into this country. For the quarter ended March 1901 the quantity imported amounted to 15,722 tons, and for the quarter ended September 30 the figures reached a total of 31,581, showing a steady increase, which has considerably alarmed the North Wales quarry-owners. It is feared that the slate trade of North Wales has been permanently injured by the dispute.

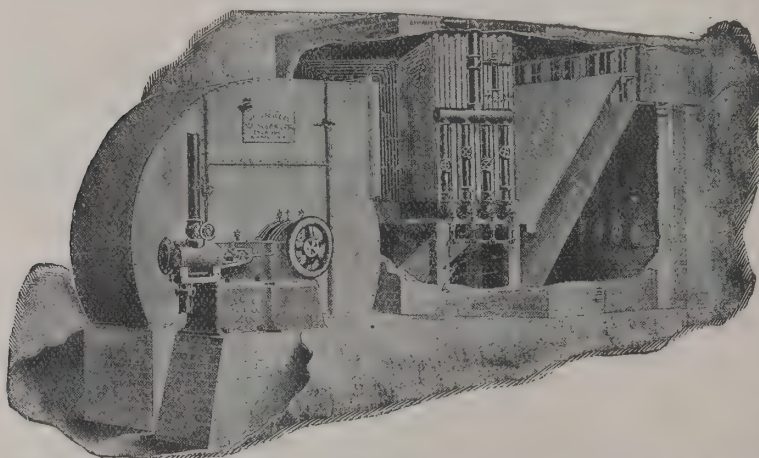
AT a meeting of the Edinburgh Architectural Association—Associates' Section—recently held at 117 George Street, Mr. J. A. Arnott in the chair, Mr. Ramsay Traquair delivered a lecture on "Notes on Later Scottish Gothic." The lecturer briefly traced the rise and progress of Gothic work in Scotland, pointing out the manner in which the earlier English style was

replaced by a mixed school influenced both from France and England. Great stress was laid on the need of studying the simpler examples of the earlier style as a base on which to raise new ideas. A number of characteristic buildings of the Later Decorated period were then fully described. The paper was illustrated by lantern slides.

THE Corporation of Wolverhampton have issued the necessary notice of their intention in the ensuing session to apply to Parliament for an Act to enable them to do a variety of things. They intend to ask for powers to construct tramways into Heath Town and Wednesfield; reconstruct, widen and improve a bridge over the canal at Wednesfield; erect new buildings supply electricity; transfer to the Corporation the power of vestry, abolition of offices of vestry clerk and collectors of poor rate; and deal with markets, streets, sewers, drains, sanitary provisions, infectious diseases, milk, provisions, commodious lodging-houses, collection of rates, borrowing of money extension, application, incorporation and amendment of Act and other matters. Power is also sought to run omnibuses within and without the borough; to supply electrical energy in bulk to local authorities, companies and persons outside the borough; to accept a transfer of an electric-lighting undertaking in an adjoining district, and to supply energy within that district.

THE Council of the Institution of Civil Engineers have made the following additional awards in respect of papers dealt with in 1902-3:—A Telford gold medal to George Deuchars, London; Crampton prizes to A. B. Brady, Brisbane, and C. Maxwell Lawford, London; Telford premiums to T. Johnston Bourne, Tientsin; R. H. Rhind, London; H. T. Hincks, Marikuppam; G. A. Hobler, Cairns; A. J. Goldsmith, Brisbane; F. H. Frere, Derby; R. Appleyard, London; F. Hamilton, B.Sc., London. For students' papers the award are:—The "James Forrest" medal and a Miller prize to Waude Thompson, Burton-on-Trent; the "James Prescott Joule" medal and a Miller prize to I. V. Robinson, West Hartlepool; Miller prizes to H. A. Bartlett, London; J. D. Morgan, Glasgow; H. S. Watson, London; J. V. Thomas Gloucester; O. B. Rattenbury, Doncaster; and C. M. Skinner Newcastle-on-Tyne.

THE Durham City Field and Research Club held their last outdoor meeting of the season on Saturday, the 7th inst., visiting, among other places, Witton Gilbert, the old hospital for lepers, founded by Gilbert de la Sey in the time of Bishop

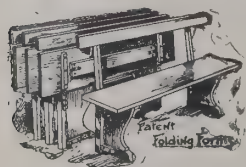


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sey, where there remains an interesting window, which has consisted of two Pointed lights within one arch, the moulding of which contains the ball ornament. In the spandrel is a quatrefoil. The church was next inspected, and Mr. Watts pointed out many improvements which have been made out, and gave a deeply interesting account of the architectural features of the church. The pulpit is a beautiful specimen of carved work, and Mr. Watts suggested that it may have come from the cathedral, the living of Witton Gilbert having often been held by a canon of Durham. An interesting dish, of seventeenth-century date, was handed round for inspection. It bears a representation of the spies returning to the Promised Land carrying a huge bunch of grapes, but it is interesting to note that the spies were clad in armour. Early parish registers were admired for the beautifully executed entries, Mr. Watts reading extracts of extreme interest. Outside work being concluded, the party adjourned to the rectory, where they were entertained to tea by the rector and Mr. Watts.

TRADE NOTES.

A new Savoy hotel extensions will be equipped with nine "Otis" electric elevators. The installation comprises four powerful passenger elevators, four luggage elevators and four service elevators; all are electric, with "Otis" controllers, with the exception of two or three smaller short-rise ones. The speed of the elevators will range from 250 feet to 300 feet per minute and upwards. Regard being had to the speed and carrying capacity, the hotel as a whole when complete will have eight "Otis" hydraulic elevators in the existing buildings) probably the largest hotel-elevator installation in this country.

The chapel schools, Cavalry Barracks, York, are being heated and ventilated by means of Shorland's patent Mantel stoves with descending smoke-flues.

The parish church at Crathie has just been reroofed by the order of His Majesty's expense, terra-cotta tiles, supplied by Messrs. Stanley Bros., of Nuneaton, having been substituted for the grey slates which previously served.

Mr. A. HIGGINS and Mr. S. Griffiths have entered into partnership to carry on the business of electrical engineers and contractors, at Albany Street, Regent's Park, N.W., under the name of Higgins & Griffiths.

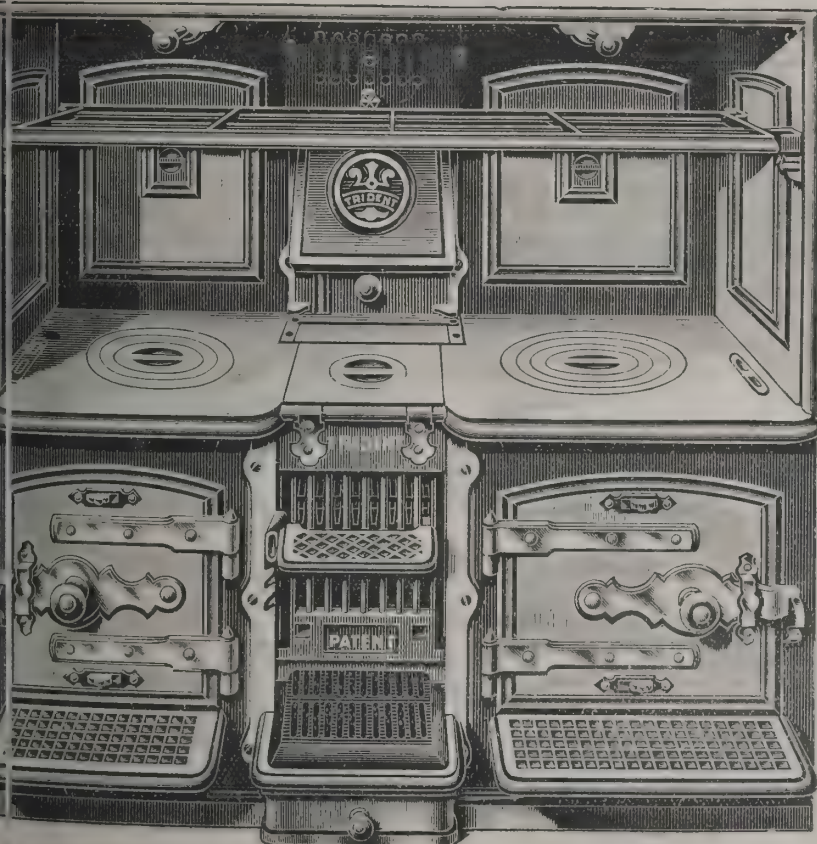
THE firm of Goddard, Massey & Warner, of Nottingham, have secured the contract—5,886*l.*—for the furnaces for the new dust destructor about to be erected at Croyden.

THE Heckmondwike public clock committee have decided upon erecting a new clock, showing the time upon four external dials, in the centre of the market-place from where the electric cars start, and have placed the order with Messrs. Wm. Potts & Sons, clock manufacturers, Leeds and Newcastle-on-Tyne.

THE new hotel which forms part of the Leeds Corporation New Central Market buildings is being equipped with an electric passenger lift by Mr. Robert Middleton, Sheepscar Foundry, Leeds, the town's main 2-phase current supplying the motive power. It will carry six persons at a speed of not less than 120 feet per minute.

WE have received from the London and District Westrumite Company, Ltd., an illustrated pamphlet descriptive of "Westrumite," the new disinfectant road-making and dust-laying agent. In this we are informed that "Westrumite" is a preparation for laying the dust in roads, streets and open spaces, and is composed of oily substances rendered soluble in water by certain patented chemical and mechanical processes. It is to its property of solubility in water that the great value of "Westrumite" as a dust-layer and road-preserver is due, for undoubtedly the practical solution of the dust problem was found directly it became possible to evenly disseminate on roadways oil or oily substances capable of dilution with water to any required degree, which is what "Westrumite" accomplishes. Any process attempting to deal with so vast a problem as the effectual laying of dust must necessarily possess such qualities of cheapness and facility of application as will render its general adoption feasible from an economical point of view. Until the advent of "Westrumite" there were only three agents which could lay any claim to some consideration as possible dust-layers, although none of them offered a true solution of the dust problem; these were water, tar and crude oil. In "Westrumite," however, which is a combination of the serviceable qualities of the three, the solution has been found. As showing the permanent efficiency of "Westrumite," attention is drawn to the following extracts from a report made on September 9 of the then state of the roads in Ireland which were treated on June 30:—"Apropos of the recent Gordon-Bennett race, I have no hesitation in saying that what contributed in a great measure to the absence of any serious casualty during the progress of that great event was the

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dressings of sections of the track which were considered dangerous with 'Westrumite.' It was perfectly apparent that when the cars, which were enveloped in clouds of dust elsewhere, passed over the sections so dressed not a particle of dust was to be observed. This was very material for the safety of the competitors, which has been clearly demonstrated by the absence of accidents." The sole agents are Messrs. Freeman Hines, Ltd., Westminster Palace Hotel, Victoria Street, S.W.

ELECTRIC NOTES.

MANY districts in Flintshire are to be connected by electric railways and tramways, and powers will be applied for from Parliament for that purpose.

THE Wednesbury (Staffs) Town Council have decided to acquire the tramways, and will start the electrification of them very shortly.

THE installation of the electric-lighting plant in the Wholesale Market, Smithfield, Birmingham, has been completed, and the whole of the market will be electrically lighted this morning. The electricity will be supplied from the power-station at the New Meat Market.

THE Cheshire coroner was apprised of the shockingly sudden death on the 11th inst., at Middlewich Electrolytic Alkali Works, of L. Page, a Liverpool electrician, aged thirty. Deceased only went to the Electrolytic Works on the Monday, and on Wednesday night was found lying unconscious on the floor of the diaphragm cell-room. He had fallen presumably in a fit, but no one was present at the time. Death took place before the arrival of a doctor.

A FURTHER extension of the electric tramways at the West End will probably be put in hand before long, and will, when completed, enable residents in London to travel on electric cars all the way from Shepherd's Bush or Hammersmith to Taplow, and one of the most beautiful stretches of the Thames, the London United Tramways Company having, on Saturday, given notice of their intention to apply for powers in the next session of Parliament to extend their system in that direction. They wish to connect the Brentford, Hounslow and Ealing lines with towns and villages in the county of Bucks, including East Bedford, Stanwell, Feltham, Ashford, Staines, Harmondsworth, Slough, Farnham Royal, Burnham, Taplow, Hitcham and Colnbrook. No part of Surrey is yet served by

the company, but they possess powers as far as Kingston Surbiton and Wimbledon, and are now seeking properties in those places for the widening of the roads, with a view of an early extension of their system there. As far as possible they will construct double lines to insure the best possible service.

THE QUANTITY SURVEYORS' ASSOCIATION

THE first general meeting of the above Association was held on Wednesday, the 18th inst., at the Holborn Restaurant. There was a numerous attendance of both London and Provincial members of the profession. Mr. W. Hoffman Wood of Leeds, was voted to the chair.

The proposed Memorandum of Association having been read by the hon. secretary, Mr. F. B. Hollis, was unanimously adopted by the meeting.

The following officers were elected:—*President*—Mr. Walter Lawrance, F.S.I. *Vice-President* (London)—A. J. Gate, F.S.I. *Vice-President* (Provincial)—W. Hoffman Wood (Leeds), and a council of twelve, consisting of the following eight London and four Provincial members:—London: W. Lawrance, F.S.I., A. G. Cross, F.S.I.; A. J. Gate, F.S.I.; W. R. Hood, F.S.I.; R. L. Curtis, H. England, H. W. Crickmay and F. B. Hollis, who was also unanimously elected hon. secretary and treasurer. Provincial: H. Curtis-Card, F.S.I., of Lewes; H. L. Beckwith, F.S.I., of Liverpool; R. J. Tollit, of Cambridge; W. Hoffman Wood, of Leeds.

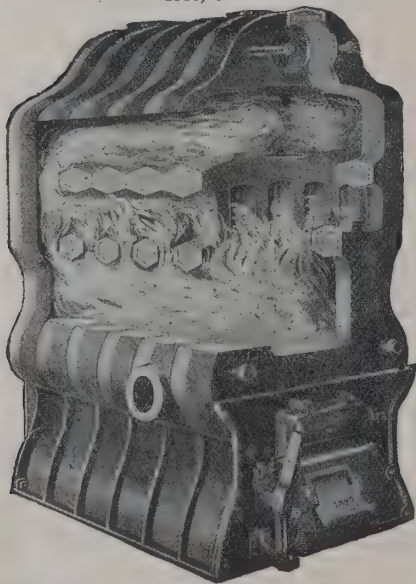
The hon. secretary, F. B. Hollis, 17 Bedford Row, W.C., will be glad to receive further applications for membership, or for particulars of the Association.

THE ROYAL VISIT TO THE CITY.

THE decorations of the City in honour of the visit of their Majesties, the King and Queen of Italy, were most effectively carried out by Messrs. Defries & Co., of Houndsditch, and possessed some pleasing features of novelty. In Cheapside, for instance, an entirely new scheme of street decoration was introduced. Richly decorated vertical banners were suspended above the centre of the roadway, supported on either side by special Venetian banners 40 feet in length bearing the Italian, British and City colours. These were carried to the buildings on either side, and large flags were placed at each extremity of

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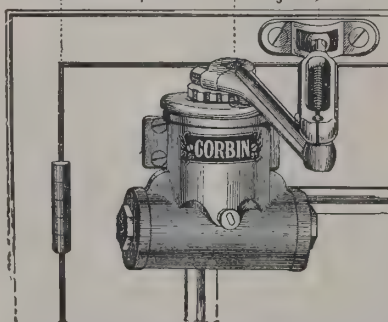


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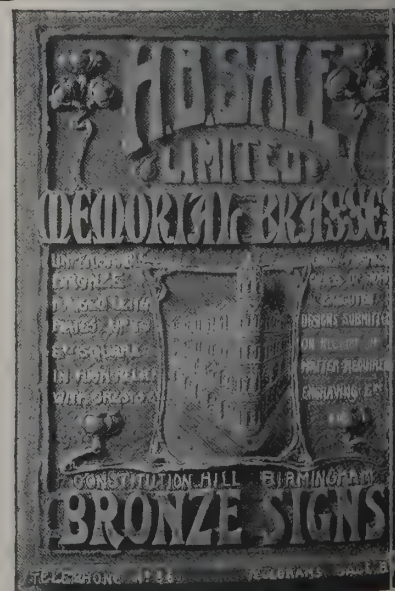
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Floral rose garlands surrounded the centre banner, carried down to the side buildings, and caught up in festoons. The centre banner on the first line of decoration bears the Italian Arms, and these are followed by the Arms, the City Arms and various Colonial Arms. These various lines of decoration are interspersed with lines of and festoons of streamers, each supporting a handsome basket above the centre of the roadway. The electric lights are also appropriately decorated to harmonise with the general scheme. In the West End a number of the lead-lights and firms illuminated for the occasion.

CHURCH REPAIRS IN JERSEY.

In each parish in Jersey there is (1) an ecclesiastical assembly (2) a civil assembly, composed of the same persons, and the "Principaux" of the parish, and who are all the laymen in the parish rated above a certain sum. In January last at a meeting of the Ecclesiastical Assembly, at which the rector of the parish of St. Saviour's was in the chair, a proposal was made as to the repairs of the parish church, which was referred to the Civil Assembly. The Nonconformist principle of the Ecclesiastical Assembly did not appear alive to the fact that the object of this reference was to endeavour to place the cost of such repairs upon the Civil Assembly, and therefore on the parochial rates. The Civil Assembly met under the presidency of the constable a few days later, and decided by a majority that plans should be prepared and an estimate given by an architect for the carrying out of the work at the cost of the Civil Assembly. Several of the principals present protested strongly against the course as an illegal appropriation of public moneys, but they were outvoted. The estimate and plans were subsequently at a meeting in August brought first before the Ecclesiastical Assembly, and then in September before the Civil Assembly, who voted 2000*l.* to be charged upon the parish for the purpose of repairing the parish church. Two of the principals appealed in the Royal Court of Jersey to upset this, as they argued, illegal appropriation of public moneys. The Judge of this Court decided against the appeal, on the ground that they had been present at the meeting of the Ecclesiastical Assembly in February. A further appeal

is now pending on behalf of another of the principals, who was not present at the February meetings. The matter will very probably in the event of an adverse decision in the pending action be brought before the Privy Council.

NEWCASTLE-UNDER-LYME HIGH SCHOOL.

THE formal opening of the Dutton science wing, an extension of the Newcastle-under-Lyme high school, which has just been completed and named after the late Mr. W. H. Dutton, the first chairman of governors of the Newcastle Endowed Schools, took place on the 6th inst. The new wing is attached to the old buildings at the south end of the large schoolroom, and consists of chemical and physical laboratories, a lecture-room, a preparation and store-room, with communication with the chemical laboratory and the lecture-room, a balance-room, private laboratory, dark-room and cloak-room and lavatory. All the rooms are commodious, well lighted and ventilated, and the floors are laid with red deal blocks on a good bed of concrete. The external elevations are faced with red stock facing bricks and stone dressings to windows, &c, and the roofs are covered with dark brindled tiles, the work being carried out to correspond with the old buildings. The chemical laboratory is fitted up to accommodate thirty-two students. The physical laboratory is fitted up to accommodate forty-two students, and is provided with six working benches, two apparatus cupboards, &c. Sliding doors divide the dark-room from the physical laboratory. Doors of communication give access to the new wing from the corridor, and from the large schoolroom of the old buildings, and an outer door is provided for the use of evening students. The total cost of the new building was about 3,600*l.* The laboratories have been designed for teaching chemistry and physics, and to foster the scientific method in the boys from their earliest youth. Around the physics laboratory and in the adjoining corridors is stored the apparatus for making measurements of various kinds, and for studying the laws of motion, of mechanics, hydrostatics, heat, sound, light, magnetism and electricity. All this comes under the head of physics. A great advantage over less modern laboratories is comprised in the wonderfully perfect arrangements in the new chemical laboratory for getting rid of all odorous fumes as fast as they are formed. At one end of the chemical laboratory is a muffle furnace, a gas furnace which

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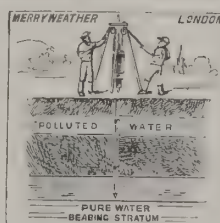
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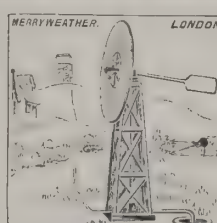
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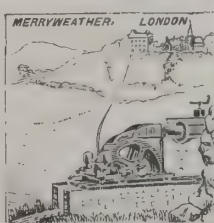
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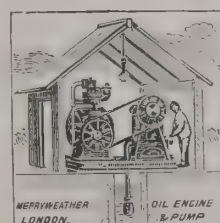


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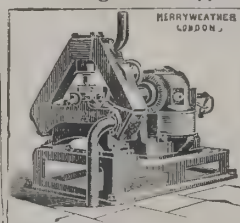


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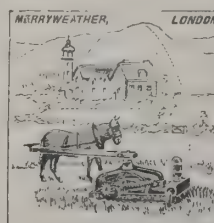
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will heat a crucible up to the melting point of cast-iron, and other varieties of combustion furnaces, besides an automobile arrangement for the continuous distillation of water. The science work taught in these new buildings will range from the most elementary principles to the most advanced research work. The fittings and equipments are available for work in all branches of chemistry, technical and industrial. It is understood that a number of young men working in the manufactories of the district are about to prosecute research work in this building in connection with the local industries.

BUILDING CONDITIONS IN LONDON.

At a recent meeting of the County Council it was stated that the absence of offers for leases of plots of land in the Strand, Kingsway and Aldwych was to be accounted for by the fact that disputes as to buildings were to be settled by the architect to the Council instead of by arbitration. The matter was referred to the corporate property committee of the Council, who have considered whether the building conditions should be modified. The committee report that as the conditions stand at present there is no provision made for arbitration, and they go on to say:—

"We have made inquiries as to the practice which obtains in regard to the letting of land on the estates of the large ground owners of London, and we are advised that the conditions in use on these estates are generally more onerous than those imposed by the Council, and that no provision for arbitration is made in the conditions. It does not appear that the Council's conditions have hitherto restricted building operations on its land. From figures which have been submitted to us it appears that the building work on the Council's freehold has increased nearly sevenfold since the year 1897, and we are of opinion that the inability to dispose of more surplus land is not due to the conditions, which have been practically the same for many years past. We are further informed that while the standard of work insisted upon is sufficient for its purpose, the Council does not press this beyond what is believed to be consistent with the circumstances of the case. That the tendency is towards leniency rather than the strict letter of the conditions is in a measure confirmed by the large increase in the building work on the Council's land. Having regard to all the circumstances, we do not think that the Council would be well advised to make any alterations in

its building conditions, and we are of opinion that, although there were no bidders for the plots of land in connection with the Holborn to Strand improvement at the last auction, the Council will not experience any difficulty in eventually disposing of the plots under the existing conditions."

HOUSING IN SALFORD.

THE proposal of the Salford Corporation to build workmen's dwellings on land in Seaford Road, Pendleton, was the subject of a Local Government Board inquiry in the Salford town hall by Major C. E. Norton. The application of the Corporation was for sanction to borrow 47,737*l.* under the Housing of the Working Classes Act, 1890, for the purchase of the site and the erection of houses.

The town clerk, Mr. L. C. Evans, in his opening statement explained that the Corporation, under an order of the Local Government Board of 1902, were bound to provide accommodation for 1,500 persons who were dispossessed of their homes by the demolition of insanitary property in various areas. The Corporation had already by several schemes provided housing for 2,432 persons, and had therefore exceeded their obligations. One of the sites on which, under the order, the Corporation had to build houses was known as Block 3, a piece of land off Chapel Street, near Trinity Church; but after an inquiry, in December 1901, the Local Government Board relieved the Corporation of the obligation to build on this particular site, on condition that they provided dwellings upon the Seaford Road site. It was the proposal to fulfil the condition which was the subject of the present inquiry. The scheme prepared provided accommodation for 1,155 persons. When this had been carried out, the Corporation would have provided for 3,587, or for 2,087 more than they were obliged to. The Seaford Road site had already been approved of by the Local Government Board, so that he understood the scope of the inquiry that evening was limited to the details of the scheme and the suitability of the proposed buildings.

Mr. Mavor said he was instructed that the houses were really being built for the accommodation of the tramway employes, that the rents proposed were too high for the people who had been dispossessed, and that the site was too far away from the No. 3 block to allow the people to get conveniently to their work without paying tram fares. The Inspector said

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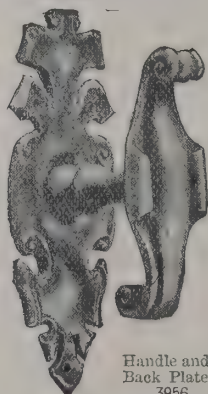
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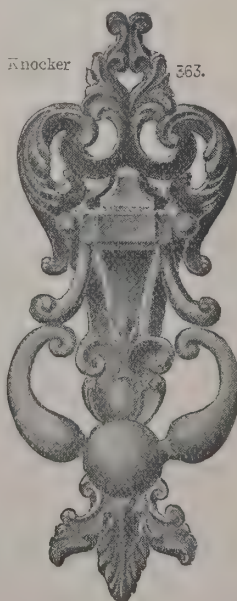
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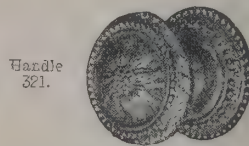


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ould not hear any objections to the site, because that had
dy been approved of.
Mr. Corbett, the borough engineer, explained the scheme.
tion of the site, he said, was land which was acquired by
tramway committee for the purpose of a tram shed, but
h it had not been necessary to use. This was to be trans-
d to the housing committee at cost price, and the cost was
ncluded in the amount for which borrowing powers were
ht. It was proposed to erect 231 dwellings. The esti-
d rent of 200 of these was 5s. 6d. per week, four at 6s.,
en at 7s. 6d., one at 8s., seven at 8s. 6d. and three shops
s. The 5s. 6d. houses would consist of two rooms up and
downstairs, passage, scullery, water-closet and conveni-
s.
a cross-examination by Mr. M'Ivor, Mr. Corbett said he
not designed these houses for the convenience of the
way men, but he did think some of these men would be
y to go into them. He thought the houses at 5s. 6d. were
ble for many of the people turned out of Block 3. The
orth site was a mile and a quarter from Chapel Street.
M'Ivor asked a number of questions with the object of
ing that 5s. 6d. a week was a much higher rent than had
paid by the occupants of the condemned property. Mr.
ett admitted that in some cases this was so, but he thought
generally speaking, the property was suitable for the
nmodation of the dispossessed persons.

THE PLUMBERS' COMPANY.

Tuesday a conference between the Plumbers' Company,
representatives of the larger water authorities of the
try and the Royal Institute of British Architects was held
e Guildhall, to discuss the question of the technical educa-
and registration of plumbers and the efficiency of plumbing
generally in connection with the public supply of water.
Robert Crawford (warden of the Plumbers' Company)
ded. Delegates from the water authorities of Birming-
Glasgow, Sheffield, Hull, Bradford, Cardiff, Dublin and
towns were present. The Royal Institute of British
itects was represented by Mr. H. D. Searles-Wood,
Thomas Blashill and Mr. W. D. Caröe, and the British
society of Waterworks Engineers by the secretary, Mr.
ey Griffith.

The Chairman remarked that the Plumbers' Company had
done a great deal towards stimulating public interest in the
matter of good plumbing, more particularly from the health
point of view. Undoubtedly the country had been thoroughly
aroused to the advantage to be derived from an increase of
responsibility and skill on the part of the plumber. On its
sanitary side much that was of value had been done in the
training of plumbers, and the attitude of local authorities
towards plumbing had greatly changed as compared with what
it was a few years ago. Of late, however, another department
of the plumber's work had come into prominence—that relating
to the prevention of the waste of water in domestic use. In
convening the conference to consider this subject in particular,
the Plumbers' Company did not suggest that the water authori-
ties did not know how to manage their own affairs, but it was
thought possible that the company might act as a sort of line
of union for the discussion of the means to be adopted in order
to secure greater uniformity in respect of by-laws, fittings and
the skill and qualifications of plumbers. He concluded by
moving a resolution approving the efforts of the Plumbers'
Company to secure the more efficient training of plumbers and
the registration of qualified men, and pledging the conference
to support the company's endeavours to obtain the necessary
legislation in furtherance of that object.

Mr. Hind, in seconding the resolution, pointed out that the
effect of the company's efforts was visible in the improvement
which had taken place in plumbers' work during the last
twenty-five years. He hoped that architects and others would
support the company by employing registered and qualified
plumbers in preference to others.

The Chairman mentioned that the Bill promoted by the
company for the registration of plumbers had been viewed
favourably by the Local Government Board, but the Govern-
ment had not seen their way to afford the necessary time to
secure its passage through Parliament.

The resolution was carried.

Mr. Searles-Wood said that as architects they strongly
sympathised with the movement for the better education of
plumbers. He did not think, however, that they could pledge
themselves to the sole employment of registered plumbers,
because architects did not interfere between the contractor and
his men. He afterwards proposed :—"That, with the object of
giving practical effect to the previous resolution, the represen-
tatives of the Royal Institute of British Architects and the
water authorities present recommend that preference be given

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to the employment of registered plumbers to carry out and inspect plumbers' work executed under architects and water authorities." In the course of further remarks, he said that the Institute deprecated any interference with the apprenticeship system. It was one thing to execute specimen joints and other things under the direction of a master in a highly fitted-up shop at a technical school and another matter to do it under the ordinary conditions in which the work had to be done in a building.

Mr. Holdsworth (Bradford) seconded the resolution.

Mr. E. A. Lees (Birmingham) said that in Birmingham there were a good many firms of the highest repute who had not allied themselves with the registration movement, and the Water Board could not shut their eyes to the fact that those firms carried out their work in a way to which no exception could be taken.

Mr. Atkinson (Hull) said that the same difficulty would arise in his town. If registration was to be adopted it should be optional for a period and only compulsory after the lapse of several years.

Mr. Holdsworth observed that registration gave a status to a plumber, and was an inducement to men to register themselves.

Mr. Hind said that they could not at present hope to make registration compulsory, but they could make it desirable and to the advantage of plumbers to register themselves.

After further discussion the resolution was carried.

The question of uniformity of regulations and the standardisation of fittings was afterwards discussed, among the speakers being Mr. Blashill, Mr. Gale (Glasgow), Mr. Askwith (Newcastle-on-Tyne), Mr. O'Dowd (Dublin) and others, and it was decided to appoint a small committee representing the Plumbers' Company, the Royal Institute of British Architects the water authorities and the water company engineers to consider the question.

THE VIEW FROM RICHMOND HILL.

The parks and open spaces committee of the London County Council report that they had arrived at an agreement with Sir J. Whittaker Ellis as to the terms upon which the action brought by the Council against him for the enforcement of his promise not to build upon certain land in the line of view

from Richmond Hill and generally for the protection of the Council's interests in relation to the preservation of the view from Richmond Hill might be settled. The agreement in effect provided that no buildings except conservatories or other buildings of that nature for garden purposes were to be erected between the river Thames and a certain line on the plan, that no dwelling-house might be erected above that line, that no other building (except those now existing) should be allowed between that and another line, known as line B, and that no manufacturing building or chimney-shaft should at any time be erected on the land above line B. The agreement also provided that, as between Sir J. Whittaker Ellis and the adjoining owner on the south-west, the existing line beyond which buildings might not be erected should be maintained, and that no alteration of it, so far as the adjoining land was concerned should be agreed to without the concurrence of the Council. A deed of covenant embodying the agreement had been prepared and approved by Sir J. Whittaker Ellis and the Richmond Corporation, and the committee now recommended that it be approved by the Council and be sealed in triplicate.

THE BUILDING TRADE IN DUNDEE.

THE *Dundee Advertiser* calls attention to the unfortunate condition of the local building trade. It has been found, it states from careful investigation that the number of workmen who, in ordinary circumstances, earn their livelihood in the business but who are meantime unemployed, is much larger than has been known for many years. The operatives chiefly involved are masons, joiners and labourers, but others, such as plasterers, plumbers, painters, glaziers and heating engineers are also feeling the pinch. Within recent months hundreds of young workmen, unable to find scope for their energies at home, have sought the wider fields offered by the colonies. Indeed, the departure of the emigrant train on Friday evenings has come to be numbered among the events of the week, and it is one of the commonest spectacles to witness on those nights vast crowds assembling at the railway stations to take farewell of departing relatives. This is an altogether new phase of Dundee life. Before the war it was unknown. The cause of this extraordinary depression is difficult to ascertain, but its roots seem embedded in the dual circumstance that tenement property has been over-built, and that no structures of a public character are meantime in course of erection. Within recent

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is a feature of the trade which has forced itself upon the minds of those concerned has been the steady and increasing tendency of those occupying central flats to move towards the suburbs. This exodus from the more thickly populated parts regarded by the municipal authorities as excellent, but against investors, whose capital is sunk in property, it is a matter for concern. Tenements, as a natural consequence, suffer depreciation in value. From the strictly industrial point of view, however, the movement has advantages, inasmuch as it will lend an impetus to the erection of self-contained dwellings. The inevitable result of this shifting has been a corresponding movement of weekly tenants into better-class properties, to many of which the system of weekly rents has recently been applied. This, in turn, has involved the desertion of the older and less salubrious localities, in the heart of which at the present moment hundreds of one-roomed houses are vacant.

LOCAL GOVERNMENT WORK.

The annual report of the Local Government Board which was issued on Saturday states that during the year consent was given to the borrowing by county councils in 176 cases of sums amounting to 714,461*l*. Of this total, 392,569*l*. was required for purposes of lunatic asylums; 118,835*l*. for the provision and improvement of police stations and court-houses and other public buildings; 76,277*l*. for roads and bridges; 74,704*l*. for erection of hospitals; 21,530*l*. for purposes of the Technical Education Acts; 15,203*l*. for contributions to the cost of providing open spaces; 11,193*l*. for the acquisition of land under the Military Lands Act, 1892; 3,550*l*. for industrial schools; 2,500*l*. for a highway depot; and 250*l*. for purposes of the Local Government Act, 1898. The largest item of expenditure in the accounts of county councils, other than the London County Council, relates to main roads. The county councils themselves expended during the year ended March, 1902, 16,202 miles of roads, of which 15,785 miles were situate in rural districts. The amount expended by the county councils, otherwise than by means of loans, during the year on the maintenance, repair and improvement of these roads was 1,077,695*l*. The total length of the main roads in England and Wales maintained during the year ended March 31, 1902, was 27,115 miles, of which 11,101 miles were situated in urban districts and 23,101 miles in rural districts. There were 828 councils of urban districts who maintained the main roads in their districts during the year.

The total length of main roads which they repaired was 3,597 miles, and the amount of the contributions received by them from the county councils in respect of these roads was 729,585*l*. In 250 of the 672 rural districts the main roads were during the year maintained by the rural district councils. The total length of main roads which they repaired was 7,316 miles, being nearly one-third of the total mileage in rural districts. The amount of the contributions received by them from the county councils during the year in respect of these roads was 454,639*l*.

INSTITUTION OF ELECTRICAL ENGINEERS.

THE first meeting of the session of the Institution of Electrical Engineers was held at the Institution of Civil Engineers on the 12th inst.

The president, Mr. R. K. Gray, in his inaugural address, referred first to the condition of the Institution. He said that developments in the near future might permit of an alliance with kindred societies for the erection of one large temple of engineering, where the various branches might find their homes. A temple of engineering, costing a quarter of a million, would be a fit home for the engineering bodies of the country. Electrical legislation was in urgent need of reform. In spite of legal impediment, however, substantial progress had been made in the utilisation of current for light and power purposes. Some 300 towns were now enjoying an electricity supply. The tramway work of the London County Council in South London was excellent. He strongly preferred the conduit system to the overhead system. The extra money involved in the construction of the conduit was well spent. Of wireless telegraphy there were no new developments to report, and there seemed to be no immediate prospect of this competing seriously with the existing cable companies.

He believed electrical industry in this country was almost entirely in the hands of engineers educated in England, but he doubted whether this could be said of chemical industry. In the calico printing and dyeing trades, for instance, Great Britain had practically been the home of the raw material and one of the greatest consumers of its products, but through the application of greater knowledge and skill, Germany could furnish our printers and dyers with the greater proportion of their requirements. We were being beaten in a race in which the foreigner was handicapped. He believed this was due to

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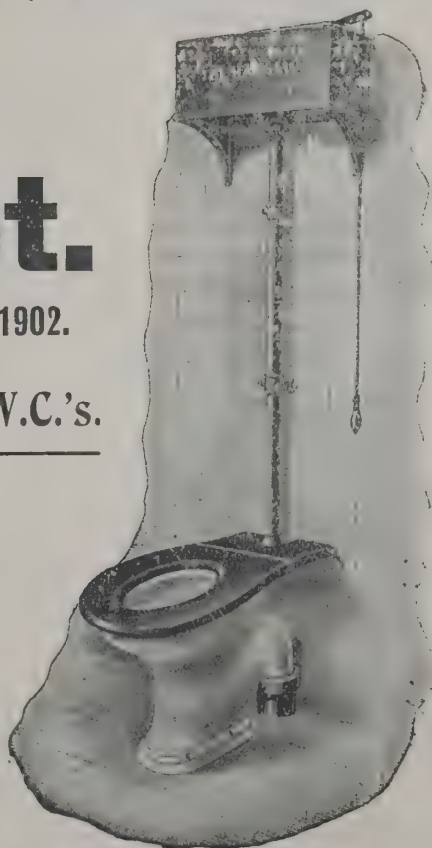
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the want of those opportunities which the foreigner possessed rather than to our natural incapacity. With wisdom we opened our arms to the skilled man of other countries, and through his skill we could, in certain directions, maintain supremacy. We must, as a policy, continue to welcome all comers, but while so doing we should continue to equip ourselves so that by sheer skill we might conquer in the end. The equipment we wanted was technical education. In this connection he was informed that there was under consideration the formation of a science guild whose fundamental object would be the encouragement of application of scientific principles to industrial and general purposes. He trusted the scheme would be adopted.

THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting on Tuesday, November 10, Sir William White, K.C.B., F.R.S., president, in the chair, the paper read was "Tensile Tests of Mild Steel and the Relation of Elongation to the Size of the Test-bar," by Professor W. C. Unwin, B.Sc., F.R.S., M.Inst.C.E.

In the case of steel, the engineer relied on tests of samples for assurance that he was obtaining suitable material. It was important, therefore, that the information given by tests should be definite and comparable. Mechanical tests were for the engineer the most important, but as usually conducted they were not wholly satisfactory, and had to be supplemented. The object of the paper was to consider some conditions which affected the results of tests, especially as regarded the measurement of ductility. Ductility was probably the most important quality in the material for working purposes.

Some conditions were then discussed. The time effect was only negligible, provided inertia forces might be neglected. The method of gripping the test-bar and the form of fracture as affecting the results were discussed, and the influence of enlarged ends on the elongation. The effect of the position of fracture between the gauge-points was examined, and some numerical results were given. Next, the effect of small variations of cross section, which was greater than was ordinarily supposed, was shown.

The total elongation was shown to consist of a general stretch, nearly uniform along the bar, and a local stretch. As geometrically similar bars deformed similarly, the percentage of ultimate elongation was the same in similar bars of the same material. The law of percentage of elongation in

geometrically dissimilar bars was then examined, and it was shown that for bars of any given material, of gauge-length and cross-section A, the percentage of elongation was given by the equation

$$e = \frac{c}{l} \sqrt{\frac{A}{b}} + b$$

where the first term on the right was the local and the second the general extension, c and b being constants. This equation was first verified by application to some results obtained by Mr. Barba on bars of varying gauge-length, cross section and form of cross section. The proportion of local to general extension in certain cases was determined.

An account was then given of a series of tests on ship and boiler-plates of different thicknesses, made for the engineering standards committee. The results were first discussed by using plotted curves without assuming the elongation equation. Taking from the curves the elongations for bars of a standard form, the real relative ductility of these bars was found. This was compared with the elongations for bars of constant width such as were generally used in testing. It was shown that the elongations in the latter case were very misleading as to the relative ductility. In the case of similar bars the ductility decreased as the thickness of the plates increased. But the results on bars of constant width would lead to the conclusion that the thickest plates were the most ductile.

The constants in the elongation equation were then given for the bars in each of six series of tests and for plates of $\frac{1}{4}$ to $\frac{1}{2}$ inch thick, with a detailed comparison of the elongation calculated by the equation and observed in the tests.

A further series of tests on plates with varying percentage of carbon was given. The constants c and b in the elongation equation decreased as the percentage of carbon increased.

Lastly, a series of tests was made by Mr. F. C. Fairholme of the Cyclops Steelworks, on short test-bars cut from tyre and axles. It was shown that the elongation equation was applicable to these short test-bars. The forms of short test bars which could be used in such cases was discussed, and a very simple recommendation was made which would secure that in all such tests the elongations would be comparable.

The question of quality figures for materials was then examined. It was pointed out that if quality figures were to be of value the tests must be made on similar test-bars, or the results must be reduced to equivalent results on similar bars.

THE HELLIWELL

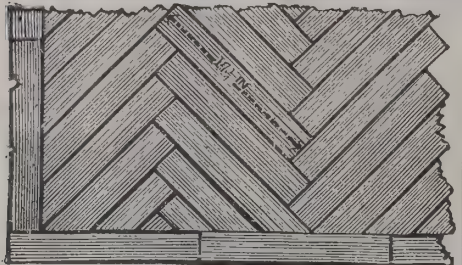
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values were examined of the quality figure for the whole the tests described in the paper for test-bars of different as of section.

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.

The ordinary annual general meeting of the members was held on the 12th inst. at the Grand hotel, Colmore Row, Birmingham, Mr. Albert S. Smith presiding. The annual report expressed regret that the depressed condition of trade referred to twelve months ago has continued during the past year. After again meeting the operative plumbers in conciliation, the committee had been unable to come to any satisfactory arrangement as to the code of working rules, the operatives declining to sign for less than three years. There were, therefore, no rules in existence with this branch. In view of the unreasonable demand of the National Association of Operative Plasterers in various parts of the country, that members should be paid on works in districts where a lower rate of wages prevailed the current rate of the districts where the contractor's chief office was situated, the committee given notice to the operative plasterers to abolish all existing rules after April 1 next. With this exception the committee had, after careful consideration, decided not to disturb the trade by serving notices for alteration of rules. Although, in their opinion, the present state of the trade fully justified notices to reduce the existing high rate of wages. The dispute with plasterers at Marle Hall, Llandudno, on this question had been before the committee on several occasions, also before the National Federation, and was not yet fully disposed of. On several occasions deputations had interviewed committees of the Architectural Association on matters of importance in the interests of the trade, notably the interpretation of the prime cost clause in the conditions of contract, and terms of making good after other trades." The balance-sheet showed total ordinary receipts for the year 219%, which, the balance from last year, made a total of 391%. The various disbursements amounted to 204%, and there remained 147% to the credit of the Association.

In moving the adoption of the report and balance-sheet, the President said he wished that the opening paragraph of the report had been different in tone. Trade last year was bad. Since then it had visibly declined. The decline was small in name, which also meant that the builder's profits had been proportionately fine. They could not say that prices were low.

Materials had not come down to any great extent. Labour was at the highest point it had ever reached; and so they could not quite say that building prices were low. Nevertheless, the committee, after carefully considering the question, had refrained from giving notice to the operatives for a reduction of wages, hoping that trade would soon show a turn for the better. The relationship between masters and men had been good throughout the year, with the exception of one branch. He referred to the plasterers. With them, as with other branches, a code of working rules was drawn up and signed by masters and men. These rules applied over a radius of five miles: but the National Association of Operative Plasterers had sought during the year to extend the radius to 120 miles, under cover of a by-law of their own union. He thought this needed no comment for him to show its flagrant unfairness and one-sidedness. If they sent a plasterer into a district where the rate of wages was lower than theirs, they must pay him their rate of wages; if they sent him into a district where wages were higher they must pay him the higher rate of wages. It was thought by the committee that if the signed rules of the plasterers were to be contravened in such a way—by by-laws made to circumvent them—it would be better to be without them at all. It was hoped and confidently expected that other towns would follow their example in giving notice to the operative plasterers to abolish the existing rules after April 1 next. Until rules could be made which would be loyally abided by and fairly kept by both sides it would be better for them to have none. If the builders broke the signed rules they were quickly brought to book. Fair play was a jewel, but it must be observed by both sides alike. With the exception of this branch of the trade the rules had been honourably adhered to. They had, he thought, reason to congratulate themselves upon the progress of the Association, and he held the Birmingham Association was one of the strongest and most loyal outside London.

Mr. William Sapcote seconded the motion, and endorsed what the President had said in reference to the plasterers.

The motion was carried unanimously. Lieutenant-Colonel Barnsley was unanimously elected president for the ensuing year, and Mr. J. B. Whitehouse vice-president; Mr. G. Twigg was reappointed treasurer, Messrs. Thomas Johnson & J. S. Surman auditors, a strong committee was elected, and Mr. E. J. Bigwood was re-elected secretary.

On the motion of Mr. J. B. Whitehouse, seconded by Mr. C. Copeland, a cordial vote of thanks was passed to Mr. Albert

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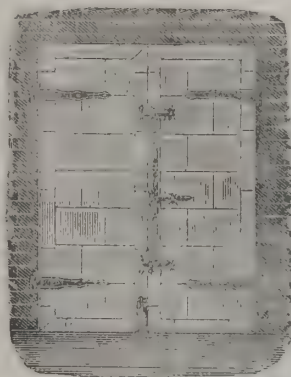
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S. Smith for his services during the past year in the position of president

Mr. Smith having responded to the compliment, a vote of thanks to the chairman concluded the meeting.

A dinner followed in the Grosvenor Room, and was largely attended. The chair was occupied by Lieutenant-Colonel John Barnsley, and among those present were Mr. Ebenezer Parkes, M.P., Councillor F. G. Whittall, Alderman J. Bowen (ex-president National Federation), Alderman Bigwood, Messrs. C. H. Barnsley (president Midland Federation), A. S. Smith, G. Squires, F. F. Jefferson, A. Rowse, J. B. Whitehouse, A. Harrison, and many others. After the loyal toasts had been honoured, the toast "The City and Trade of Birmingham" was submitted by Councillor Whittall, who gave an interesting account from a builder's point of view of the work carried on in some of the departments of the Corporation, mentioning in particular the Public Works Department and the Drainage Board. He also attached much importance to the education side of the work of the Corporation, and in this connection referred to the splendid results obtained at the technical schools, which had recently been described in such glowing terms by Professor Perry, the well-known engineering expert. If manufacturers were to satisfactorily compete in the commercial and manufacturing world it was imperative that the greatest attention should be paid to the scientific and technical training of students. He mentioned that in the building trade there were no fewer than 580 students, while a great many applicants had had to be rejected owing to the pressure on the school accommodation. As a Builders' Association they were always glad to adopt any policy which was calculated to add to the efficiency of the working men.

The toast was well received, and Mr. Ebenezer Parkes, M.P., whose name had been coupled with the toast, responded. He recalled the fact that he had taken a part in the municipal life of the city, and bore testimony to the public spirit and self-sacrifice displayed by so many of its citizens for the good government of the city. People had to go away from Birmingham to fully appreciate it. In his travels he had heard the praises of the city more than within its boundary. He warmly commended the work that was being done in the secondary, technical and art schools of the city. In the present stress of competition in commercial life their importance could not be over-estimated. He believed that the educational work of the city so recently taken over by the Council would be well performed. He thought it could not be denied that it was

advantageous that it should be in the hands of the people. Touching on municipal enterprise, he pointed to the importance of a judicious restriction of the public debt, especially having regard to the increased facilities for loans. He incidentally alluded to his visit to America, and said he was much impressed by the loyalty and affection shown to the mother country by Canada.

Mr. Thomas Barnsley proposed the toast "Success to the Birmingham Builders' Association," giving an interesting account of the successful work carried on by the organisation during the past year. That work had been advantageous to employers and workmen alike; between both there was better understanding, and by means of the Association employers had been able to meet workmen when friction arose and to satisfactorily settle their differences by conciliatory conferences. The toast was acknowledged by the President, who also testified to the better relations existing between employer and employed, which was the result of a better understanding and was largely attributable to the influence and operations of the Society. He incidentally touched on the fiscal question, and pointed out that one important matter affecting the building trade related to how importations, such as steel and timber goods, would be regarded—whether as raw material or manufactured goods.

The toast "The Architects and Surveyors" was proposed in fitting terms by Mr. J. B. Whitehouse, and Mr. Arthur Harrison and Mr. Anthony Rowse responded on behalf of the architects and surveyors respectively.

Mr. A. S. Smith, the new president, proposed the toast "National Federation of Building Trade Employers of Great Britain and Ireland," and referred to the excellent work which had been performed under its auspices, especially during the past few years.

The toast was well received, and response came from Alderman John Bowen, the ex-president of the National Federation, and Mr. C. H. Barnsley (president of the Midland Federation). Mr. Bowen explained that for the last two years their organisation had been federated—a circumstance which he hoped would prove beneficial to the trade and the community at large. He believed it to be a step in the right direction.

The other toast honoured was that of "The Visitors," submitted by Mr. George Squires and Mr. Fred Jefferson.

At intervals vocal selections were given with much acceptance by the Moseley Quartette.

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The Architect.

THE WEEK.

THERE has been some excitement in Paris, which news-
correspondents have communicated to other parts of
the world, concerning the "sensational discovery" of M.
REDON, the architect, that the Louvre extends for more
than 24 feet below the present ground level. He has
described the building as a colossus which is buried up to
its knees. M. REDON considers that PERRAULT and his
contemporaries were guilty of a gross act of vandalism in
digging and abetting the burial of the ancient palace. The
excavations have brought forgetfulness to as much perfection
as it were an art. Not quite twenty years have elapsed
since a predecessor of M. REDON, the late M. GUILLAUME,
effected a similar discovery. A correspondent of *The*
Architect, writing on June 13, 1885, gave the following
account of the subterranean part which he was privileged
to visit:—"On Tuesday the place was lighted by
candles, which were held by attendants, and probably
can only be visited under special conditions. It
is evident from the columns and remains of groins
that there was a great hall on the site, and judging
from the masonry it may be considered to have been erected
in the thirteenth century. There have been many altera-
tions about the Louvre in the course of six centuries, and
though it is now so much below the ground level, the
roof of the hall may have been a few feet above the level
of the Seine. A large circular opening suggests an *oubliette*,
which recalls the legends of the Tour de Nesle on the other
bank of the river, which has been supplanted by the respect-
able building of the Institut de France." The discoveries
attributed to arose out of the arrangements for heating the
future galleries. All that M. REDON has done by
digging trial excavations outside the building in another
direction is to confirm the conclusions which would be
drawn by any architect who visited the subterranean part
in 1885. That French architects and archaeologists will
make a noise about the recent "discovery" is not surprising
to anyone who knows how rarely their views extend beyond
today.

IN *The Architect* of September 4 it was stated:—"Unless
administrative changes occur in Paris in 1910, the Eiffel
Tower will share the fate of numerous other structures, and
be sold as old metal. The difficulty of disposing of its
labour of the same age, La Galerie des Machines, sug-
gests that seven years hence there will be a similar scarcity
of speculators, and the tower may continue to dominate
the greater part of Paris." That likelihood has been
strengthened. The Society of Civil Engineers, possessing
influence in France, has protested against the removal
of the two structures, which exemplify in a remarkable way
what can be done by means of steel. It is also noteworthy
that M. PASCAL, the French architect, and a member of the
Society, has sided with the civil engineers. There will
frequently be a contest between those who consider that
the Gallery of Machines will prevent the realisation of
M. LOUVEAU's project of a fine park and other improve-
ments and those who are inspired by utility alone.

EVERY visitor to Edinburgh is aware that the city
possesses not only one Acropolis, but two. On one side
the Castle, crowning a rocky hill; on the other, the
Calton Hill, are the uncompleted National Monument,
which was to be a copy of the Parthenon, an Observatory,
monuments to DUGALD STEWART, PLAYFAIR and
others. It is to be regretted that so noble a site does not
contain some grand structure that would be suggestive of
the art or literature of the Scottish Athens. The Royal
Academy, which is one of the buildings which were made
the subject of the departmental inquiry, or the adjacent
National Galleries, should have been erected there if archi-
tectural effect alone was considered. FERGUSSON, in speak-
ing of the former building, which he greatly admired,
said:—"The great defect is its situation, being so low as
it looked down upon from the approaches either

in front or rear. From George Street the spectator
is on a level with the cornice, and so loses all
effect of perspective, and from the Castle Hill he
has a revelation of skylights and chimney-pots sadly
destructive of the illusion produced by the purity of
the external architecture. Placed on the Calton Hill, or
on any height, it would have been one of the most faultless
of modern buildings. Where it is, it fails entirely in
producing the effect which is due to the beauty of the
design." It will be found in the report of the evidence of
Mr. HONEYMAN, R.S.A., in the present number, that there
would be an opportunity to remedy the mistake made in
the selection of the site by re-erecting the National
Galleries on the Calton Hill. The two buildings on the
Mound being in Classic style lost much of their importance
when the Scott Monument and the Royal Bank of
Scotland were erected in the neighbourhood. But the
elevation of the buildings in Princes Street and the immense
structures erected in connection with the improvement of
Waverley station have rendered it still more difficult for two
Classic buildings of a single storey to assert themselves.
On the Calton Hill either or both would have a chance
of appearing effective when seen against the sky. Any
difficulty there is in approaching the summit could easily
be diminished by an improvement of the roads.

WHEN we published our first illustration of the Indian
scenes of Mr. EDWIN LORD WEEKS we pointed out the
strangeness of an American painter utilising so vast a field
for subjects which English painters ignored unless they
were sent out to India on a public commission. His works
were always viewed with interest in the Salon. The sub-
jects were novel to Frenchmen, and no brighter colouring
was to be found in the works of any of the French artists
who treated Oriental subjects. Sometimes, as in his
Three Mendicants of Cordova, he suggested the relationship
between scenes in India and in other lands where the sun
triumphed. It is with sincere regret we have to announce
that Mr. WEEKS will no longer enrich the world with his
works, for he died a few days ago in Paris, where he
resided for the greater part of his life. He was a native of
Boston, and he owed his selection of subjects and their
treatment to the instruction received from M. GERÔME
and M. BONNAT. He was deservedly recognised as one of
the ablest of the band of American artists who have con-
stituted Paris their home. His death was due to the con-
sequences of a fever which attacked him in India.

UNLESS wood pavement is kept in the cleanest state it
may become injurious to the public health. An apprehen-
sion of that kind has been an obstacle to the use of blocks
in many places. The question was raised in the Court of
Appeal on Monday whether cleaning might not be carried
to excess, or, in other words, an unnecessary quantity of
water be employed in the operation, and therefore mainten-
ance became more expensive to the contractor. The pave-
ment of Westminster has been for some time a subject for
newspaper criticism, and one of the latest incidents was an
application to Mr. Justice PHILLIMORE for an injunction
on behalf of Mr. ALCOTT, the contractor, to restrain the
Council from watering excessively the pavement laid down
in Whitehall. His lordship having refused, an appeal was
brought. The plaintiff was to maintain the pavement he
had laid down for the long term of fifteen years, but under
varying conditions. For the first three years all the repairs
were to be carried out at the plaintiff's expense. He
asserted that the blocks were never allowed to become dry
and that the concrete foundation was softened by the water.
By the contract deed the Westminster Council were allowed
to wash the pavement, and indeed it would be strange if
liberty of that kind was withheld. The Master of the Rolls
affirmed that the case was not one in which the Court
could interfere in the form of an injunction. It was a
question of damages which must be fought out unless the
parties could arrive at some solution of the difficulty. The
case is important, and it is to be hoped that the proposed
application to the Lord Chief Justice to have the trial
expedited will be successful.

GERMAN SCHOOLS OF BUILDING.

IN the discussions relating to technical education which are now common, it is not sufficiently recognised how wide is the difference between the school or college system and the system of apprenticeship. There are some advocates who would have the latter superseded by the former. There are others who would combine them. There is a third class who still favour apprenticeship, especially when it can be supplemented by occasional attendance of technical classes.

In the evidence of Professor FREDERICK BROWN, of the London Slade school, which we published last week, he said that he preferred to have his students caught young, for "it is much better that they should know nothing than come with ideas that are all wrong, which is generally the case." The meaning was that the methods adopted in other schools were not appreciated in the art classes of London University College. The heads of many business establishments would agree with the Professor. Turn-over apprentices have a hard life and are rarely welcomed, whether they find their way into architects or engineers' offices or builders' workshops. In other callings we see the same belief that instruction of any kind is not of uniform excellence in all places. We even can hear it among representatives of regiments and crews of the Army and Navy.

When, therefore, people speak about the superiority of a foreign method of training, or *vice versa*, it is possible that only partial views are taken of the students, and there is no real comparison between the finished products. For instance, it would not be difficult to meet with a student who, after being only a few terms in a technical school in Germany, could calculate the diameter of a gas-pipe that would afford light to a single room, and the result would be worked out to a remote decimal degree. A student might be double the time in an English architect's office, and yet would be incompetent to set about such a problem. But he would know what sizes of gas-piping are to be had in the market for immediate use, and how far experience has decided the ratio between them and the number of lights required in a house. The German student would imagine, at least until the time arrived when he had to encounter actual practice, that his calculated diameter, with its array of decimals, would be adopted by the builder; and the piping would be rolled or manufactured according to his figures. That is mere ignorance of the conditions of business. Yet an educational investigator who examined the two representatives would feel no hesitation in declaring that the German student was the better, and was eventually more likely to become a thoroughly competent architect. The difference between them arises from theory being adopted in one case as a basis, while experience is the foundation in the other.

If we could suppose the two students arriving in a colonial town, there is little doubt the Englishman would be the more competent to undertake the carrying out of a building. Being aware of the economy of utilising the materials which were to be found in the market, and of adapting his plans to them, the building would be far advanced under his direction before his competitor discovered how costly and tedious it is to have things specially manufactured, and how a slight increase in size or weight has compensatory advantages. Our German might then reflect how few of the great buildings he was taught to admire were constructed by means of data which corresponded with those he had acquired in his college classes. Classic, Gothic and Renaissance structures would all be found to be incorrect if tested by the constructional formulæ which are presumed to lead to perfection in building. It is only the metaliferous piles of the cities of the United States which can be considered as the truest exponents of advanced theories in building, and of the close connection between theory and practice.

There is consequently an impossibility for any collegiate system to properly equip a student to be an engineer, architect or builder. The professors have to deal with examples on a small scale. TREDGOLD'S conclusions about the strength of materials, the dimensions of parts of engines,

&c., led to surprising deductions, especially when we remember the poverty of the man. But they were only misleading, and are now of no use in practice. Doubtless a professor who has gained experience in practice will be able to point out to his students the shortcomings of specimens or of models. But it is only under exceptional circumstances men of that class drift into lectureships, and perhaps less often in Germany than elsewhere. Yet the tendency at the present time is to make technical instruction take the place of apprenticeship.

It may be granted that the old conditions of apprenticeship were onerous. It was possible in the majority of trades for an apprentice if treated fairly to become a competent workman in less than seven years. Instruction, however, was not the aim of the system. Every trade was a close corporation and selfishness dictated that entrance should be difficult. Hence it was that the rules and regulations in England were condemned by that great judge, Lord MANSFIELD, as being against the natural rights of man and contrary to the common-law rights of the land. In some trades the period of apprenticeship was extended to ten years, and it is believed a still longer servitude was occasionally exacted. At a period when all the operations of a trade were performed by hand seven years was sometimes not excessive. A country carpenter or blacksmith of the old school was expected to deal with wood or metal in so many forms, his versatility was not easily acquired. There were no books of instruction to give him hints, and he had to derive his skill mainly by a course of failures for which he was made to suffer. The punishment of apprentices by a master was allowable according to English law. But in our time, when division of labour is adopted to a remarkable extent, and in every trade materials are partly or wholly prepared by the aid of machinery, the seven years' term is unnecessary. One of the causes for its continuance arises from the dislike of workmen to the admission of others on easier terms than were enforced from them.

Equality is one of the objects of English trade unions, and consequently there is no provision in the system which would encourage working men to become foremen or general overseers. As a rule carpenters have been selected in cases of building, and the Carpenters' Company, taking advantage of the custom, hold examinations of would-be foremen; but there is no reason why any one trade should enjoy a monopoly. A carpenter may be longer on a job, but there is no economy in choosing him, for it is only on small buildings he could work at his trade and serve as foreman. In Germany, where military discipline prevails, the haphazard method of obtaining foremen, which was similar to that of England, gave rise to discontent about seventy years ago. Men who were ambitious to acquire the knowledge were obliged to take lessons from private teachers, foremen, or even from architects. Accordingly a building-trade school was founded in Stuttgart in 1832. There are now about fifty such institutions, and twenty-two of them are in Prussia. In some cases they are State schools, in others municipal or provincial schools, or they may be State, municipal and provincial schools combined. Originally most of them were intended to afford instruction in building operations. But as time went on new courses were added, and the majority of them are now building and engineering trade schools. A report by Dr. ROSE, the British Consul-General at Stuttgart, gives particulars of the instruction followed in them.

The literary history of Germany reveals the sacrifices which were made by students who became renowned in order to acquire learning. Everyone has heard of HEYNE, the great Classical professor and editor, arriving at Leipzig to study all learning without having enough to pay professorial fees or to buy a loaf, and he was sometimes compelled to subdue hunger by eating peas-cods he found in the streets. In his eagerness for study he for a time allowed himself only two nights of sleep in a week. The majority of the students of the mysteries of building live in extremely modest circumstances, and sometimes they meet their expenses by working at a trade and studying in alternate terms. Dr. ROSE supplies tabular information of the average expenditure of a great number of students. The following relates to the winter term, which lasts about four and a half months:—

Items of Expenditure.	Amount.	
	From	To
Simple room, board, heating and service, 2l. 5s. to 3l. per month	10 0	13 10
Drawing materials, &c.	1 15	2 5
Pocket-money per month, 10s. to 13s.	2 5	3 0
School fees	1 10	1 10
Various	0 15	1 0
Total	16 5	21 5

The next is an approximate estimate of the annual (or for two terms) expenditure at Stuttgart:—

Items of Expenditure.	Amount.
Fees for two terms	5 0
Drawing materials, books, &c.	3 0
Combined bed and sitting-room and board for two terms of from 4 to 4½ months	27 10
Coals, light and service	3 10
Miscellaneous	11 0
Total	50 0

The Stuttgart school has three sections, viz. building, engineering, surveying and drainage and irrigation. There are twenty-nine professors and thirty two assistants, or masters for special subjects, making in all a staff of sixty-one teachers. Out of that number ten professors and four assistants deal with building and architecture. There are six successive classes for building besides a preparatory class, and the average number of hours varies from forty to forty-six per week. The subjects taught in the preparatory class are German, physical geography and history, arithmetic, geometry, geometrical drawing, freehand drawing and calligraphy. In class 1 algebra is substituted for arithmetic, stereometry for geometry and geometrical drawing, and building drawing for physical geography. In class 2 descriptive geometry, physics and chemistry are introduced. In class 3 are mathematical exercises, theory of the strength of materials, graphical statics and building construction. In class 4 perspective, building materials, supervision of building operations, general details of buildings, building styles, designing of buildings and modelling of ornaments are treated. In class 5 firing, heating and ventilation; road and bridge-building and book-keeping are new subjects. The tasks for class 6 are the following:—Mathematical exercises, stone-cutting, building mechanics and construction and designing of same, designing of buildings, building estimates, building laws, exercises in road and bridge-building and prevention of fires. As each class takes half a year, i.e. a hundred days' actual work, to go through the curriculum, in those schools where the instruction is given during the winter months only the course would extend to six years, but where there are summer and winter courses the duration would be three years. There is a supplementary inspection of buildings in the neighbourhood of the school. Sometimes more distant excursions are organised which may extend to a week, and the travelling expenses are defrayed by the school. If the students can show certificates of a satisfactory preliminary education they need not pass through the elementary classes. As the monetary condition of the majority of students is realised, they are not required to attend the classes in uninterrupted succession. The breaks are allowed in order that they may earn money. For the same reason building instruction is generally given in winter to enable the students to engage in actual operations during the summer. Additional consideration is shown when the students are clever but very poor. In the winter of 1902-3 no less than 270 pupils were dispensed from the payment of fees in Stuttgart. The King of WÜRTENBERG and the Freemasons have established scholarships. As the fees are only about 2l. 10s. per term, or 5l. a year, a student who can live with his family in Stuttgart is happily placed. Having passed examinations and obtained a diploma, a student becomes eligible for an official appointment or can find work in other forms.

The number of students in the winter term 1901-2 was 1,049, of whom 915 were natives of Württemberg, 95 belonged to other German States, and 39 were foreigners. Some of them went through courses of engineering, sur-

veying and drainage, but 458 are described as masons and stonehewers, and 165 as carpenters. It is remarkable how many of the students already possessed practical knowledge. In the returns, 172 were described as building overseers, foremen and draughtsmen; 673 had served apprenticeship in some technical branch, and 166 were apprentices, while 38 had already received certificates of the "Techniker" class. The larger number of the students ranged between twenty and twenty five years of age. Of these there were no less than 377. The lowest age was 14½ and the highest 35½. The principal professors' salaries are 200l., 220l. and 240l. per annum, and 15l. for house rent; 3l. per hour per week is received for every extra hour beyond the limit agreed upon in the contract of appointment. The assistant professors are paid 3l. per hour per week of instruction given. Thirty hours per week would accordingly yield 90l. per term and 180l. per annum. Assistants obtain 100l. to 115l. per annum, together with 10l. for house rent. The pension for professors is 40 per cent. after ten years' services, 60 per cent. after twenty years, and 90 per cent. after forty.

In the Karlsruhe school there is no department for surveying as at Stuttgart, but railway technical science is taught, and there is training for students who wish to be masters in industrial schools. It has also been arranged to open a section for electro-technics. The fees are only 1l. 10s. per term, or 3l. per annum for all subjects, and some students are exempted from paying those modest sums. The Nuremberg school gives instruction from November 22 to May 31. The remainder of the year is devoted to practical work in connection with the school. After a couple of years manual work is not insisted on, but the students are expected to obtain engagements as draughtsmen or assistant overseers. The fees are 1l. 16s. per term. As the school cost in 1900 5,891l. and the fees amounted to only 816l., the State, province and municipality were obliged to subsidise to over 5,000l. There are twenty professors and twenty masters. The programme of instruction is very extensive, and includes not only design and construction, but building legislation, regulations and commercial book-keeping. The fees of the Prussian schools, according to Dr. Rose, are higher than those of other German building schools. They amount to 4l. per winter or summer term, or for the preparatory classes. A further fee of 1l. per term is levied for the use of drawing-boards and materials, of writing materials, of technical instruction books and for medical treatment during illness. Foreigners are required to pay five times more than Germans.

The interest taken in building by German Governments requires no great astuteness to explain. In the first place, it is considered desirable to exercise as much control as possible over all classes of business, and foremen or overseers who hold Government diplomas, and by whom official appointments can be acquired, are likely to be loyal to authority. Then, again, it is well known there has been a very earnest competition for the favours of the working classes, in the expectation of outbidding communist leaders. A circular issued by the Prussian Government in 1877, urging the erection of building-trade schools and promising State contributions, explained the new zeal by saying that the majority of builders, building foremen and overseers were either unwilling or unable to give the workmen and apprentices any other than a purely manual instruction. There were several private building-trade schools, but so important a branch of instruction should not be left to private speculation, of which the results had not always been of a satisfactory nature.

As it was not intended to scare the workmen by too extensive a programme, a course of three successive classes was arranged. The German master-builders, however, appealed to have it lengthened to four courses, in order that more proficiency in the designing of buildings could be acquired. The meaning of the move is that builders are now able to obtain designers who possess a knowledge of building construction on much lower terms than would have to be paid to a young architect from one of the technical high schools or universities. The architect's work in Germany seems therefore likely to be restricted to important buildings, whilst those of an ordinary class will be designed and superintended by students of the building-trade schools.

RATING OF PROPERTY.*

THE list of law cases referred to in Mr. FARADAY'S volume fills nineteen pages. If all those which have been heard in various courts relating to rates were printed in a list, nineteen hundred pages at least would be required. The manner of determining the value of property, and therefore the amount to be paid in rates is so lax, and there is so little uniformity in different places, it is surprising that litigation on the subject ever ceases. According to JOHNSON "a rate is a tax imposed by the parish;" and now as well as formerly the word "imposed" does not always mean fairly assessed. New candidates for office generally profess to be advocates of economy, and resolved to bring down the rates, but they sometimes suggest in a friendly way to voters that they would be able to reduce the valuation of particular premises, for where is the occupant or owner who believes he is fairly treated?

It would be an advantage if the property of the country could be valued by men who have been specially trained for such work. The Poor Law Amendment Acts give authority to guardians to appoint a competent person to assist the assessment committee, and the remuneration is to be derived from the common fund of the Union. But, as is pointed out by Mr. FARADAY, "it would appear to be necessary where a valuer is appointed by a Union to value certain properties in that Union that he should have a separate agreement with the guardians for each parish in which the property he is valuing is situated." This is enough to show how easily obstacles can be raised to valuing on a definite basis. One reason is that in old times the value of property was supposed to be a matter of common knowledge in a parish, and the variations which might arise were never much above or below an average. The custom is suggested by some of the enactments framed with regard to taxes payable to the king. Thus, in the reign of EDWARD III. an Act was passed for the creation of "commissions of review," who were to go through the country in order to ascertain whether the levies in money were obtained without abatement, or if any were passed over. It was then commanded that "from henceforth the people shall be taxed after the old manner, and not otherwise." In fact, it was a principle of the law of England that no one was to be twice charged for his property. To attain that end local knowledge was reckoned preferable to any skill a stranger might possess.

Rent is assumed to be a sufficient standard for adoption for valuation purposes. But efforts are often made by those who have to fix rates to compel a tenant to pay on a higher basis, on the ground that the rent then paid was fixed by considerations which should be taken into account, for they were not altogether just to the Union or parish. If the rent paid by a tenant at an earlier time was higher, an endeavour is made to assess on that amount. Or it may even be stated that by fully utilising the property it would be easy for an occupier to derive from it far larger sums than those required to meet an increased taxation. The judgment which was delivered by the late Mr. Justice LUSH should always be kept in view when such cases arise; or, in other words, the present value is to be considered rather than the past or the future. According to his Lordship:—"The rateable value of property is not to be determined by what it once was or may hereafter become. If a piece of fertile land were to be covered by the ashes of a volcano or by an inundation, it would have no rateable value so long as it continued in that condition. So also, on the other hand, a barren rock, so long as it remains a barren rock, has no rateable value, but the moment it is worked as a quarry it becomes rateable. The rateable value of property must be determined by what it is at the time the rate is made."

It would be useless to question the equity of the adoption of house-rent as a standard of income. MILL maintains that no part of a person's expenditure is a better criterion of his means, or bears on the whole more nearly the same proportion to them. "A house-tax," he says, "is a nearer approach to a fair income-tax than a direct assessment on income can easily be." But circumstances which

are not easily defined often compel people to live in residences which are more costly than prudence would dictate. About half a century ago the then Duke of DEVONSHIRE is reported to have said that he could not afford to live at Chatsworth for longer than a month in the year, and many agents and surveyors assert that large houses are always obtainable on cheaper terms than those of moderate size. The outcry raised on the discovery that at one time houses like Belvoir and Chatsworth were rated at not more than 200% a year was therefore not altogether justified. In the same way the ground-rent is sometimes supposed to bear an insignificant proportion to the rent of the building, and that it falls always on the landlord. But it will be found that a leaseholder, in addition to his annual ground-rent, often pays a sum equivalent to what would be required to change the building plot from a leasehold into a freehold. This is easily managed. When the sites are "eligible" a speculative builder is sure to add to the cost of erection a liberal sum to represent the advantages of the position, and which is all profit to him. The building-rent and the ground-rent in reality differ from what the economists mean by those phrases.

The old-fashioned system of regarding rent as a basis hardly corresponds with the arrangement now enforced, by which all houses from 40% upward are treated as one class. As Mr. FARADAY points out, "there is a maximum rate of deduction from the gross value or rental value to arrive at the rateable value, and notwithstanding that the Act says that the rate of deduction shall not be more than it provides for, there is no clause which says it shall not be less."

The assessment of houses is exceedingly simple, and on that account when a poor rate was first established it was not anticipated there would be any difficulty in determining the valuation. But in the course of time buildings were erected for purposes which were unknown in the Elizabethan period, and their assessment demands considerable judgment on the part of valuers. In theatres, for instance, there may be boxes which are held on lease and which have to be treated as separate properties. Some charitable institutions are only nominally rated. But hospitals are assessed by a percentage on their structural value and a percentage on the value of the site. Private lunatic asylums are valued at a high rate; and what seems most extraordinary, workhouses, which may be considered as representing a part of that provision for the poor which originated rates, are not necessarily exempt. Indeed, the apparent anomalies are so numerous it is strange that the assessment of property should ever be allowed to be conducted by ordinary shopkeepers, who in the majority of cases prepare lists without any professional aid.

Mr. FARADAY'S volume justifies the promise of the title, for it deals with "Principles, Practice and Procedure." It is comprehensive and an earnest effort is made to impart some unity to subjects which are sometimes regarded as too diversified for classification. He has had the assistance of Mr. VULLIAMY, who is a solicitor, and has been long engaged with the duties of assessment. It will be found a most useful addition to a practitioner's library, as well as to land agents and others who are connected with rateable property of all kinds.

NEW NATIONAL GALLERY, EDINBURGH.

THE following evidence relating to the inadequacy of the existing National Gallery and the necessity of the erection of a new building was given by Mr. John Honeyman, R.S.A., before the departmental committee of the Board of Manufactures:—

You have come forward to give evidence on behalf of the Royal Scottish Academy, I think, specially with regard to the question of space for the collections?—Yes.

I may take it, from what we have seen ourselves to-day, that there is practically no room for expansion, even if there is sufficient room for the existing pictures?—That is my opinion.

What would be your view as to how the extra space should be acquired?—There are three proposals made by the Academy, one of which is the erection of new galleries on a new site. Another is the making of an addition to the present gallery, and the third is to give the building to the south to the National Gallery, and this building for the use of the Royal Academy.

* Rating: *Principles, Practice, Procedure*. Second edition. By Philip Michael Faraday. The legal matter revised by A. F. Vulliamy. (London: *Estates Gazette*, Ltd.)

Turning this building in which we are now into galleries?—Yes, gutting it out entirely and turning it into galleries. I think it will probably be considered for your convenience if I strengthen my evidence as much as possible and not go into details of detail very much, unless I am asked.

Certainly, if you give us the general lines, and if members of the committee wish for further information they can ask for the details?—Well, I have come to the conclusion, after very careful consideration, that neither of these latter proposals should be entertained.

The latter proposals are those dealing with this building?—The second and third—that we would require to fall back on the first, that is, the erection of a building for the National Gallery on a site where expansion would be possible. My view is that for the purposes of such a building, as has been abundantly proved—especially in London, where enormous sums have been expended to gain a little addition from time to time—it should be an essential condition that the possibilities of the future should be provided for, especially with the hope we have that under better conditions the National Gallery will grow at a much more rapid pace than it has hitherto done. It seems all the more essential that provision should now be made for its extension to a very considerable extent, so that the site might be retained probably in perpetuity without difficulty. There is another objection to the conversion of this building which I might just refer to—to the gutting out of this building and spending a lot of money on it—that after all it would be merely a temporary expedient which would not be worth the large expense involved in doing it, and also that there is some doubt in my mind about the advisability of spending much money on this building, because it is a very well-ascertained fact that the foundations are not in a satisfactory condition. It rests on wooden piles; it depends on them at all events chiefly, and these have reached a stage of decay in which we may expect the progress of decay to become much more rapid.

It takes it incidentally that this building is not fireproof?—No, it is not fireproof.

And it would be desirable in housing a National Gallery of pictures that the building should be fireproof?—Yes, so far as possible—indeed, it is quite practicable; it would be decidedly practicable. Without touching further on the existing arrangements, if there were no other reason for going out, there is, I think, that it is quite impossible to add to the National Gallery any other you house it in the present building or in this one here and convert this for its use. I may pass on to say that an idea occurred to me which would probably meet the requirements of the case, and also conduce to economy in the first instance, and that is to remove all this building entirely to the Calton Hill, and transfer the location of the National Gallery to that position. It is a very superior position in every respect except one, and the objection to removing the building is purely a sentimental objection. The Calton Hill, from our point of view in Glasgow, at all events, is a very central position. We are accustomed to greater distances. The Calton Hill is within ten minutes' walk of the very centre of Edinburgh, and the very centre of bustle and traffic in the neighbourhood of the Post Office and Register House; and even if you take the boundaries of Edinburgh, which now extend to Portobello and almost to Corstorphine, and from Calton Hill to the very south side of Morningside, the position is very centrally, and entirely different from what it was as I can well remember Edinburgh more than fifty years ago, when the prevailing notion was that it was a very out-of-the-way place. In fact, it is not. It is a place of easy access, and it would be entirely free from a disadvantage which exists at this place here, and that is the dust from the road, which almost circles the buildings, and the smoke and the dust from the motive engines passing below. There are none of these objections to the Calton Hill, and there is ample ground there to transfer this building, which would save a great deal of expense in the erection of a new building, and would preserve the building which is justly appreciated by everyone in Edinburgh. It would also effect a very great improvement here in the part of Princes Street, which might be a consideration to some of those interested. This building was rather a prominent and important building when it was erected, but at the time there were few houses west from here, unless in Princes Street, and the houses that did exist were two-storey houses—ordinary dwelling-houses with areas in front of them—and therefore this was a very imposing building, but now it is entirely overshadowed—and dwarfed, in fact—by those enormous hotels and drapery establishments which go along the other side of the street. That has imparted a rather degraded and low appearance to it, and therefore it would be a very great improvement if it were raised to what might be called a more dignified position, where it would look down upon those buildings; and it would also have the effect of opening up the full vista from west to east of Princes Street, which is now obstructed for a considerable distance by the presence of this building. It would also improve the facilities

for traffic along the front of it, which projects awkwardly into the street. That is a thing which I see no difficulty whatever in doing. The building, stone for stone, could quite well be transferred to that site at the Calton Hill.

May I ask, incidentally, to whom does the Calton Hill belong?—I am not sure.

Would the site have to be acquired?—I have not the least doubt it could be acquired from the Corporation. I think they are the proprietors or custodians.

Do you think they would place the ground at your disposal?—I think they certainly would, in exchange for the very great improvement that would be effected here. I have no information on that subject, but I assume that that would be the case. If this building were properly cut up into galleries that would provide not far short of double the accommodation the National Gallery has at present, and that would certainly do for some years, and it would be permanent. The money spent upon it would not be merely for a temporary expedient. So far it would be absolute gain, and if the circumstances required, of course it could be extended there to any extent. It would make ample provision for all the growth of the Academy for this century, at all events, and perhaps for ever.

You would place in the new building you suggest on the Calton Hill both the Academy and the National Gallery?—No. I beg your pardon, I should have said only the National Gallery.

Because you mentioned the word Academy?—It would leave it practicable to give the whole of the existing building to the Academy.

Would you house the Royal Society in the building on the Calton Hill?—No. That would hardly suit the members, I am afraid; but I must say I have not much sympathy with the Royal Society. I think they are quite in a position to do what the corresponding Society in Glasgow did a good many years ago. The Royal Philosophical Society of Glasgow, which is quite a similar institution, built a place for themselves, and they did so without any Government grant or without any assistance of the kind, whereas I understand the Royal Society has a yearly grant of 300*l*.

They pay 300*l* a year for their rooms?—Yes, I think they probably apply it in paying the rent of the rooms; but with such a subsidy they ought surely to be able to provide a place for themselves if the other Society could do so a good many years ago without any subsidy at all, because, of course, the 300*l* would be a very great advantage in the way of money negotiations in doing a thing of that sort. Therefore, for my own part, I think it would not be advisable to allow any consideration of that sort to interfere with the proper accommodation for art purposes in Edinburgh.

Don't you think that the Royal Society of Scotland should be housed in a public building?—The Royal Society of Edinburgh.

Well, it occupies rather a different position, and has always occupied a different position, from the Philosophical Society of Glasgow?—Nominally I admit it does.

And in the general opinion of scientific men too?—Yes. I do not mean to differ from that opinion at all, and it has also a sort of prescription, you may say, in having accommodation here for so many years. All these things, I quite admit, are worthy of consideration, but at the same time my position simply is that the mere question of giving them accommodation, when it could be got elsewhere, should not interfere with carrying out a great and beneficial change in regard to the other institutions.

What would happen to the schools that are carried on in this building at present?—The schools, I think, are generally admitted to require more drastic treatment. That is to say, there must be some other institution for the tuition in art than exists now, properly organised and properly equipped according to modern ideas, and that could not be done here.

And that would require fresh buildings elsewhere?—That would require fresh buildings.

Then your claim is one of financial magnitude?—Yes, if the building of a school of art is connected with it; but that is a matter that is required in Edinburgh quite apart from anything that is done here, and quite apart from anything that is done by the Board of Manufactures. It is generally admitted to be an absolute necessity.

Don't you think there would be an irresistible outcry about such a proposal as to take down this building and cart it away to somewhere else?—I do not think so.

As matter of fact, in spite of its being surrounded so closely by the buildings of Edinburgh, it is a very famous example of a famous architect, and it has been very much admired in its time. Do you think it would be practically possible to carry through such a proposition as you make, to take it down and build it up somewhere else?—I do not contemplate destroying the building, but preserving every bit of it, and preserving it really on a better foundation and in a very telling situation.

But don't you think that in the present state of opinion such a modification of the outline of Edinburgh, and such

drastic treatment of a building which has been known to two or three generations of people, would be opposed so strongly that it could not be carried out as a matter of fact?—I think it would be opposed by a certain section, but I think the more it was looked into the better chance there would be of people agreeing to it. For the purpose of giving an indication of the treatment that could be made of the site, I have prepared a rough block sketch which I have no doubt you, Mr. Chairman, will at once understand. The idea would be to sweep this building away entirely, and treat the space between Princes Street and the building on the south side of the Mound (the present Royal Academy and National Gallery) symmetrically, taking the centre of that building as an axis. That leaves the road up the Mound untouched, and the boundary of Princes Street Gardens untouched, and there would be just a clear space between Princes Street and the National Gallery building, which would then have a very good effect, and the vista along Princes Street would be enormously improved. You would see the Scott monument from a much greater distance west, and you would see west from a much greater distance east. If people look at the thing as it actually stands, and imagine the change, I think they will see that this building has got out of its intended position altogether.

Still, its transformation into a National Gallery would involve the displacement of the Board of Manufactures, or whatever succeeded it, and it would involve the displacement of two schools, and it would involve the displacement of the Royal Society of Scotland, besides the building itself?—These would all be displaced if the third proposal were entertained, that the National Gallery should have the whole of the building behind, because you would require to make a clean sweep of the inside here to provide galleries for the Academy.

That is, if you remove this building for the purposes of the National Gallery; but would not all these requirements be met if a new gallery could be built, giving the space occupied by the National Gallery to the Royal Academy, and leaving this building for its present purposes?—Yes, that would equally well solve the difficulty.

It would solve the difficulty the same as your scheme would do, but you say that yours would add to the public improvement of Edinburgh?—Yes.

But so far as the committee are concerned, in making a recommendation for the benefit of the galleries of Scotland, surely if, for the sake of argument, a National Gallery were erected on the Calton Hill, and this building left to its existing purposes, and the place now occupied by the National Gallery handed over to the Royal Scottish Academy, you would have all you wanted?—That would meet all we want.

And a building on the Calton Hill, on that supposition, could be adapted to the Calton Hill?—Yes.

And we would not be tied to having buildings suitable to one site and not suitable to another site?—No; that has much to recommend it from an architectural point of view as well; but my suggestion was rather with the view of economising to some extent, as we have been rather pushed for money to carry out improvements in Scotland for a good many years, and also with the view of preserving this building and putting it in a more telling position than it is placed in now. It is very much overlooked and dwarfed by the existing buildings here. But, so far as we are concerned, what you suggest would amply satisfy us.

Would there be very much difference in the cost of taking down this building and removing it, and putting it up again on the Calton Hill, compared with building a new building with similar accommodation on the Calton Hill?—Not a very great deal, not many thousands.

Do you think there would be any at all?—Yes, there would be some, every stone would be used.

But the whole structure would have to be reconstructed, because the arrangement of the rooms at present would not be suitable for a National Gallery?—Yes.

You save a lot of hewing?—Yes, a building of this character, with all its columns, involves an enormous amount of hewing, and that would all be saved.

But you would not necessarily put a copy of it on the top of the Calton Hill?—Certainly not.

Can you tell us anything more about the foundations; that struck me as very important?—In regard to that, I may say that some years ago, in conversation with Mr. Stevenson, C.E., of the Northern Lighthouses, he told me that this building—in fact, both these buildings—were a source of constant anxiety to him. He was never sure of what was going to happen next. There was always some settlement appearing or some difficulty about the foundations; and I have since heard that idea confirmed by statements that were made to me in Edinburgh by architects and others.

Who is the architect in charge of these buildings now?—The Stevensons were employed professionally.

Was this communication in recent years?—Within about ten years.

Of course in early days there was a good deal of trouble with the foundations?—Yes, this corner was rebuilt not long ago, and a foundation of piles is not an easy thing to put right—to extract old piles and put in others with a proper bearing. Still, if the building is retained here for its present purposes, it may last for a great many years just as it is.

Does the Calton Hill afford a good site for a National Gallery?—I think it does. It affords many advantages.

You mean as to space?—As to space and prominence because every stranger almost goes up to the Calton Hill, and the National Gallery would be kept in sight, as it were, in a very prominent way, and it would be no trouble for anyone visiting Edinburgh to get up. The approach might be improved, but even as it is, it is no great matter.

I have stepped it, and there is space between the National Monument and the east side of the observatory?—It would be possible architecturally to group it with the National Monument if there was a chance of the building being built, but I do not think that would be advisable, and it would not interfere with the building at all. There would be plenty of room for it, and no necessity for interfering with the picturesque look of the Hill as it is.

It might add to it immensely?—It might add to it immensely, building a proper gallery there.

I was going to ask whether, if the Academy were to obtain possession of the whole of the buildings, which they have no part of, much alteration would be required?—None would be absolutely required, but there is an objection to these octagon rooms. It would be more convenient to have them square but that is a mere matter of having partitions run across the corners. There would really be no necessity for any alteration. Another idea that occurred to me was that in the event of the National Gallery being transferred to the Calton Hill the offices of the Board of Trustees might still be in the building up here. It would be more convenient to the members of the Board to have their offices there—that is, the space occupied by the sub-curator now. That could easily be made into offices for the Board of Trustees.

The departmental committee, in their report, say:—Having asserted the need for a new National Gallery we felt bound to indicate the sources from which the money should come for its construction. It has already been pointed out that the Board of Manufactures, out of savings from the annuity under the Treaty of Union, built the Royal Institution at a cost of 47,000*l.*, contributed 20,000*l.* towards the cost of building the National Gallery, and has expended out of its capital on these buildings and the National Portrait Gallery large sums. In London and Dublin the expenses for buildings and for extensions of buildings for the national collections have been defrayed from the public exchequer; and Scotland might quite fairly claim that her new National Gallery should be built out of public money exclusively. Still we are prepared to suggest that, in the event of our other recommendations regarding the National Gallery being adopted, a sum of 20,000*l.* might be advanced from the accumulated capital of the Board of Manufactures towards the construction of the new gallery, the rest of the cost to be borne by the Exchequer. We have no doubt that the Town Council of Edinburgh would be very generous towards providing a site for the new National Gallery as they were fifty years ago towards that of the existing one.

We would only make this addition to our recommendation. A National Gallery will take several years to build. The want of space, already noticeable, will be more keenly felt year by year. We would strongly urge, therefore, that steps be immediately taken by the Board towards the acquisition of a site and the commencement of the construction of a new National Gallery.

RECENT DISCOVERIES AT KNOSSOS.

ON Tuesday Mr. Arthur Evans addressed a meeting of the Hellenic Society on "The Last Campaign at Knossos." During the last season he had expected that the work would be finished in a month or two, but there were unexpected developments, and he lighted on the remains of outlying buildings adjacent to the palace. These proved to have been structures of an earlier period, and constituted interesting additions to the first discoveries. There were some closed one or two houses apparently of high officials of the court. On the north-east side of the house there was a characteristic room with a square pillar in the middle. There was also a window in the outer wall, and on the portals he discerned a beautiful fresco of lilies. There was also a space of porphyry or similar material, and close at hand a wall-painting of olive or myrtle sprays. At the back he found a columnar chamber on the floor of which was a quantity of curious pottery which appeared to have been dedicated to sacred purposes. The house itself, with its double colonnade, was in fact a kind of miniature of the palace. On the north-east of the palace there was a sort of royal villa. The site

hill was tunnelled, and going through the passage he struck on a stone staircase from which two smaller staircases branched off. More searching investigation disclosed a perfect Minoan house, the elevation of which might be seen in elaborated detail on the screen. The main entrance was from a terrace above, and traces of upper storeys were discernible. There was also a noble doorway which led direct into the largest hall of the palace. This system of open halls which might be shut off at will secured coolness in summer and warmth in winter. One of the most remarkable features was a recess in which were found the remains of a throne—indeed in these early times there were many of the features which marked a Christian basilica. It was clear that this tribunal was a seat of honour. An elaborate system of lighting had also been devised. There were other rooms which, like the one to which he had referred, had a pillar in the centre. The roof was made of timber more massive and solid than any now found in the island. Many interesting objects were found in the house—among them, vases of a wholly different character from those in the palace itself, and wall-paintings of designs like those of the vases. Two of the latter were specially beautiful, with papyrus relief forming good examples of the later palace style. The house itself was built against the rock, and in it there was a system of corridors, light wells and other arrangements for excluding the damp. There were marked evidences of the careful attention bestowed on sanitation by Minoan builders. During the season pits were sunk, and they came to a lower pavement and a large stepped area. The remains were in a decayed condition, but the line of the outer wall could be made out and the general dimensions were fairly ascertained. The stepped area was, it would seem, a primitive theatre, though it was hard to conjecture the character of the performances. A dance of the workpeople was given in the course of the work, and they danced in wandering fashion, recalling the maze of ancient days. The entertainments could hardly have been bull-fights, but there was probably boxing. Near at hand were very singular miniature frescoes of gaily dressed women. Close by was a building of great complexity of wall, and on the ground were many objects illustrating the local cult of the double axe. A group of fine bronze vessels was also found with a foliated design and motifs of an Egyptian style not unlike those of Thothmes III. The ornament was of a lotus and papyrus development. On a lower level were vases of an earlier period, which might perhaps be assigned to the third millennium B.C., when Crete was in communication with the Egypt of the twelfth dynasty. This might be termed the middle Minoan period, and the work was of elaborately beautiful design. There was also a deposit of earlier times, which might be called Early Minoan, ranging from the sixth to the eleventh dynasties of Egypt. The ware was incised, and appeared to fit on with late Neolithic work. There was altogether a depth of about 25 feet of deposit at Knossos of different periods. The remains of the earlier period appeared to have been deposited, probably after some revolutionary movement. It might be stated with reasonable probability that the latest part of the place was of the date of 1500 B.C. Many of the objects appeared to be religious emblems, and the goddess and the lions frequently appeared. These were found in what might be presumed to have been a sanctuary disclosing the relics of a shrine. The pottery was like the early work of Melos. The religious character was found on many of the seal impressions in which the goddess and the lions were seen and snakes held in the hands. It was a surprise to come upon faience figures of women in a strange costume beautifully embroidered. Initiatory rites with snakes were figured in this faience, which showed the extraordinary perfection of the art of the middle period. There was also a very remarkable faience relief of a wild goat and kids. The Italian mission had discovered a smaller palace and sarcophagus, which also illustrated the cult of the double axe to which he had referred. The inference was that the kings, like Minos himself, had a sacerdotal character—were priests as well as kings.

YORKSHIRE ARCHITECTURAL SOCIETY.

THE annual general meeting of the Leeds and Yorkshire Architectural Society was held on the 19th inst. The air was taken by Mr. Butler Wilson, the president of the society.

The President's prize of five guineas and the silver medal measured drawings of Whitby Abbey were presented to H. Winterburn; Martin Shaw Briggs took the first prize for sign, and Ralph Thorp the second. The prize for construction was won by P. A. Horrocks, for sketching by Ralph Thorp, and for essay by P. A. Horrocks.

In the course of his address the President referred to local alterations. He said:—

During the last few years Leeds has seen the sweeping away of vast blocks of dilapidated and insanitary property and the upraising of structures, whether beautiful or no, at least fitted with every modern convenience and appliance. Broad

thoroughfares have appeared, some of them leading to nowhere in particular. The electric tramways have created, whether legitimately or not, an inclination on the part of the authorities for rounded street corners; an inclination which has developed into a mania, born, I presume, of a passion for the curve of beauty.

Whilst upon the making of new streets, one is constrained to consider whether our arteries of traffic can be diverted by the tempting prospect of a broad thoroughfare which is even a little off the main line. The answer is emphatically "No." It is easier to turn the course of a river than to divert the natural stream of a city's traffic. That stream will pursue its natural tenor however restricted the confines. The moral would seem to be that it is wiser to spend money upon widening the existing natural veins of traffic rather than upon the creation of new thoroughfares in the midst of which one may stand, secure from harm, and listen, amid their spacious silence, to the rumble of traffic in the congested but natural artery only a few yards away. It is pleasant, of course, to possess these fine streets, so quiet and peaceful, where one is enabled to indulge in musings so far and yet so near the maddening crowd. But I submit that it is somewhat expensive. Piecemeal improvements are futile unless they form part of a pre-arranged scheme. After the Great Fire, London missed its chance for evermore of rising from its ashes and taking the shape of a nobly planned city, owing to its neglect of the admirable plan for its re-formation which was prepared by Sir Christopher Wren. No such mistakes were made by Paris and Washington. I do not suggest for one moment that we are in a position to follow their example to the full, but surely we can do something in such direction. As a means of thoroughly realising the position, I would propose that a map of the city be prepared with the streams of traffic shown and the varying density of such traffic indicated by distinctive colours. Street improvements should be guided by that record. Do not railway companies, when asked for additional trains, commence by checking the number of passengers they are carrying and so arrive at a decision?

An interesting paper on this question was read before us last session by Mr. Musto, one of our members, who went to great trouble in preparing plans illustrative of his ideas. One of these, referring to the widening of Vicar Lane, is exhibited here this evening, from which it will be readily seen that this street instead of pursuing its present aimless wanderings could with a little forethought have been constructed in a perfectly direct line from the dispensary to the new markets without additional expense.

Our Society has been twitted with the remark that it always raises its voice after the event, when it is too late to adopt our suggestions. We contend that we cannot suggest improvements in schemes of which we have no clear and definite knowledge, and that such intentions should be frankly made known to both profession and public. The City Council reply that they must conceal their intentions, or owners will unduly inflate the price of land which it is ultimately intended to purchase.

They do not work on this principle of secrecy in Paris. They pursue a directly opposite course, with results the success of which is beyond contention. We will see how much secrecy enters into their mode of procedure, which is as follows:—Plans are prepared to fully demonstrate the scheme, and it is announced by means of placards and newspaper advertisements that an inquiry will be held. For fifteen days the plan is publicly exhibited in order that citizens and others interested may examine it and record their observations in writing. One would think that this would suffice to ventilate public opinion; but they court still further criticism. For three additional days a specially appointed agent attends to record all verbal observations made to him regarding the scheme. The agent also prepares a full report, giving his own opinion on the scheme, which is forwarded with all other documents to the City Council, and should it be determined to modify the scheme a revised plan is exhibited. The plan and reports are then submitted to the Ministry of the Interior which controls the whole of the thoroughfares of France. If approved the scheme becomes effective by the signature of the chief of state to a declaration of its "public utility."

The idea that the proposals of our City Council can be altogether concealed is, I contend, fallacious. If I am wrong, and it is a fact that there is successful concealment, then Leeds ought to feel proud indeed in the possession of a corporate body and an official *personnel* from whom nothing, short of rack or torture chamber, can drag prematurely the secrets which they have sworn to keep inviolate.

Mr. G. B. Bulmer proposed a vote of thanks to the President for his address.

Mr. H. S. Chorley (hon. secretary), in seconding the vote of thanks, said that during the three years that Mr. Wilson had occupied the office of president the membership of the Society had increased from 110 to 130, and the Society showed every sign of continuing to increase.

NOTES AND COMMENTS.

AN important report by Professor UNWIN has been issued by the Engineering Standards Committee. It relates to the "influence of gauge-length and section of test-bar on the percentage of elongation." It was a common practice to cut strips 2 inches wide from plates when tests were required. But as in the case of cement briquettes, it is now supposed uniformity of width is not desirable. Professor UNWIN has come to the conclusion that a normal test bar should have more width at the ends than in the middle. He represents one with two ends $4\frac{1}{2}$ inches each in length and a central part having parallel sides of 9 inches or 8 inches gauge; for, as he says, "nearness of enlarged ends to the gauge-length diminishes the percentage of elongation; hence the parallel part should be rather longer than the gauge-length, and curves should join the parallel part to the enlarged ends." For plates from $\frac{3}{8}$ inch to $\frac{7}{8}$ inch in thickness it is suggested the gauge shall be 8 inches and the cross section of the test-bar shall not exceed 1 square inch. The maximum width of the bar need not exceed 2 inches.

ALTHOUGH the University of Liverpool is only a young institution it possesses a department of Egyptian archaeology. We also learn that an opportunity is about to be offered for exploration in Egypt. A firm has been obtained authorising the resumption of work in the necropolis of Beni-Hasan, where Mr. JOHN GARSTANG was engaged in excavations last winter. Objects derived from the place are in the museum of the university. Beni-Hasan has long been known to explorers. Columns seen there were supposed to be the prototypes of the Doric shaft. It was also believed that the arch was recognised in constructing the ceilings of tombs. The coloured figures imparted an additional impetus to inquiry, and ethnologists discussed whether some of the figures were not representations of the Jews. Beni-Hasan has afforded materials for many volumes, but it is far from being exhausted. Archaeology has demonstrated the value of objects formerly little prized. It is proposed to undertake the exploration of a great tomb near Negadeh, a place where a Roman temple was discovered by M. PRESSE. The tomb is by some thought to have been that of MENES, the first king of Egypt and the creator of Memphis.

THERE was a time when the name of QUATREMÈRE DE QUINCY was familiar to architects in England. His speculations about the Principles of Taste, especially with reference to buildings, were studied with respect. He was also fond of making designs to suggest the character of famous works of art, such as the chryselephantine statue of ZEUS by PHIDIAS, or to attempt the embodiment of imaginative works like the "Shield of Achilles." He made a model of the western pediment of the Parthenon from NOINTEL's drawings, and was the first to demonstrate that the remains of the principal figure belonged to a *Neptune*. He was also one of the earliest to explain the system of polychromy as applied to sculpture and architecture by the Greeks. His name is now rarely mentioned, but he deserves remembrance, for he was one of the few aestheticians who possessed a knowledge of the processes of art. On the 13th inst. an effort was made by the venerable M. WALLON to revive an interest in QUATREMÈRE DE QUINCY by reading a paper on his life and works at the annual meeting of the Académie des Inscriptions et Belles Lettres. It is remarkable that M. WALLON was his successor. QUINCY died in 1849, and consequently the same chair has been occupied by the two savants for a century.

A DESIGN has been prepared by Sir S. S. JACOB, superintending engineer, Jaipur, Rajputana, for the canopy to be placed over the statue of the late Queen VICTORIA at Ajudhia. The style, it is needless to say, will be Hindu, for the designer is well known for having directed the production of the noble work on Indian art which was brought out at the expense of the Sultan of JAIPUR. The foundations of the canopy will be of brick masonry on a bed of concrete. The terrace will be 40 feet square and raised $6\frac{1}{2}$ feet above the ground, the approaches being by a flight of steps 13 feet 6 inches wide. At the corners will be kiosks. The canopy will be of Jaipur marble, supported by four bracket columns with capitals projecting 5 feet. The

outer covering of the canopy is formed of horizontal rings terminating in a sikkar or spire. The estimated cost is 49,967 rupees.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: THE NAVE ARCHES.

STOKE NEWINGTON SYNAGOGUE.

THE new synagogue in Shacklewell Lane, Stoke Newington, was consecrated in September of this year, being the fifteenth and latest constituent of the United Synagogue. The synagogue and schools, with forecourt and outbuildings, stand on a site of 135 feet frontage by a depth of about 110 feet, the synagogue building being 95 feet long by 58 feet wide, and the internal dimensions of the place of worship 64 feet by 54 feet. The gallery and roof are carried on iron columns. On the gallery level at the west end of the building is a committee-room, separated from the synagogue by shiftable shutters, so that this room can be used as part of the gallery by the poorer female portion of the community during the high days, the ladies occupying the gallery floor while the men use the ground floor, as is customary in Jewish synagogues. At the east end of the gallery on both sides is an emergency exit leading into the garden outside the building. The seating accommodation is for 434 males and 295 females, the seats being of pitch pine made by Messrs. HARBROW. The Almemar, or reading-desk, and gallery front are of pitch pine and oak, made by the builders, Messrs. PERRY BROS., of Whitecross Street, City. The pulpit has been specially designed by the architect. It is in the Ionic style, is five-sided and made of Carrara marble, the base, steps, balusters and electric-light newels being all of the same material. The small capitals and fluted pilasters are carved and polished in high relief, the front panel has the Shield of DAVID also in high relief, and with diminishing dentils with trusses on either side. The side panel records the fact that it was presented by Mr. GUSTAVE TUCK. The whole of this work was carried out at the works of Messrs. HARRIS & SON, under the personal superintendence of the architect. The steps up to the Ark, with the balustrade on each side, are also of marble wrought by Messrs. HARRIS & SON. The two tablets containing the prayer for the Royal Family have been made by the same firm. The Ark, which corresponds to the altar in a church, has been made by Mr. BOEKBINDER, of Pratt Street, Camden Town, from full-sized drawings supplied by the architect. Mr. BOEKBINDER has also carried out all the internal plastering work. The floor space in front of the Ark is of marble mosaic, and the floor of the entrance hall is of terrazzo mosaic supplied by Messrs. EBNER. The stairs are of composition stone, and of course comply with the Building Act as regards safety from fire. The front of the building is of red Istock bricks ornamented with terra cotta. The heating of the building has been done by Messrs. BURROUGHS & SON, and is arranged so that the synagogue shall be warm during the coldest weather. The electric-light fittings have been supplied by the General Electric Company; and the electric installation has been fixed by Mr. CREWE, of Chapel Street, Cripplegate. At the north end of the synagogue site is a school divided up into four rooms by movable partitioning, so that the whole room, which is 64 feet by 20 feet in the clear, can be turned into a place of worship for some 250 children during holy days, or can be divided up into four classrooms for the Sabbath classes. This school has a flat leaded roof, with glass movable light in the centre, so that it can form a Succah during the Feast of Tabernacles, 32 feet long by 20 feet wide. At the west end of the schoolroom is a small room for the master's use. The architect is Mr. LEWIS SOLOMON, of 55 New Broad Street. The synagogue has been built mainly for poor members of the community who inhabit the district. The architect has therefore not spent any money in elaborate ornament. The whole of the building is finished in white, which gives a very light appearance to the structure. The cost of the site and building together is about 12,500*l*.

COWLEY MANOR.—BALL ROOM—BILLIARD-ROOM.

PURLEY LODGE, BOSCOMBE, BOURNEMOUTH.

THE RED HOUSE, BOURNEMOUTH.

THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. R. S. Balfour, vice-president, in the chair. The following were elected as members:—Messrs. H. S. Coll, J. A. Wilson, F. S. Chesterton, C. W. Lucas, G. Ward, R. H. Browne, L. Velasco, H. de A. Broun-Morison, Collard, S. Murray, S. L. Steane and L. G. Rayner. M. H. Field was reinstated a member. Mr. H. M. CAUTLEY read a paper on

Farm Buildings.

will be within the memory of a few of you, and I hope very few, that but twelve months ago I read a similar to this before the Discussion Section of this Association, the practice of farming does not vary so rapidly as to have changed much in that time, I am afraid that much of what I said must be repeated now; but I have been at pains since to solicit fresh facts from my farmer friends, and to settle my opinions on several points, which I did not then dare debate, in order to fit myself for and fill the wider scope enjoyed by a paper. I am fully aware of the diversity of conditions under which farming is engaged upon in this country, and that the problem is satisfactorily solved in the west country would require a very different solution to be equally satisfactory in the east, the underlying principles are essentially the same, so that I will speak to-night wholly from within my practical experience gathered on farms and amongst farmers in the eastern counties; and as the one condition that does not vary is that of the agriculturists' finances, I shall restrict myself to the description of that type of buildings and fittings in which the truest economies are effected, and thus made most suitable to meet the requirements of those to whom farming is a real business. It is so easy to be elaborate, so difficult to exercise economy, no difficulty will be experienced when one has to build a farm for a rich hobby-rider: in introducing the porcelain and the catalogue's nickel-plated fittings for the humbler farmer, the principle remaining the same, and the only important being that they are entirely suitable for their purpose. And now as to the site and position of the buildings. The essential, of course, is a good water supply for both house and outhouses. You will, no doubt, have noticed that this necessity is provided for by our ancestors by grouping all the buildings round some good pond, and though no doubt picturesque in the days of windmill-power and hydraulic rams, some further economies must be adduced for planning the buildings about the water. The next most important point, in my estimation, is to get the building quite close to some hard metalled area maintained at the public expense. A farmer's private road in and about his holding are a perennial source of expense to him, and I have rarely seen them except in such a position that the labour of carting is doubled. In this year, when I have seen corn unable to be carted from the land owing to its heavy state, there seems an added importance to this point. As to the position of the buildings on the holding, in an ideal one they should be as near the centre as possible, unless the slope of a hill, when it should be nearer the top to save uphill carting of manure. Of course, it will be thought that is left the uphill carting of the crops, but with the improved machinery of to-day, threshing and winnowing can be accomplished all in one performance, and thus there is no necessity for bringing all to the stack-yard adjoining the barn, which can be stacked in the field it is cut in and marketed straight from there. In dairy farms, however, the buildings should be near the centre of the pasturage part of the holding, in order to avoid fetching and feeding the cows from long distances. And further good points one might look to find in an ideal homestead would be a dry, healthy soil, easy drainage and sheltered southern slope. The best aspect for stock is no doubt south with a touch of east in it; but when building on a slope, unless the aspect is very wrong, the building should perhaps be placed across the direction of the slope, or some very awkward steps will have to be dealt with. Finally, in rebuilding old homesteads—and in England a good deal of our work must be with such—do not accept it as an axiom that they should be rebuilt on the old site. Some of the advantages should be looked for on the holding, and in greater measure at some other point rebuild your homestead there! Do not be afraid of leaving one or two buildings too good to be pulled down isolated; they will prove a variety of objects. And now, having to erect a new homestead, what should be the arrangement and construction? Of the conditions which govern it we are sure. It should be built with an eye to the economy of construction and maintenance in the most saving and convenient manner possible; but, above all, it should provide for the most suitable and sanitary housing of the stock that they may be maintained in the most healthy

and therefore profitable manner. Should the solution of this problem seem easy to anyone, I am afraid its appearance will be found very deceptive, for I have never seen any group of buildings for a mixed farm even when I have visited so-called "model" buildings which were not teeming with defects.

I have not come with any perfect plan, nor am I prepared to tell you how it may be attained, but I believe that it will be found somewhere between the two extremes presented by the old-fashioned and modern or "model" homesteads. But perhaps it would be most helpful to glance at the advantages and disadvantages of both. In an old homestead there will generally be a large rambling old barn of flail-threshing memory, with perhaps the cow-sheds ranged about same; then the stables will be in an entirely separate block, the piggeries in another, the granary, chaff-cutting house and cart-shed in another, and various outlying loose boxes and small cow-sheds wherever there is an odd corner. In addition to this, the yards are nearly always of a much too large size, rain-washed and wasteful of litter, all tending to the making of bad manure, whilst apparently the aspect was rarely studied at all. This is obviously not of a labour-saving character, or suitable to the modern practice of farming. It means carrying fodder from the granary to both the cow-sheds and the stables, from the mixing floor to isolated stock scattered about the homestead, and straw from the stack-yard and barn to all the various departments, which, besides entailing endless labour, keeps all the roadways in a constant litter.

But to turn to the modernised type, which common usage designates as "model." Here all the buildings, even down to the fowl-house, are grouped in one large parallelogram, the outside walls of which arise square and gaunt, with scarcely an opening to be seen. I am not urging its ugliness, though I believe it to be the outcome of one of its most practical defects, namely, that everything is approached from within, frequently from internal roads and alley-ways. Were it situated on some of our bleakest wold lands I should find excuse in the pitiless winds and rains which drive across them, but why when on some sheltered hillside or sunny valley? Did it save roadways, as its exponents urge? I should not even then think it counterbalanced its disadvantages, for think of the indescribable filth into which these internal approaches must be churned, the insanitariness of it all, and on a heavy winter's night or sultry summer's day the stagnation of the exhalations so enclosed. But it does not save roadways; the sparse openings are distributed on all sides and they must have approaches, so I believe the system is even wasteful of cartway.

I cannot believe either that the buildings so grouped can be as healthy and sanitary as those built in more open formation, for the large deposit of manure which accumulates in the yards must have a deleterious effect when in so confined an area, whilst the ravages of disease would be much more difficult to check. The internal alley-ways also make independent walls just as necessary as they are in more open formation, so I do not believe there is any economy effected in construction. In case of fire, too, the whole range of buildings is endangered, and unless the removal of the stock was undertaken early in the conflagration many must inevitably be lost, whilst in any case their rescue would be seriously hampered.

In designing a complete homestead myself I should certainly have as few internal approaches as possible, but everything, as far as possible, approached from a common farm roadway, and whilst grouping the cow-sheds, stock-yards and piggeries under the shelter of the barn, granary, &c., keep the horse-yards, stables and cart-sheds distinct. The staffs that work these two departments are entirely distinct, and if over the cart-sheds a roomy loft was constructed, into which a stack could be threshed direct, the extra labour involved is nothing, as only chaff and corn would have to be carted from the granary block, which is but a small operation, and even if the departments are grouped in one block it is impossible to get them all adjoining the barn and granary so closely as to save all labour and carriage.

But I will proceed to the practical details in connection with the various buildings, only reminding you again that I shall treat of each in its simplest form, believing so thoroughly as I do that all repairs should be capable of being undertaken by the estate carpenter, or else whatever is broken or missing is sure to be neglected till some serious mishap arises through it. For this reason, and for the reason that on most estates enough timber is felled and steam-sawn sufficient for the purpose of repairs, I am strongly in favour of the simplest wood construction in everything but the main fabric. Where it is only a question of nailing a plank up a tenant will always do it himself, but should it be anything less simple, it is either neglected or the landlord burdened with it.

In cart-horse stables it is very desirable that each horse should be provided with a separate division, which must in no case be less than 6 feet wide. In old-fashioned stables it was not at all unusual to find all the horses standing together with no divisions between, but this is much to be regretted. It is but seldom, perhaps, that one horse damages another, but it

will be found that under such circumstances some of the horses will never lie down, much to the detriment of their working powers, and, what is worse, the stronger horses will prevent the weaker from getting their fair share of food. Here then is a strong plea for separate stalls, but it will be found, I am afraid, that many farmers shrink from what they consider such extravagance, when, perhaps, the best compromise is to divide up for pairs, the divisions with 10 feet centres, and the weak horses can then be put together. The width of stables may be arrived at by allowing 2 feet for manger, 7 feet for standing, 12 inches for gutter and 5 feet for passage way behind. The cubical contents necessary, 800 feet per animal, applies to both stables and cow-sheds.

No general rule for determining the number of horses required to be provided for can be given, as to-day many farmers go in for stock so largely that, laying down much grass, the quantity of arable land is greatly reduced, and not so many horses needed. Roughly speaking, a horse to every 25 acres is what is generally needed. The manger should be of 1½-inch plank, and about 3 feet high, with stout, rounded, hardwood chin-piece, preferably in oak, as I believe the acid in this wood makes them most averse to crib-biting. The divisions should have hardwood heel posts, 1 foot in front of gutter and 5 feet out of ground, with, it will be hardly necessary to add, all the arrises taken off, as should be done to all fittings, and the boarding to them may be 1 inch rough, but in any case should not be tongued, neither tongued into the rails (as this makes repairs difficult at once), but nailed one side only, and kept off the ground to prevent decay. I will say nothing about feeding passages behind the manger, as there is not the objection in feeding horses from the front there is with cows, but should it be possible to indulge in this extravagance, there is no doubt that horses would do better with their noses further from the wall.

The doors should be 4 feet wide, and at least 7 feet 6 inches high in two heights, and capable of being hinged right back and there fastened, as should all farm doors, whilst the windows should be of the hit and miss pattern, with glazing over, unless, having a lofty stable, you can put your light in front, but well above the horses' heads, or better still, can bring yourself to put plenty of glass tiles in the back slope of the roof, than which, I suppose, there is really no better way of lighting (at all events for cow-sheds) or of avoiding breakages. But unless the roof is pantiled and glass tiles are being used, large sheets should be employed, as every joint forms a lodgment for dirt and eventually obstructs the light. For the paving in stables a very hard brick will be required, or the iron-shod feet of the horses will make short work of it. Blue bricks on edge will make the cheapest efficient paving, or there is a red brick made at Skier's Spring, near Barnsley, which I believe to be just as good. The fall would be at least one in forty, and the gutter can best, perhaps, be made with bull-nosed bricks, and of sufficient width to allow the free passage of a shovel.

To insure the all-important ventilation I think the best and safest form is still that employed by our ancestors, namely carrying the eaves well over, leaving out all filling between the rafters' feet and raising every fourth or fifth ridge tiles. A fodder and harness-room combined should be in connection with the stable and approached from same. A small compartment opening out of same for chaff is a great convenience, especially if arrangements are made for filling it from outside by a small door high up. Lofts running over the stables, with arrangements for bundling the hay down into overhead racks, are to be condemned on every score. They cannot be as healthy, and even if we do not think the overhead rack a faulty arrangement in itself, filling them from above so that all the dust of the loft gets into their eyes is evidently wrong, whilst the very ease of the operation conduces to the greatest wastefulness, enough stuff often being put down to last a week. If, on the other hand, hay racks by the side of the manger are adopted, and the hay has to be carried separately to each manger, it is far less likely the men will be troubled with this spirit of wastefulness. To form these racks the chin-piece should be carried through, bars let into same and carried down on to a brick pinning about 9 inches high, and the bottom sloped up to the back so as to let out all the hay-seed and dust.

The stables should have direct access to a horse-yard, with shelter sheds in same, in the construction of which it must be remembered that the manure is allowed to accumulate to a depth of about 2 feet before removal, so that the eaves must be kept high enough to allow of it and for the horses to pass beneath; about 8 feet is usual. They are often also made far too shallow, so that little protection is afforded the animals; 14 feet must be the minimum depth, and 2 feet or 3 feet more may be added with advantage. All the eaves should be spouted to prevent the manure being more rain-washed than is necessary, but I would not advocate horse-yards being entirely covered. In the eastern counties we turn the horses out at night, and attribute their hardness to it, which will make evident my objection to doing so.

In all shelter-sheds, cart-sheds, &c., where one has to

employ posts let into the ground to take the roof-plates, one troubled with the constant annoyance of rotting feet and the attendant necessities of spurring them. I have seen various attempts to obviate this. An ingenious one, based on the fact of posts always rotting at the ground level, was to set them in a drain pipe, the top of which was kept 6 inches above the ground and filled in with cement; but the best I think I have seen is the use of steel joists bedded into a block of cement and attached to the roof-plates with angle-irons, but should these be used there must be bolted to both sides of the web, at least for a height of 6 feet, a chamfered block of wood, or serious injury may happen to the animals. Cast-iron columns ought never to be used owing to their liability to fracture; a car backed up against them would in many instances be sufficient to break them, and I have even seen a 4-inch one broken by a bull which found it in its way.

The gates of all yards should be 10 feet wide and hung open outwards and fall right back. When there are gates between two yards they must, of course, be hung at least 2 feet up to clear the manure as it rises; and so, if the yards are ever to be used for pigs to run in, the bottoms must be fitted with elm slips, constructed like miniature gates, to work in grooves formed in the gate posts. Palings make very bad fences between or around yards, but should they be necessary on the score of economy, do not point the tops and let them close, or an animal may get hung up and seriously damaged. For the same reason keep the top rails of gates close enough to prevent animals ever getting their heads through.

Cow-sheds.

In treating of cow-sheds, we come, perhaps, to the most important buildings which go to make up a homestead. Two kinds of sheds are in common use—those for single rows of cows and those where they stand double. No preference can be given to either system, except that in the latter, for a large number of cows, it will be cheaper if the building stands independently, as then one roof takes the place of two; but generally it is possible to arrange some of the sheds lean-to's against a barn or some higher building on the north side, thus giving them welcome protection and making quite economical the roofing of a single shed.

In a shed in which there are two rows they may either be arranged head to head with the feeding passage in the centre, which is perhaps most convenient, as the stockyards naturally flank the shed, the manure can then be thrown straight out into them (though this arrangement makes it difficult to get fresh air to the heads of the animals), or tail to tail, with the dunging passage in the centre and the feeding passage on either side, in which case, however, the manure has to be bundled all the way down the dunging passage to the outside door; but as far as space is concerned, neither of the arrangements is more economical than the other, as may be deduced from the following figures:—The feeding passage must never be less than 3 feet in width, the manger will take up 2 feet, the standing 6 feet 6 inches from manger to edge of gutter; the latter must be 12 inches wide, and the dunging passage at least 4 feet.

I know to some the above length of standing may seem short, but should you make it more the cow will be nearly certain to foul its bed, under which circumstances, not only is the litter wasted, but the milking carried on under unfavourable conditions, for I should think it would be difficult to find a man who would trouble to clean his cow before milking it. I would even advocate a still shorter standing for Alderneys or other small breed of cows. It is usual to tie the animals in pairs, which case the divisions need to be with 8 feet centre, 6 inches, or even 12 inches less, is often given this, but leaves the cows very cramped and also hampers the milker. The divisions may be constructed in much the same manner as those described for stables; but the heel-post is better not so far back, or it will get in the way of the milker. It should certainly be 2 feet in front of the gutter and only about 3 feet 6 inches high, whilst if it rises to 5 feet at the back of the manger it will be ample.

The construction of mangers is important, but little understood, I am afraid. There is, in my mind, little question, however, that each cow should be provided with two bins, which means four bins in each of two-stall divisions, each bin capable of holding a bushel easily, and the bin next division in each case fitted with ventilated lid to hinge back and fix with butt against it. This arrangement permits of the two feeds being put in at the same time, and allows of the cows being fed the first thing in the morning without delaying the milking. It will also be found that some cows will not let their milk down unless feeding, so that a bin one can open for a short time will be found convenient. At haysel, too, and harvest a double bin will allow of the men getting into the fields to help, whereas with a single bin only it would have been necessary for them to have been feeding their animals still. The height should certainly not be more than 1 foot 9 inches, or the front piece will seriously incommode the cow's dew lap, and it will

experience a greater difficulty in rising should it not be able to get its head over it. As to the depth, the usual custom is, for ease in construction, to use an 11-inch plank for the divisions. They should be constructed of 1½-inch plank, and the plank at least should be well cantled. Of course, no chin-need be provided. There will, however, want to be a support half-way between the divisions. The food placed in bins, such as brewers' grains, chopped roots, &c., assisted by the dripping of their noses, keeps them rather damp, so that the points should be painted in. A cantled fillet is often placed at the angles to enable them to clean their food up better. To prevent the cows pushing out the food into the feeding passages is a very difficult problem, and one which I have never seen satisfactorily solved. If you put a roll edge projection at the back it would prevent a large-horned cow from getting at the bottom of the bin. I think if you can spare room a ledge at the back with small curb or a cantled plank, as shown on my section, is best. The cow will then be able to get at what it throws out. Of course, this difficulty does not arise where there is no feeding passage, a cantled ledge against the wall throwing the food back. In this case it must be remembered, however, that the bin must not be put close up to wall, or the large-horned cow would be in just as awkward a case. The cows are invariably chained up nowadays, but the chain should not be fixed to the side of the manger, or they might damage each other with their horns and get each other's food. It will be best with a turning ring on a stout upright iron bar, fixed on division near manger. With quite a short chain, the cow then has perfect freedom when lying down, as the chain drops with it. Far away the most common mistake in cow-shed construction is the paving of the whole area up to the manger, or letting there be a continuous fall from manger to gutter. The whole of the cows' excrement falling behind, there is in the case no need for it, and when, added to this, we consider how averse a cow is to lie on a slope, and that the best standing is rammed chalk or clay, it will readily be seen that paving in front of the heel-posts should be level and of the same substances. If you have observed cows lying on a slope you cannot fail to have noticed that they invariably lie across the slope, and should you go into a cow-shed where the standing is sloped right up to the manger you will see the cows standing or lying as far back as the chain allows, vainly trying to get on a more comfortable level. Not only is this poor treatment for the cows, but poor policy as well, for lying over a gutter with their hindquarters unsupported is likely to result in abortion. Of course, if by chance a single cow should be chained up in a double stall, it will lie across it close under the manger and foul the standing above the paving, but this is a chance not worth reckoning with. As to the paving of cow-sheds, if it were not for the expense I should use V-grooved bricks, the grooves running only in the direction of the fall, as in economising litters it is very necessary that the liquids should pass rapidly to the gutters; but as a cheap paving I do not suppose a good bed of cement concrete finely faced can be improved upon. The gutters are very important, as in all districts the local sanitary authorities are now empowered to control the construction of cow-sheds, and they will not allow any covered drains, but insist on the main channel being carried right outside the shed a distance of 18 inches before the liquid manure is disposed of in any way. Long lengths are thus made necessary, which should clear themselves with a small flow as rapidly as possible. I have therefore adopted as the most satisfactory type that which I have shown in my section. The standing next gutter is terminated with a stone slab slightly rounded on edge, and the feeding passage, which is all at a lower level, is sloped to meet with a steeper incline as it approaches it. This system has many advantages. It forms a platform of the standing, and the dung falling on a lower level keeps the bed clean, whilst the litter falling from the platform is less liable to choke the channel. It is also easy to clean, conducive to a rapid flow and easily detected. Of course, an ordinary channel such as described for stables may be used; but the litter always bridges it, making a platform for the dung which will foul the cow, and its presence is also obscured. The paving of the feeding passages may be of rammed chalk or clay, or wheel trolleys are to be employed, when a concrete floor is necessary. It might be here mentioned that it does not seem necessary to have an elaborate system of drainage connected to one big tank. I should say its benefits are more than doubtful. It is the custom now to have liquid manure carts with a pump and length of hose attached, so that small cemented tanks near the separate buildings with channels leading direct into same are practicable. They should, however, not be made of too large a size and should have a small outlet at one end of the chamber into which to put the hose. The width of the door to the cow-shed should, I think, be about 3 feet 9 inches to 4 feet 10 inches. If you make it less, the cow forward in calf may be seriously injured, whilst should you make it more, it would probably be equally dan-

gerous, as then two cows will try to push in at once. Doors must be provided from sheds into the stock-yard, and then cattle will generally be let out this way, for voiding nearly always takes place immediately after they are loosed, and the roadways are thus saved being fouled. The sheds will naturally be built adjoining the yards, and unless you have covered yards with only dwarf walls between them and the stalls (it is difficult to foresee the action of draughts with the arrangement), it will be found convenient to have low doors somewhere at the ends of the sheds, opening into the yards, for throwing out the manure (the space beneath the windows can generally be utilised), and here again it must be remembered that the manure is allowed to accumulate to a depth of 2 feet or more, so that the floors of the sheds must be kept up from the yards and sloped ways made to the doors.

Provision for calves should be made in conjunction with the cow-sheds. Very often a space at the ends of the stalls is partitioned off for this purpose, particularly now that the custom of weaning those young bull calves to be reared on their mothers is so much in vogue for the fine points they develop under that treatment. Calves, however, are very liable to scouring, and great care must be taken to insure a dry bed for them. If the site is dry, they will no doubt do well on a well-drained floor, but if there is any possibility of damp, a stout slatted floor, with 1½ inch spaces, will be necessary, and a dished floor beneath; all the voidings will then fall through. The slatted floor must, of course, be easily removable for cleaning purposes. Calving boxes should have at least 180 square feet, and, if drained, the floor should but slightly fall all one way to a gutter underneath one of the divisions kept up for that purpose; no gutter or other irregularity of the floor must be allowed, and a rammed chalk floor is preferable. The angles may have racks and mangers fitted across same.

Bull-houses should be entirely independent, and open into stock-yard. Mention should be made of cattle-boxes for fattening beasts; 80 feet to 90 feet super is allowed for each box, and they should be built in ranges, divided by gate-like divisions capable of rising with the manure in grooves on either wall and entirely removable. The beasts then rise on the manure they are making during the fattening period, and the manure generally attains a depth of about 3 feet. The end of the building should be capable of being opened, so that with the divisions taken away a cart can back right in and clear away the manure. Of course, ordinary stalls answer for this purpose, but these boxes are very useful, as should they not be required for fattening purposes the division can be taken away and the shed used as a covered yard for young stock or any other purpose.

As to the desirability of covered yards, I know there is a wide divergence of opinion amongst those who should be the best judges, but when you think of the general use now made of cake foods, and the high manurial value of the excreta of animals so fed, it would seem to be most unwise to abstain from taking precautions to avoid the waste of it in rain-washed yards. Warmth, too, with stock takes the place of food, and one of the few disadvantages that can be urged against covered yards is the thinness of the coat on young stock engendered by their use. In constructing them 160 feet super should be allowed per animal, free ventilation should be provided in the roof, which should be of one span, and the gable ends should be covered in.

I will only further state that the average annual amount of manure produced by cattle is 16 tons per head, and that the estimated value of manure from 1 ton of decorticated cotton-seed cake is 5½. 10s., from a similar amount of meadow hay 25s., and from roots about 5s. As fattening beasts are largely fed on cake, these figures will enable you to estimate the fine quality of the manure formed in the cattle-boxes just mentioned.

Coming to what may be termed the administrative block, namely, that which contains the straw-barn, food-stores, &c., this is generally a two-storeyed building stretching east and west, with the stock-yards, &c., grouped and sheltered under it on the south, and the stack-yard on the north. The food factory thus comes in its rightful position, between the food to be consumed and the consumer. The straw-barn now does not want to be of the size of the old threshing-barns, but only commodious enough to store about one day's threshing. It should be carried up the whole height, and have large doors 14 feet high for access, whilst, if possible, I like to see it arranged myself that waggons can pass right through and out the other side through one of the stock-yards. The floor may be of concrete, but the cartway would soon get broken up if of this material, and may best be made of wood. I have seen the sawn off butts of felled trees used with advantage. At the blank end, doors high up in the walls are useful for passing the threshed straw through. Next the barn is generally placed the mixing-floor, with the root-store adjoining, and only divided by a dwarf wall, over which the roots can be served into the pulper which stands just inside the mixing-floor. Both these departments should have wide doors so that carts may back right in, in the one case to dump the roots, and in

the other to load up the ready-mixed food when required about the farm. It will be very evident that the root-house must have blank walls opposite the doors, against which to stack the roots, and in the same way the mixing-floor should have a blank corner against which to stack the prepared food.

Over these departments are placed the cake-room with its crushing machine and chaff-cutting machine, with their shoots to the mixing-floor, and beyond the granary, all connected together for the convenience of trucking right through. The end next the barn should be open, and a cart under cover may then be loaded up with chaff, cake or corn and meal from the granary, as may be required. The floors of these upper departments should be grooved and tongued; any skirting should be in cement, and the end of all joists and the spaces above roof-plates filled up solid, and the ceilings should not be plastered, lest there should be any hidden harbour for vermin. The roofing to these buildings must be quite weather-proof, and I do not consider pantiles sufficiently so.

If a fall of the ground can be utilised, or by banking up a cart may be drawn level with the floor of the granary, so that everything can be barrowed straight in and all mechanical or other lifting dispensed with, it will be found of the greatest convenience. It is difficult to give an exact rule for determining the size of a granary, but they are very useful of a good size, and 2½ feet super per acre should be the minimum.

Dutch barns are very deservedly growing in favour amongst farmers; their cost of construction is so little and their usefulness so great that they must be a good investment. Not only is all the cost of thatching avoided by their use, but in wet weather loaded waggons can be drawn beneath, and it is said ricks dry much better under them owing to the free passage of air over the top. The waggons draw between the bays, so that these should not be less than 12 feet in width, and as cost is the only thing which governs the length that they may usefully be made, any multiple of that figure will do; whilst to admit of topped-up waggons passing through, they should be 14 feet high to the underside of plate, and to afford protection to the load they would best be 20 feet wide. As much space as possible should be left in the roof, and the whole fitted with gutters and down-spouting, with the gable ends closed in.

Cart-sheds should, if possible, have a north-east prospect, and the openings not less than 9 feet in the clear; the height of these should be not more than 8 feet, in order to keep out the weather as much as possible. As to depth, a single waggon or two tumbrils will require 20 feet, but 30 feet will accommodate two waggons or four tumbrils. Knocking stumps should protect the posts at entrance, and a guard-rail should be placed in front of the back wall. An implement shed for the more expensive implements is necessary, and should have an opening 10 feet wide, with doors to lock up and provided with windows. If a tool-house is provided—and it is very useful for storing ropes, rakes, forks, &c.—it may be best placed in conjunction with this.

Before designing piggeries, some thought should be given as to whether they should take the old form of covered sty and run or the more modern box or pen. If the former is adopted the chief necessity is to keep the covered lodging well above the level of the run to insure its being dry. But I would rather describe the boxes, as I believe them to be most useful. They should, if possible, be placed adjoining the stock-yard, so that the manure may be flung out into the same, and the store pigs allowed to run when the cattle are at pasture. This practice will greatly improve the quality of the manure in the yards. The boxes should have an area of from 80 feet to 90 feet super, with perhaps one or two rather larger as farrowing pens, and be separated by walls about 4 feet 6 inches high. If a feeding passage can be provided at the back leading to the boiler-house at the end of the range, it will make a most compact department. A further labour-saving device will be to have the feeding troughs midway between the pen and the feeding passage, with a swinging shutter hung centrally above same so that it may be bolted on the pen side in filling the troughs, and then swung back and bolted next the passage, throwing the whole into the pen. It has a further advantage in not allowing the pigs so easily to get into the trough, fouling and wasting their food. The shutter, however, must be very strong. A guard rail 6 inches wide and 9 inches above floor should be placed round the farrowing pens to prevent the sow lying on her young. Pigs will soon rout up a brick floor, and I believe the best is again concrete, cement faced, as this is more impervious, and will carry off quicker the large amount of liquid voided by these animals, and for which good drainage should be allowed into the yards. The boiling-house should provide accommodation for several meal and swill tubs, and have a good-sized copper and furnace fixed in it.

One or two good-sized loose-boxes on the premises will be found useful for foaling and to act as sick boxes, and perhaps in one of them may be fitted a beam capable of sustaining a ton for slinging an injured animal or slaughtering those past veterinary aid.

I think now I have mentioned all the more important

buildings about a farm for housing stock, as I do not intend to waste your time with fowl-houses, and, of course, permanent sheep-folding yards are now acknowledged as a mistake and become obsolete.

My paper might not seem complete, however, without some slight allusion to dairies. I shall make it slight, for there would be almost enough matter for a separate paper did I discuss boiler-houses, refrigerators, separators, and all the complexities which go to the making of a modern dairy. I shall only, therefore, mention one or two details of a housewife's dairy, where butter is made but occasionally and in small quantities. Of course, it should have its main window north but to get a fresher current of air I like another window east or west, which can be sheltered by bushes grown outside should prove too hot. To maintain an even temperature, the wall should be hollow and the roof of thatch or plain tiles—certainly not slated.

A settling-room should be provided with wide slate shelves around the walls, but not close up to same, a little space being left for the freer passage of air about the pans. It is customary to whitewash dairies throughout, but the whitewashing had better not extend down to the shelves; or, the pans being pushed carelessly back, will flake it off, and give you the ridiculous comic-paper article of milk with chalk in it. Two rows of an kind of tiles will obviate this. It is impossible, of course, without artificial heat to maintain a temperature of 58 degrees, but this temperature should be striven for as nearly as possible, as at it milk gives off 30 per cent. more cream than the same quantity at 30 degrees Fahr.

The butter-making department must have no drain inside the building, but the floor should slope to a channel outside the building, conducting into a gully. The ceilings in all cases must be ceiled, and everything conducive to the greatest cleanliness. The gauze should be on frames fixed outside the windows and easily removable for cleaning.

I feel that it hardly falls within the province of this paper to discuss farmhouses and their cottages, so will content myself with throwing out only two or three hints for your guidance. Do not waste your clients' money in providing a second sitting room and laying on hot and cold water for a farm of a hundred acres. It will never win a tenant from the class of men who would wish for so small a holding. On the other hand, you will never get a tenant for a farm of larger acreage unless most of the luxuries to be found in a modern two-sitting-room house are present.

Do not again, in striving after compactness, put your house so close to the stock-sheds that after its erection one or other is proclaimed by the sanitary authorities uninhabitable. This may sound very superfluous advice, but I have known such cases, and remember that there is in this country a very tender bias towards progressiveness, so that in twenty years' time it may be deemed necessary to have the malodorous pig sty 50 yards from the dwelling-house instead of 33, as at present.

Finally, in labourers' cottages do not put in less than a 24-gallon copper or they will not be able to brew enough to fill an 18-gallon cask at a time, a serious inconvenience, and one which I feel the importance of, having had to remove in some cottages that I built the smaller coppers provided and put in larger.

Mr. H. P. G. MAULE, who proposed a vote of thanks, said the paper was exceedingly interesting and full of matter. He wished to discuss some points raised, but the remarks, he hoped, would not be taken as criticism. All the objections to the paper to the so-called "model" farm buildings were to the point. A considerable number of this kind had been built, and in most cases they were quite unsuitable for farming, although the work of an architect. Nothing had been said about saving rain-water. A supply of rain-water was valuable on stock farms, being more healthful than hard water. The large area covered by the roofs of the buildings afforded an easy means of catching rain, and storage tanks could be made to hold the supply. In the choice of a site for a farm it was important to have a position sheltered by trees, because animals were like plants in a garden, and protection from the prevailing wind was necessary to their well-being. In dealing with stables, the paper adopted dimensions which allowed of a harness-room in connection with them. The measurements might be greater and it was doubtful if the harness-room was necessary, because farmers often preferred to have the harness of each horse hanging on the wall behind it. The argument against the arrangement was that the leatherwork decayed quickly, but if the stable was properly ventilated the effects of ammonia would be carried away, and the harness could not perish. In the construction of piggeries the speaker advocated an arrangement of plan which allowed of a feeding passage being made because it saved labour, and when connected with the boiling-house gave easy access in serving the troughs. Pigs should be kept warm, and as a brick floor was warmer than concrete and more easily repaired it was well to use the former. In conclusion, he said farm buildings were not beneath the dignity

structure, and the treatment of roof and gable ends offered scope for artistic effect.

V. C. WEYMOUTH seconded the vote of thanks, and simplicity of construction should never be overlooked. In buildings it meant economy of labour, an all-important successful farming.

rs. C. H. HOOPER, M. G. PECHELL, H. TANNER, jun., MEARS also joined in the discussion.

THE RHIND LECTURES.

fourth lecture of the course by Professor Hume Brown, LL.D., as reported in the *Scotsman*, on "Scotland in the time of Queen Mary," related to towns. The external appearance of a Scottish town in the time of Queen Mary has been described, they would, he said, now glance at its organisation, at the principles on which its common life was based, and the conditions under which the individual burgher performed his functions as a responsible member of the community. What had been said of the external appearance of a town was equally applied to its organisation: it was still a medieval town, alike in its scope and the aims to which it was directed. From the town records of the time one could see how far they were forced upon them—that the prime consideration of town policy was security and self-defence. The security required was of a double nature—protection from external violence, and protection from the conflicting interests of neighbouring communities. Of every candidate for citizenship it was made as the first condition of his receiving it that he should possess the full equipment of weapons and armour prescribed by the laws of the burgh. As a guarantee of his ability to maintain this condition, he had to appear before the Council with his arms and accoutrements, and give a pledge, moreover, that they were his own property. Nor in the time of Mary was the town a purely military service, a merely formal one, as was proved by plaintive petitions from burghers to be relieved of its burden. Another proof that security was still the chief concern of the burghs was found in the fact that at that time had they been so zealous in their attempts to extend their bounds with effectual lines of defence. But the security from open violence, there was that other security which had just been noted—security namely from the rivalry of other communities, and the consideration of this brought them face to face with the fundamental consideration under which the town-dwellers had roofs over their heads, found food for their mouths and raiment for their bodies. Originally, it had to be borne in mind, the territory of the town arose formed part of the domain of some superior—king, baron, or ecclesiastic. For the tenements and other erections on the town territory therefore dues had to be paid to the superior, whoever he might be. At first each holder paid his own fee directly to the superior from whom he held his land, but as the town grew in extent and population, it was found to be an inconvenient arrangement, and by the fourteenth century most of the Scottish burghs had entered into a new agreement, which had long been in use in England and other countries. The superior granted a lease to the burgh, on condition that he should pay a stipulated annual sum, as the collective rent of all the land in the territory and the subjects that pertained to it. To this annual collective sum was thus the first and all-important consideration that determined the manner in which the community should be organised and governed. From one point of view the town was simply a collective unit which had to pay dues to its superior. How, then, was the annual sum raised, and from what sources was it derived? By the laws under which the town held its tenure there could be no private property. All its territory and its adjuncts belonged to the superior, and were leased to the community as a collective body. There was thus but one method of raising the annual contribution for which the town was bound. The Town Council, or the representative bodies elected before town councils, let the town territory and its adjuncts to the highest bidders, who retained them on condition of paying the stipulated rent to the common purse. It was this system of letting, therefore, that determined the entire scope and character of the constitution of the burgh. It prescribed the duties of the various officials, regulated trade and commerce, controlled the life of the individual townsman, and determined the relations of each burgh to its neighbours. But the system was not without its drawbacks. Whatever contributed to the common good had to be applied, which revealed another aspect of the town life of the community. Besides the rentals from the town territory and its adjuncts, the superior claimed a further contribution from its occupiers. In return for certain privileges of trade he enacted an impost on all commodities that entered and out of the town gates. In the earlier period of the history of the towns it had been the function of the chamberlain or subordinate officials to levy directly the customs due

to the Crown. But when the town received its perpetual lease, the town itself took over the levying equally of the petty customs taken at the town gates and the market, and of the great customs enacted from commodities shipped for foreign countries. The methods of raising the petty and great customs were then described, and it was pointed out how these affected the administration and organisation of the community. A condition which affected all business transactions was the fixed idea of the Middle Ages, and still prevalent in the time of Mary, that every article had an intrinsic just price which was not to be altered either at the caprice of the individual or by competition in the market. Originally it had been the privilege of each burgh to fix the prices of all commodities that changed hands within its own precinct, but by the reign of Mary the privilege had to a certain extent been curtailed, though not to the same extent as in England. The rigorous supervision necessitated by the fiscal and commercial arrangements did not insure honest dealing on the part of buyer and seller. Everywhere—in England and the continental countries alike—the same regulations were promulgated, and everywhere the experience was the same. Burghs and Parliaments passed endless laws to enforce their application, but legislation was futile against evils that were inherent in the economical system. In the case both of home and foreign trade individuals, and even communities, constantly sought to evade restrictions which were yet generally recognised as necessary in the interest of the general welfare. The most lucrative exports were barley and oats, hides, skins, wool, coal, salt, coarse cloth and fish, and of these sheepskins, wool, herring, salt and cloth were the most valuable. The chief manufactures were plaiding, salt, linen, knitted hose and gloves, of which by far the most important were plaiding and salt—the two national industries. The foreign trade was mainly carried on with Campvere in Zealand, Bordeaux, London, Newcastle and the ports in the Baltic Sea. From Zealand corn was chiefly obtained in return, from Bordeaux wine and walnuts, from the Baltic flax, hemp, iron and tar; and from England mainly wheat and oats.

V.

The general conditions of town life in the time of Mary having been described, they would now, said the lecturer, consider the community that was gathered within its precincts. In the first place, it had to be noted that with the exception of Edinburgh, the number of indwellers, even in the more populous burghs, amounted only to a few thousands. In such a society every one was more or less familiar with his fellow-townsmen, and as he had scarcely any interests beyond the community of which he was a member, his feelings were proportionately keen regarding all that concerned it. If the records of the burghs were to be trusted, we must conclude that a sixteenth-century Scottish town was a sufficiently lively place, and could on occasion be the scene of humorous and dramatic incidents, which the march of civilisation had made impossible with so many other things. In the town community there was a deep line of cleavage which divided the inhabitants into what were virtually two hostile camps. On the one hand there were the burgesses or freemen, and on the other the non-burgesses or unfreemen. According to the laws of the burgh, though they were not unfrequently broken, the unfreemen could not follow any handicraft, could not engage in any form of trade or merchandise, could not be taken into partnership by any freeman, nor be employed by him in any business capacity either at home or abroad. But if the freeman had valuable privileges, he had also weighty responsibilities—so weighty indeed that he often became convinced that he had made a bad bargain in accepting them. He had to pay a considerable sum for admission to burghership, he had to take his share in watching and warding—everywhere rigorously enforced, and hardest duty of all, he had to be ready at any moment to don his jack and take his hagbut and halbert, and march with his fellow-burgesses wherever his king might require his services. Besides the deep cleavage between burgesses and non-burgesses, there was a further subdivision in the ranks of the burgesses themselves. The freedom of the burgh was shared by two classes of persons, who in Scotland, though apparently not in England, were in bitter and chronic antagonism. The one was the class of merchants, the other the class made up of the more or less numerous crafts that were to be found in the free burghs. By the beginning of the fifteenth century the various crafts had attained such numbers and influence that the merchants were unable to maintain undisputed influence in the affairs of the burghs. By the same period, in England as well as in Scotland, the crafts had begun to attract the attention of the executive by their restless activity and by what were deemed their revolutionary tendencies. The conflicting legislation regarding them showed the embarrassment of the authorities in the presence of this new power in the commonwealth. The question at issue was whether the crafts should have deacons or masters over them, and what powers should be assigned to them. The

objection of the Government to the appointment of deacons was that "they were the cause of great trouble in the burghs," and gave occasion to "raising of the king's lieges." On this ground the office of deacon was abolished in 1555, during the regency of Mary of Lorraine, but so powerful had the crafts become in all the burghs that the very next year the Government was forced to cancel this Act. In the reign of Mary the long controversy between the crafts and the merchants mainly turned on one point, and it was one of far-reaching importance. Having gained the right of appointing their own deacons, the crafts now set themselves to procure representation in the town councils—in this following the example of the same class in other countries. To this demand of the crafts the merchants offered the strongest opposition, and it was only from sheer compulsion that in 1560 the Town Council of Edinburgh admitted two craftsmen into its body. The victory of the crafts, however, was still far from being won, and it was not till the close of the sixteenth century that they gained their point in the leading burghs of the United Kingdom. In the conflict between the crafts and the merchants great national issues were involved. Under one aspect it was a conflict between the democratic spirit on the one hand, and the spirit of exclusive privilege on the other. It was in its economic bearings, however, that the conflict had the greatest significance. The question essentially at issue between the crafts and the merchants—and it was the great economic question of Mary's reign—was what authority should possess the power of fixing the prices at once of raw products and of manufactured goods. The attainment of this authority underlay all the strivings of the crafts, and the conflict that arose in connection with this privilege moved the inhabitants more deeply than the change of the national religion. The fact that the struggle did not fill a larger place in the general history of the period had a simple explanation: owing to the isolation of the burghs from each other, the issues at stake could not give rise to a collective struggle in which the whole nation would be cleft in twain as in the case of the religious revolution. Up to this point they had been mainly concerned with the more serious concerns of the people, and they must now try to see them when relieved from the pressure of duty, and when they looked about for such pleasures and enjoyments as the conditions of life offered them. The call of the watchman at hours determined by the authorities sent burgher and villager to rest at night and summoned him to his avocations in the morning. Such was the rule of life among the respectable members of all classes, but there was a number of the population who made the tavern their daily and nightly resort, and indulged in gambling, roystering and all manner of disorderly conduct, Sunday being the day when the taverner drove his best trade, as was the case in every other country at the period. It was the business of the town authorities to provide amusements for the inhabitants. Each town had its staff of musicians, and they heard of performers on the big and little drum, the pipes, the fiddle, the trumpet, the cornet and the German whistle. The most popular amusement was the annual frolic of Robin Hood and Little John, on which the Government in vain laid its interdict. Within doors, cards, dice and backgammon were the chief games, and betting was a general practice. Outdoor games were catch-putty or tennis, football, golf and shooting with the long-bow, cross-bow and culverin, though this practice was hardly regarded as an amusement. Most of the burghs had also their annual horse-race, the prize being a silver bell or cup presented to the winner by the Council. Both from the literature and the public documents of the period we gathered that in the reign of Mary there was a rapid increase in luxury of living. The dress of the different classes of the people was then described, and the futile attempts of the Legislature to regulate it. In the case of the mass of the people cabbage and colewort, pease and beans were the principal vegetables; salted mutton and geese the common meats. In the towns wheaten bread was to be had, but it was only the wealthy who could afford to buy it; the bulk of the people had to be content with oatcakes. Wine was the beverage of all persons of substance, but ale was the general drink of the people. Visitors to Scotland charged the upper classes with intemperance, but this was a charge which each nation brought against every other.

VI.

The Professor, in the sixth and last lecture, said that in the importance of its contribution to the national development the reign of David I. was the only one in our history to be compared to the reign of Mary. The reign of David definitely created the social order under which the Scottish nation existed throughout the later Middle Age; and the reign of Mary broke up that order and gave a new direction to the nation's ideals and aspirations. Mary's reign abounded with picturesque and tragic incident as well as with striking individualities, but it was as an epoch at once of violent revolution and of gradual transition that it commanded our special attention in any

serious view of the national destinies. Besides the religious revolution that shook the foundations of the kingdom there were other processes at work, which, though less obvious, were eventually hardly less powerful in transforming the aims and ideals of the nation. The sixteenth century saw the great schism from Rome, and it saw an equally decisive breach in the economic system which had grown up under the aegis of that Church. In the case of religion, the breach with the past was nowhere more complete than in Scotland, but for various reasons the change in its economic system could be so rapid and fundamental as in the case of certain other countries. Yet in the reign of Mary, and still more in that of her immediate successor, there were many indications that the nation was fully alive to the economic developments in progress in other countries. The most striking characteristics of the Mediaeval society were to be found in the position held by the nobility in the Church, and in the conditions under which trade and industry had been conducted in every country. In England, France and Spain the power of the feudal nobles had been completely broken when Mary began to reign. But as the example of Mary's reign signally proved, the nobles of Scotland were by no means been so completely "shorn" of their power. Nevertheless, but for what might be called "accidental" circumstances, the Scottish nobles would have shared the same fate as their order in other countries. In Scotland the same old feudal tendencies were at work as in the rest of Christendom, and the Scottish sovereigns as deliberately aimed at absolute power by the suppression of the nobility as the contemporary rulers of England and France. In such a policy they were aided by the tendencies of the time, and conspicuous among the part which the nobles played throughout the reign of Mary their power was in reality no longer what it had been. The old feudal ties which bound the man to his lord could no longer retain their strength in the presence of the new religious ideas, and of the new developments of commerce and industry. The feudal lord, who had hitherto lived a self-sufficing life on the produce of his domains, now required a supply of current coin to enable him to keep pace with the times and rack-rent his tenants as he might; the Scottish baron was usually on the wrong side of his account. A noble with broad domains and a scanty purse was a stranded leviathan, impotent to put his strength in the new conditions in which he found himself. On the other hand, under the new economic conditions the rich burgher and the flourishing town came to play a part of increasing importance in the social and political order. Money being now the prime essential in the conduct of affairs, the wealthy merchant who could supply a heavy loan was a more important person in the State than the impecunious baron. In the close of the sixteenth century these various influences bore their full fruit, and James VI. effectually pared the crown of the once formidable order, and thenceforward the Scottish nobles sank into what they had long been in England and France—the creatures or nominated officials of an all-powerful Court. A second characteristic of the Middle Age had been the immense place which the Church had filled in the social order. The Mediaeval Church had not been merely a great religious institution; it had been a great economic organisation as well. Whether in Mediaeval towns first began to make their appearance, and in several centuries afterwards, it had been the Church that ministered provided for the material as well as the spiritual wants of the people. But a period came when the clergy could not, without renouncing their special functions, be the industrial pioneers of humanity. While the Church ceased to be what it had been—the principal ministrant to material as well as spiritual wants—it remained in possession of the chief source of wealth in every country. As the incidence of taxation pressed on the Church in Scotland on the eve of the Reformation only half the wealth of the kingdom. Hence it was not only the needy Scottish nobles, but the enterprising merchant looking for assistance at a body of men who, while ceasing to be producers of wealth, were yet its principal consumers. When while Knox and his brother reformers assailed the doctrine of the ancient Church, it was assailed from another side by an obtrusive but not less deadly set of foes. The teaching of the Reformers was of but recent growth, and impressed itself only on that limited section of a people who in all ages have been profoundly influenced by religion. But the spirit of material progress had been of slow, unconscious and inevitable growth, and was, in truth, but the spirit of a new epoch that had dawned, and which in the end was to substitute purely secular considerations for those theological conceptions which had been the first and last reference in the conduct of human affairs. A third characteristic of the Middle Ages had been the economic system which arose out of the conditions on which the Mediaeval society was based. Under that system each town had formed an isolated economic centre, regulating its own interests and its relations to the rest of the world. One of the great developments of the sixteenth century was the transition from a merely municipal to a national basis in the operations of trade and commerce. Thus in

the power of each town to determine the prices of all things without reference to any external authority. In the sixteenth century this power was withdrawn from the towns, but of Scotland they could only say that there was no indication of State interference in the regulation of prices. In another direction they found England breaking away from the Mediæval economy, while Scotland held fast to its old ways. In the Middle Ages none but burgesses were allowed to practise any craft, but through the suppression of the guilds any one who possessed the requisite skill was at liberty to pursue his special calling. In Scotland, on the contrary, the crafts were never more powerful than in the sixteenth century, and never were more rigid in their demands towards "unfree" craftsmen. In the case of the textile trade, they found the same contrast between the two countries. In Scotland the hard-and-fast regulations which bound the Mediæval merchant were as stringent as ever, while in England the door was virtually thrown open to all who might desire to put their capital to profitable use. The backwardness of Scotland in the new economic developments had a simple explanation. It was through the growth of capital that these developments had taken place in England and other countries, but in Scotland there was no such growth—a fact sufficiently explained by its geographical position, the character of its soil and climate, its unfriendly relations with England and its remoteness from the trading centres of the Continent.

James Balfour Paul, Lyon King-of-Arms, proposed a vote of thanks to Professor Hume Brown for the series of lectures he had delivered.

Professor Brown, in acknowledging the compliment, said that his typewriter had informed him that in the course of the lectures he had uttered no fewer than 40,000 words. He concluded by thanking the Chairman for his kind words regarding the Society for making him Rhind lecturer, and to the gentlemen who had shown such exemplary patience during the series of lectures.

We are indebted to the *Scotsman* for the careful abstracts of the lectures.

TOYNTON CHURCH.

The church of Teynton All Saints, in the deanery of Bolingbroke, Lincs, which is now under repair and restoration, has been found to contain a thirteenth-century arcade in the south wall and a Norman arcade in the north. These were not discovered till the plaster was removed. The north arcade, which is much damaged by fire, is in a weak condition and needs underpinning, but the bishop, the rural dean and the rector are of opinion that it would be a great pity that the arcade should be built up again for lack of funds. To restore them will add 250*l* to the cost of the restoration, and the Bishop of Lincoln has sent 5*l*. After considerable effort 620*l* has been raised locally towards the restoration fund, and the rector, the Rev. D. Carey, will be glad for any contributions. The architect is Mr. Harold B. of Newark-on-Trent. It may be added that the south arcade, which is of the Decorated style, consists of four bays. There are two limestone pillars, octagonal in shape, but standing on square bases. Three of the arches are quite perfect, but the fourth has at some time been cut away to make room for a window to give light to the west gallery. The Norman arcade, which is probably two centuries older, has five bays of about 12*ft* each. The pillars are round with carved capitals. The arches which have so far been cleared show traces of the old custom of coating sandstone with plaster and then painting the plaster. When the arches were built up in the thirteenth or fifteenth century the brickwork was plastered and the surface adorned with ornamental lettering.

CLAIM FOR REINSTATEMENT.

On Monday Mr. J. Troutbeck, high bailiff for Westminster, presided, and a special jury concluded the hearing of the case in which Messrs. Vacher & Sons, Parliamentary printers, of Great Brunswick Street, Westminster, claimed from the London County Council 25,600*l*., as compensation for the compulsory acquisition of their leasehold interest in the premises, 20 and 22 Millbank Terrace, Westminster, required by the Council in connection with the improvement of that thoroughfare. It was said that the claimants' case was based on the principle of reinstatement, namely, having erected large and commodious premises in Great Brunswick Street at a cost of 27,000*l*., incurring an extra rental of 1,619*l*. and above the 500*l*. paid for the old premises of 1,619*l*. per annum. On this sum they claimed ten years' purchase, and the other items included—value of machinery, 3,849*l*.; 10 years' net profits, 4,700*l*.; and removal of stock, 500*l*. Part evidence in support of these figures was given by Mr. Trollope and Mr. John Esson. Sir Edward

Clarke described the claim as an extravagant one, and said the County Council refused to recognise it on the basis of reinstatement. For the County Council Mr. Samuel Walker stated that the utmost the claimants were entitled to was 4,364*l*. He could have housed them in a nearer and more suitable building for 5,000*l*. Mr. Howard Martin said he thought 4,048*l*. would amply compensate the claimants. The High Bailiff said that unless the jury thought the ordinary mode of compensation would do the claimants an injustice they ought not, in his opinion, to adopt the basis of reinstatement. It was a very serious and important case, as the adoption of the principle of reinstatement might create a prohibitive cost of carrying out public improvements. The jury awarded the claimants 8,413*l*.

HITTITES AND ETRUSCANS.

IN a second communication to the *Times* on the above subject, Major Conder writes:—The arguments of De Cara are not linguistic; the suggestions of Drs. Sayce, Hommel and Jensen as to the sounds of the emblems are mutually contradictory, and are not founded on comparative study or on the sounds of the Cypriote. The name Tarkon is neither Semitic nor Aryan; it is not found in Armenian, Georgian or Vannic, but only in Etruscan and Turkish and Hungarian. It survived in Cappadocia down to the Christian era, and was known to the Byzantine emperors as a Turkish title. The well-known double-headed eagle, found among Akkadians and Hittites alike, was the Seljuk emblem of the Turkish conquerors, and may still be seen carved by them at Erzerum, Trebizond and elsewhere in Asia Minor, as early as the eleventh century A.D. It may be noted in passing that the Hittites were not exterminated in the eighth century B.C., for, according to a recently-found text of Nebuchadnezzar, their princes were still to be found in Syria as late as 600 B.C.

One or two other comparisons are worthy of notice. The Hittite gods stand erect on their animals, just as do the Assyrian deities at Bavian and at Samalla. The demon head of the Etruscan Charon—the infernal deity—recalls those of Babylonian demons, especially as regards the protruded tongue. The labrys, or double axe, which is generally regarded as distinctive, occurs on the ancient slate carvings of Egypt, though it was not an Egyptian weapon in later times.

The horse and chariot were, no doubt, known to the Hittites before the Egyptians adopted them, and also adopted Semitic names for both, but the chariot is found yet earlier among the Akkadians, from whom the Semitic race took so much of its civilisation. Lydian traditions and customs point no less clearly to Babylonia and to Mongolic rather than Semitic origin. The strange custom of the Couvade appears in Lydia as well as in Bretagne and in America, and the tracing of descent from the mother was common to Lydians and Etruscans, and survives among Mongolic tribes in Eastern Asia. The magnificent Etruscan sarcophagus in the British Museum represents an Etruscan lady, whose appearance is most remarkably Mongolian. The Etruscan masonry called "cyclopean" is found at Tiryns and Troy and throughout Asia Minor, where it continued (with the false arch) to be used even down to Roman times. It was attributed by Classic writers to the Cyclops, or "round-faced people" from Asia, who built Mycenæ. It is not, I believe, to be found in Egypt. The Lydians also used Babylonian weights, and built in brick, and traced descent from Ninus.

All these indications serve to strengthen the argument founded on language. But the Etruscan emigration to Italy occurred apparently about 1000 B.C., when the alphabet, derived from the older syllabary of Asia Minor, was superseding earlier scripts, which only survived in islands like Cyprus and Crete, among the Greeks. Thus the Etruscans brought with them apparently an alphabet only, yet not one directly derived from Phœnicians, since they do not use the Phœnician letter-names according to the evidence of the *abecedaria* of Etruria. The history of Mongolic dispersion thus rests on many considerations more definite than art comparisons would by themselves be considered.

THE AMERICAN ACADEMY IN ROME.

IN 1894 a number of artists who had been engaged together upon the work of the World's Fair at Chicago established "The American School of Architecture in Rome." Their object was to enable American students of architecture who had passed with honour through leading technical schools, or who had been equally qualified by private instruction, to develop their powers more fully under the most favourable conditions of direction and environment. The students of the school were selected by competition and received pecuniary aid. The school was wholly supported by the artists referred to and their personal friends.

The rapid improvement in the work of the students and their enthusiasm convinced those who were interested that the scope of the school should be made broader, and should include the allied arts of sculpture and painting. To this end representative sculptors, painters and architects, together with other persons interested in the subject, decided in 1897 to found, on the lines of the French Academy in Rome, a school which should be open to American students of sculpture and painting, as well as of architecture.

In pursuance of this design the American Academy in Rome was incorporated under the laws of the State of New York in June 1897. A constitution was then adopted, and suitable rules made for the government of the institution. All these steps were taken under advice of competent legal counsel. In 1901 the Secretary of State for the United States authorised the Ambassador at Rome to accept the position of trustee *ex officio* of the Academy, and directed him to secure for it "all the privileges and exemptions that are accorded by the Italian Government to like institutions of other countries."

The Academy is therefore legally established and competent to receive and hold any moneys that may be donated.

The Academy, like the School of Architecture, has been until the present time supported solely by the incorporators and a few of their friends; to the end that the usefulness, importance and practicability of the undertaking might be fairly demonstrated before any public request was made for funds for a permanent endowment. For this reason the number of scholars sent to Rome has of necessity been small, and the facilities and conveniences for work have not been such as would be afforded by an older well-equipped and well-endowed institution.

But now the work of the Academy has justified its existence. It is no longer an experiment. It is an established institution, working along the same lines and for the same end with the French Academy, whose pre-eminence in the world of art has been proved by the experience of more than two hundred years. The incorporators feel that the time has come when they have the right to ask the friends of art in America for a permanent endowment, and to ask them also to become members of the Corporation, in order to help provide funds for current expenses until such time as the income of the endowment fund is available for this purpose.

GENERAL.

The Council of the Royal Academy will on December 15 elect a Cooke annuitant, who will receive 35*l* a year. Applicants are to be painters in oil or water-colour, not less than sixty years of age, and in distress from age, sickness, or some other cause.

The Rev. D. Carey, rector of Toynnton All Saints, Lincs, the discoveries in which are described elsewhere, has received from a vice-president of the Lincoln Architectural Society an offer of 10 guineas if twenty-nine others give the same.

Notification is given of an intended application to Parliament next session by the City Corporation for an Act empowering them to rebuild and maintain Southwark Bridge, with approach roads and accesses thereto, to alter, &c., the levels of the streets and roads, and to authorise them for the purposes of the Act to raise further money on the credit of their Bridge House estates. Clauses will be inserted in the Act to empower the Corporation "to stop up and to discontinue" the use of the high-level footway forming part of Tower Bridge.

Professor Schweinfurth has left Berlin in order to undertake additional explorations in Egypt, especially in respect of the Stone Age, which engaged his attention during the winter of last year.

The City Lands Committee of London Corporation has decided not to recommend a scheme of municipal fire insurance.

The Leighton House Executive Committee will hold an exhibition at the house during the next three months of studies and sketches in colour by the late Lord Leighton. The owners of examples of this character are requested to allow them to appear in the exhibition.

Carrington House, which was opened on Saturday on behalf of the London County Council, is a lodging-house accommodating upwards of 800 men. The new buildings, which have been erected in Mill Lane, Deptford, on the site of an insanitary area, are estimated to have cost 51,500*l*. The building, of red brick relieved with Portland-stone dressings, is six storeys in height, exclusive of basement, the five upper storeys comprising 814 cubicles. The Council have also erected twenty-four cottages, each self-contained, with a small garden in rear, and providing accommodation for 144 persons, on land adjoining, also forming part of the scheme for dealing with the condemned area. These have cost 4,767*l*.

The Site selected for the memorial of Goethe in Rome, in the park of the Villa Borghese, which is henceforth to be known as the "Villa Umberto."

Sir Henry C. Burdett will open a discussion on "London Hospitals and Medical Schools and their Sites" at a meeting of the Hospitals Association on Thursday, December 3, at 4*pm*, in the Board-room of Charing Cross Hospital.

The London County Council have had erected at the cemetery at New Southgate a memorial to the memory of the patients who lost their lives at the fire at Colney Hatch Asylum. It is a grey Aberdeen granite runic cross on die and plinth, the front of the shaft and wheel being decorated with carved interlaced work of the Anglo-Saxon type. Underneath is the following inscription:—"Below this stone are interred the remains of the fifty-one patients who perished in the lamentable fire at Colney Hatch Asylum on January 27, 1903."

The Prefect of the Seine has decided against the adoption in Paris of the overhead-wire system for the tramway line proposed by the omnibus company of that city. The Municipal Council and the Minister of Public Works will have to uphold this opinion before it can be enforced on the company.

The Chambers in the Vatican which are known as the Appartamento Borgia having been assigned to Cardinal Medici del Val, the papal secretary, will be closed. The rooms contain works by Pinturicchio, which were recently restored.

The Dean and Chapter of Rochester have decided to rebuild the central tower of the cathedral. The design will be in harmony with the rest of the building; it will closely resemble the original tower, and will be capped by a spire of oak and lead. The donation of 5,000*l*. recently given to the Dean and Chapter by Mr. T. H. Ford will be applied towards this work.

The Royal Military College, Sandhurst, is to undergo extensive alterations. The accommodation for cadets will be doubled to meet the recommendations of the special committee on military education. The sum of 350,000*l*. will, it is stated, be spent on the buildings, &c. A new wing will be added, and the quarters for married people in the basement will be adapted for bath-rooms, &c. A block of officers' quarters is also to be erected at the rear of the existing college.

The Church of All Saints, Penfai, near Bridgend, which has been built at the cost of Mr. R. W. Llewellyn, was consecrated by the Bishop of Llandaff on Monday. The church has been built to Mr. Llewellyn's own designs, and contains sculpture which he brought from Florence and an alabaster reredos, of which the central panels were designed by Mr. Goscombe John, A.R.A.

The Exhibition of the Royal Society of Painters in Water-Colours will be opened to the public on Monday next.

Professor H. Louis, of Newcastle, who was sent out by the Government to investigate the asphaltic deposits of the Trinidad, recently affirmed that he has proved that the so-called pitch lake from which 120,000 tons of asphalt were dug annually is exhaustible. The level of the lake had sunk to a degree corresponding exactly with the quantity taken from it. If they knew the depth of the lake they would know to a certain extent how much asphalt was in it.

Messrs. Waterman & Abrahams, architects and surveyors, 7 Cullum Street, Fenchurch Street, E.C., have dissolved partnership. Mr. Abrahams will continue the practice at the same address on his own account.

The Next Ordinary Meeting of the Society of Engineers will be held on Monday next, November 30, at the Royal United Service Institution, Whitehall, when a paper will be read, entitled "Mechanical Stokers for Electricity Generating Stations," by Mr. Albert Gay, M.I.E.E.

Dr. T. H. Tristram, chancellor of the London Diocese, has granted a faculty to the Rev. Thomas Smith, vicar of St. John the Baptist, Green Hill, Harrow, authorising the erection of a new church to take the place of the existing one. According to Mr. J. R. V. Marchant, who appeared as counsel for the petitioner, the present church was built in 1866 as a chapel of ease to St. Mary's, Harrow, the parish church. At that time the population was not quite 1,000, and the seating accommodation (470) provided by the church was then sufficient. Now the parish has a population five times as great, and it is necessary to have more accommodation.

According to the architect's plans for the new Union Railway station at Washington, U.S.A., just published, it is to be the largest and most ornate in the world. It will cost 14,000,000 dollars. Inside the building will be a huge plaza with fountains, balustrades and terraces in the Romanesque style of architecture, harmonising with the Capitol. There will be five exits, one constructed especially for the President and guests of the White House, for whom a suite of apartments is provided. Among the novel features is an invalids' room where a physician will be in constant attendance. There are to be several mortuary chambers, a Turkish bath and a large swimming pool.





The Architect, Nov. 27th 1903.



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COWLEY MANOR: BILLIARD ROOM.

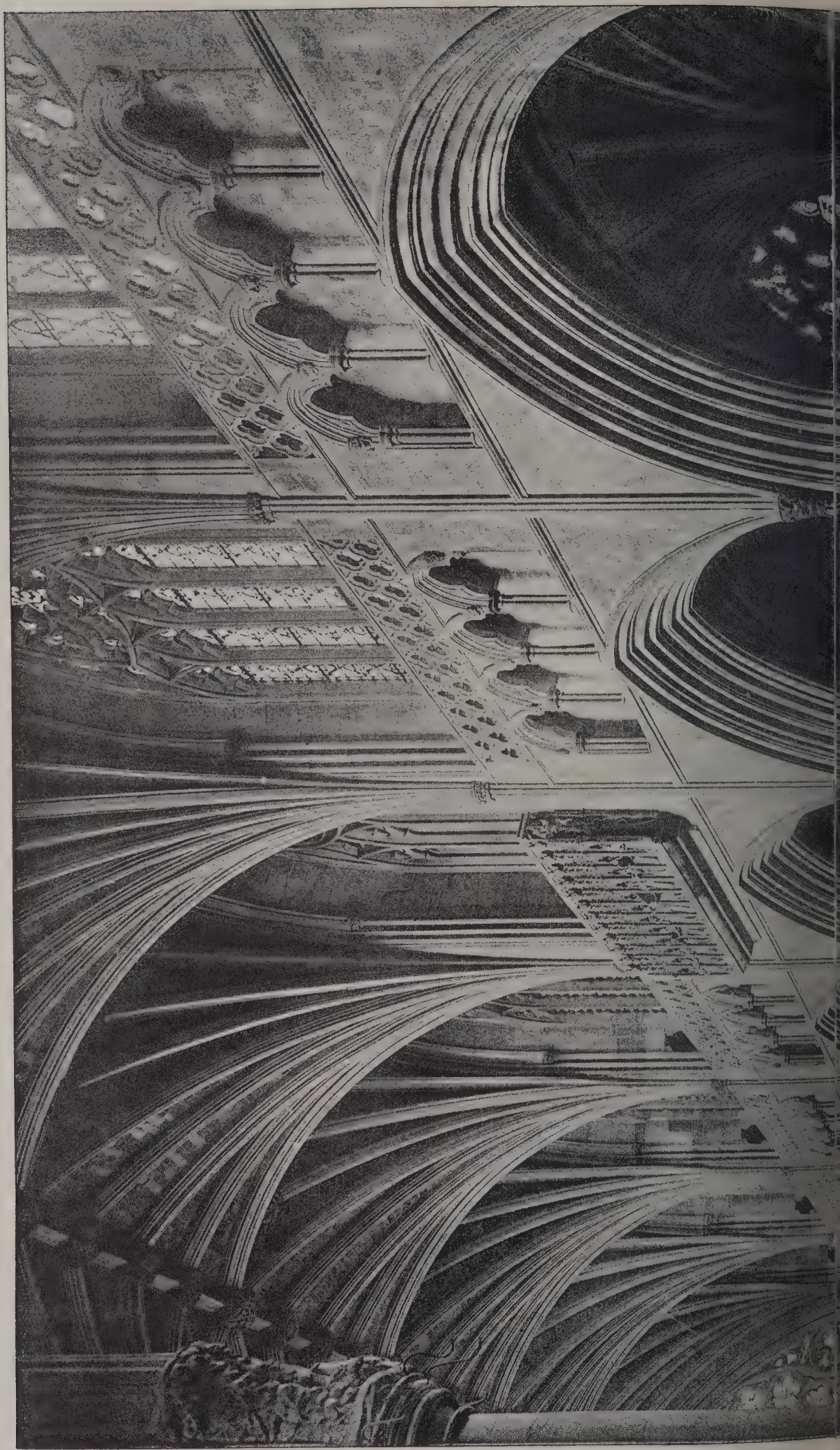
R. A. BRIGGS, F.R.I.B.A., Architect.

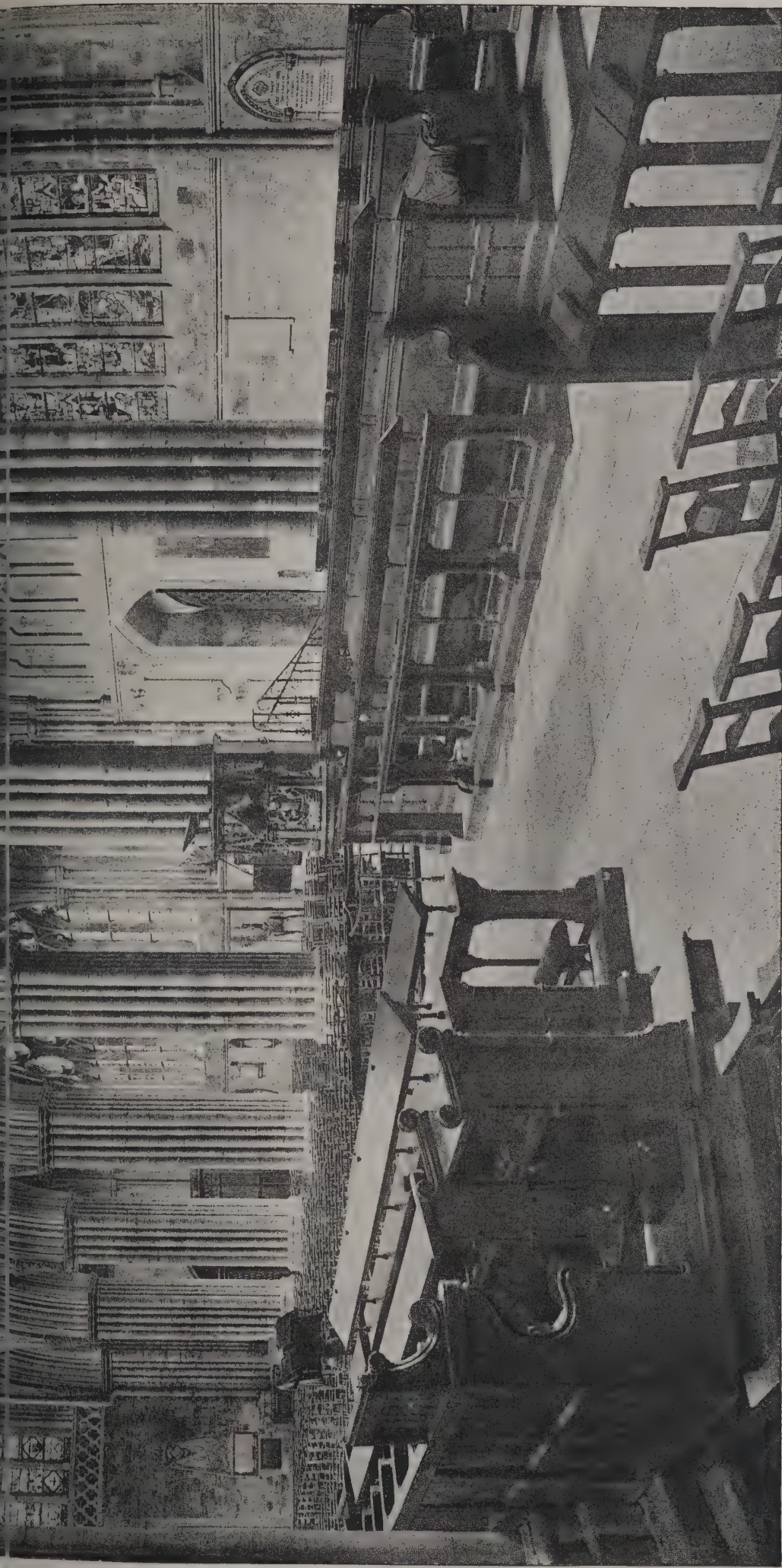


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"THE RED HOUSE," BOURNEMOUTH.
CHARLES T. MILES, F.R.I.B.A., Architect.

The Architect, Nov. 27th 1903.

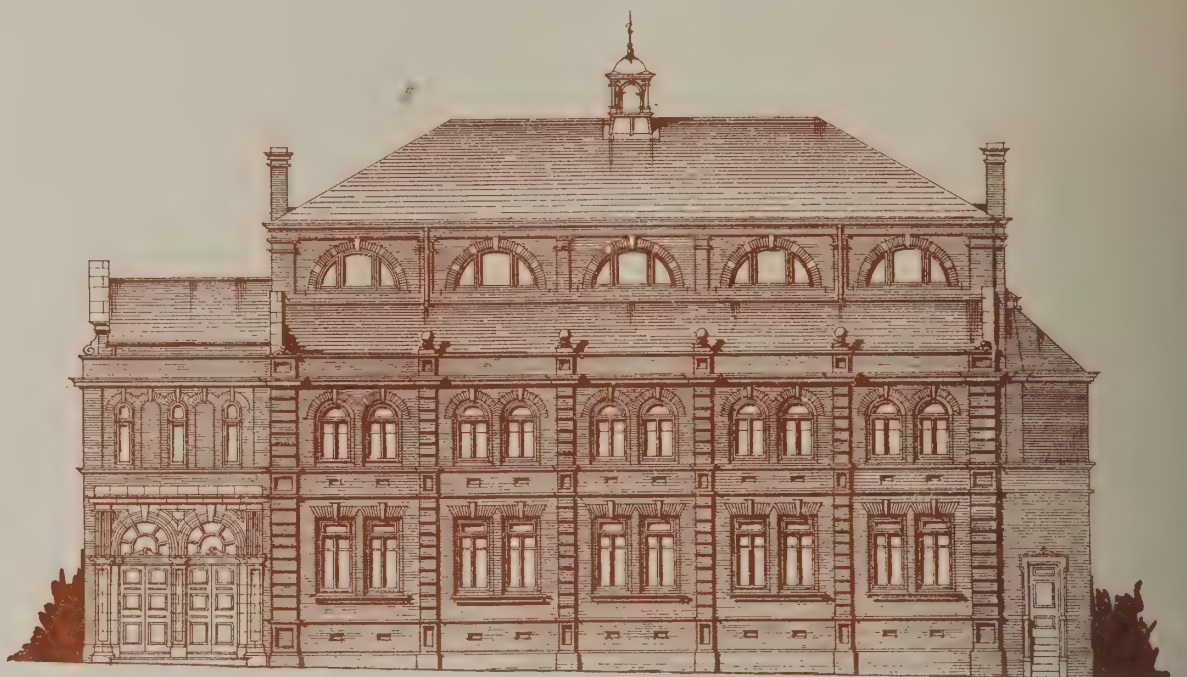




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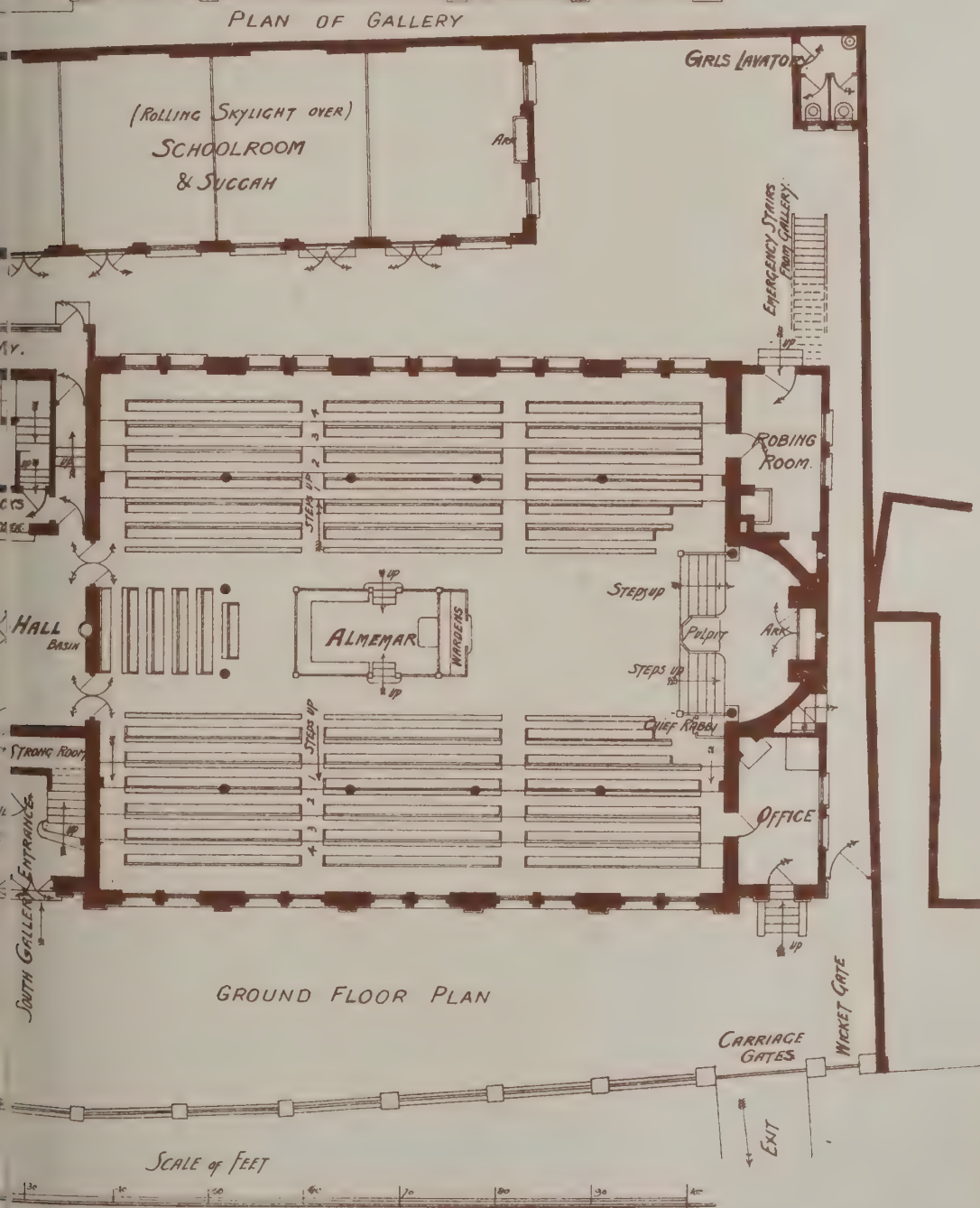
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CATHEDRAL SERIES, No. 473.—EXETER: THE NAVE ARCHES



SOUTH ELEVATION (FRONT)





THE Architect and Contract Reporter.

EDITORIAL NOTICES.

the many difficulties which are certain to arise in connection with the law, practice rules and procedure under Workmen's Compensation Act, we have added to our list a **VERY EMINENT BARRISTER**, who has undertaken to subject a special study, and will be glad to answer in the columns of this paper any questions relating to the legal matters arising from the provisions of this Act. Our **LEGAL ADVISER** will further answer any legal question that may be of interest to our readers. All letters must be addressed "**LEGAL ADVISER**," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

We will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders for particulars of Works in progress in which they are interested.

Authors of signed articles and papers read in public must not be held responsible for their contents.

Communications can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Readers are requested to make their communications as short as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

Disappointment is frequently expressed at the non-acceptance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be sent to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

Nov. 30.—The committee of Bray Pavilion and Gardens invite plans for proposed pavilion and winter garden. First prize, 30*l*.; second prize, 15*l*.; third prize, 10*l*. with three prizes of 5*l*. 5*s*. each. Messrs. Frank E. Lee and P. Macdonnell, hon. secretaries, Town Hall, Bray.

Feb. 1.—The Urban District Council general committee invite designs for new council house and council buildings, to be erected at the junction of Mason Road and Church Road, Erdington. Premiums of 50*l*., 30*l*. and 10*l*. awarded for the designs placed first, second and third respectively. Mr. Herbert H. Humphries, district architect, surveyor, Public Hall, Erdington, Birmingham.

Dec. 16.—The Lambeth Borough Council are invited to erect a public library, with residence for librarian, in the Hill ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for a public library, with residence for librarian, in the Hill ward of the borough to Mr. H. J. Smith, town clerk, Town Hall, Kennington Green, by 12 noon on

December 16. General information as to the extent and nature of the accommodation required in the proposed library and residence can be obtained on application to the town clerk.

SCOTLAND.—Dec. 7.—The Elgin Landward School Board invite competitive plans and estimates for the erection of school buildings at New Elgin capable of accommodating about 340 pupils. Mr. Hugh Stewart, clerk to the Board, Elgin.

SELLY OAK.—Dec. 7.—Competitive plans and designs are invited for public baths at Selly Oak, near Birmingham. Full particulars of the site for the proposed baths, limit of maximum expenditure, &c., with copies of sketch plans showing the accommodation required, &c., may be obtained on application to the Urban District Council's surveyor, Mr. A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham.

WAKEFIELD.—Dec. 1.—Competitive designs are invited for the proposed reconstruction of the Wakefield cattle market. Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively. The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works. Mr. R. Ernest Langhorne, solicitor, Wakefield.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l*. returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

BATLEY.—Nov. 30.—For the erection of a refuse destructor at the electrical-generating station, New Ing Fields. Mr. J. H. Craik, town clerk, Town Hall, Batley.

BATLEY.—Dec. 3.—For the erection of new classrooms and lecture-hall at Broomhill church, Taylor Street, Batley, Yorks. Mr. F. Ineson, 18 Bradford Road, Batley.

BERWICK-ON-TWEED.—Dec. 7.—For rebuilding house and shop, 106 High Street. Mr. Wm. Gray, architect, 2 Ivy Place, Berwick-on-Tweed.

BIRKDALE.—Dec. 4.—For the erection of a hospital, with the necessary isolation houses, administration block and other outbuildings at Birkdale, Lancs. Mr. J. F. Keeley, clerk to the Urban District Council, Town Hall, Birkdale.

BIRMINGHAM.—Nov. 30.—For the erection of waiting-room and car-shed to accommodate eight cars, &c. Mr. A. W. Cross, surveyor, 23 Valentine Road, King's Heath, near Birmingham.

BIRMINGHAM.—Dec. 14.—For the erection of the superstructure, internal finishings, &c., of the new university buildings at Bournbrook. Messrs. Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

BISHOP AUCKLAND.—Dec. 2.—For the erection of a new branch co-operative store at Evenwood. Mr. F. H. Livesay, architect, Bishop Auckland.

BRADFORD.—Nov. 30.—For additions and alterations to the Hutton school at Eccleshill, and erection of an infants' school and caretaker's house. Mr. Tho. Garbutt, clerk, School Board Office, Bradford.

BRADFORD.—Nov. 30.—For repairs to roofs of old carshed, Thornbury. Mr. F. E. P. Edwards, city architect, Whitaker Buildings, Brewery Street.

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BRIGHTON.—Dec. 1.—For renewing the sanitary appliances and other work connected therewith in the main building of the workhouse, Elm Grove. Mr. H. S. Reed, Parochial Offices, Princes Street.

BRISTOL.—Dec. 16.—For alterations and repairs to the workhouse at Clutton. Mr. W. F. Bird, architect, Midsomer Norton, Somerset.

BURSLER.—Nov. 30.—For the erection of a generating station at the gasworks, Longport. Particulars may be obtained at the offices of the borough electrical engineer, Town Hall, Burslem.

CAIRO.—Feb. 1, 1904.—For the construction of three bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CANTERBURY.—Nov. 30.—For the erection of oak stairs to the outside of workhouse infirmary. Mr. G. Smith, architect, Station Road (West), Canterbury.

CARLISLE.—Nov. 30.—For the erection of additional out-offices at Ashley Street schools. Mr. Henry C. Marks, surveyor, 36 Fisher Street, Carlisle.

CROYDON.—Dec. 7.—For the erection of two relief stations in Church Road and Sanderstead Road, Croydon. Messrs. Wills & Anderson, architects, 4 Adam Street, Adelphi, W.C.

DEAL.—Dec. 5.—For rebuilding the Five Ringers' inn, Deal. Messrs. Jennings & Duthoit, architects, 6 Claremont Place, Dover.

DURHAM.—Dec. 1.—For alterations and repairs of dwelling-house at Heworth. Mr. H. Miller, architect, Council Buildings, Felling, Durham.

ERITH.—Dec. 1.—For repainting and repairs to the roof, &c., of the main boiler-house at the Crossness outfall works, near Erith. Particulars can be obtained at the Engineer's Department, L.C.C. County Hall, Spring Gardens, S.W.

FELIXSTOWE.—Nov. 30.—For the erection of three public conveniences. Mr. F. B. Jennings, clerk, Town Hall, Felixstowe.

GALLOWES PLAIN.—Dec. 11.—For alterations and additional buildings and incidental works connected therewith at the isolation hospital, Gallowes Plain, near Hertford. Mr. Geo. H. Gisby, clerk, Ware, Herts.

GOLCAR.—Dec. 4.—For the erection of three dwelling-houses in Station Terrace, Golcar, Yorks. Mr. Arthur Shaw, architect, Golcar.

GREENWICH.—Nov. 30.—For the erection of a mortuary with post-mortem room, &c., between Lamb Lane and Church Passage, Greenwich. Mr. Alfred Roberts, architect, 18 New Street, Greenwich, S.E.

HALIFAX.—Nov. 30.—For alterations to premises Commercial Street and Old Cock Yard. Mr. Thos. Ker, architect, Lancs. and Yorks. Bank Chambers, Halifax.

HALIFAX.—Dec. 1.—For alterations to the bakery rooms, stabling, &c., in Pear Street, Halifax. Mr. Kershaw, architect, Lancs. and Yorks. Bank Chambers, Halifax.

HALTWHISTLE.—Dec. 9.—For the erection of Boarding and offices for the Guardians. Mr. John M. Clark, surveyor, Haltwhistle.

HAMMERSMITH.—Dec. 2.—For the erection of a cottage free library in Brook Green Road. Mr. H. Thompson, clerk, Town Hall, Hammersmith, W.

HEWORTH.—Dec. 1.—For alterations and repairs to dwelling-house at Heworth, Durham. Mr. H. Miller, architect, Council Buildings, Felling, Durham.

IPSWICH.—Nov. 30.—For the erection of a new out-patient department at the Ipswich and East Suffolk Hospital (Bartlett's gift). Mr. John S. Corder, architect, Wimborne House, Ipswich.

IRELAND.—Nov. 30.—For enclosing the proposed recreation ground, Letterkenny. Mr. John G. Larkin, town clerk, Town Council Office, Letterkenny.

IRELAND.—Dec. 1.—For alterations and repairs to Millbrook House, Glendermott, Londonderry. Mr. R. Buchanan, architect, Castle Street, Londonderry.

IRELAND.—Dec. 7.—For the erection of two artisan and ten labourers' dwelling-houses, with out-offices and the appurtenances at Clonmel. Mr. James J. McAuley, architect, Town Hall, Clonmel.

IRELAND.—Dec. 12.—For the erection of a church, Murroe, co. Limerick. The Very Rev. J. J. Duan, Murroe.

IRELAND.—Dec. 21.—For the erection of a church, Roseyards, co. Antrim. Mr. S. J. McFadden, architect, Rose Street, Coleraine.

JARROW.—Dec. 7.—For alterations and additions to Dunn Street school. Mr. T. H. Spencer, clerk, U. D. School Board, Jarrow.

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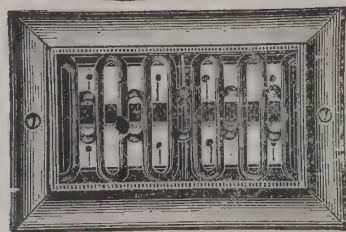
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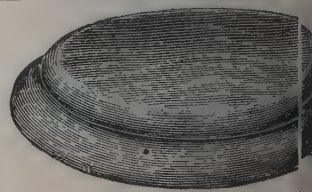


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ES.—For the erection of three-storey warehouse 82 feet ft, and alteration of two houses and shops and house the houses and shops and lock-up shop in Leicester and St. Mark's Road, Leeds. Messrs. Mosley, 6 Wor- Rv, Leeds.

THAMPTON.—Dec. 11.—For the erection of a new station at Littlehampton, in the county of Sussex, of houses for an officer and twelve men, watchroom, and outbuildings, &c. Particulars may be obtained Director of Works Department, Admiralty, 21 North- al Avenue, W.C.

ND.—Dec. 15.—For the construction of a river wall foundations of a chimney-shaft at the proposed power ld Barge House Wharf, Blackfriars, S.E. Drawings, and a copy of the conditions and form of contract en on application to Mr. J. Wager, His Majesty's Works, &c., Storey's Gate, S.W.

NESTER.—Dec. 12.—For the erection of an exhaust- mp-house and workmen's dining-room at the gas- chdale Road station. Mr. C. Nickson, superin- as Department, Town Hall, Manchester.

UTH.—Dec. 1.—For the erection of warehouses on r, Great Western Docks, Plymouth, for the Great Railway Company. Mr. G. K. Mills, secretary, Station.

—Dec. 3.—For the erection of library buildings at n, Poplar. Mr. C. H. Norton, architect, 14 Bedford W.

OUTH.—Dec. 2.—For constructional ironwork to floors, and new flooring to dining-rooms of the home, St. Mary's Road, Milton, Portsmouth. Mr. y, architect, 79 Albert Road, Southsea.

EBOROUGH.—Dec. 11.—For the erection of a coast- stan at Queenborough, in the county of Kent, consist- hies for officers and four men and a boathouse. and specification, &c., may be seen at the Coastguard a Queenborough.

ND.—Dec. 1.—For alterations and repairs to Eton adise Road, Richmond. Mr. J. H. Brierley, borough, own Hall, Richmond.

H.—Dec. 5.—For erection of cattle-house, root-house and barn and cattle-house at Little Brynn, in the of Roche, Cornwall. Mr. George Gow, Tregothnan Tro.

SCOTLAND.—Dec. 1.—For the erection of a stone lifeboat house and stone and concrete slip upon the quay near the site of the existing lifeboat house in the harbour of Anstruther, in the county of Fife. Mr. W. T. Douglas, architect, 15 Victoria Street, S.W.

SHEFFIELD.—Dec. 1.—For the erection of a maternity hospital at the workhouse Mr. J. R. Wigfull, architect, 14 Parade Chambers, East Parade, Sheffield.

SHIPLEY.—Dec. 15.—For the erection of an inclined retort house and other works. Mr. T. G. Wilcock, manager, Gasworks, Shipley, Yorks.

SOUTHSEA.—Dec. 2.—For alterations to the Royal Naval Reserve battery, Southsea. Plans and specifications can be seen at the Coastguard Office, Southsea.

SWANAGE.—Nov. 30.—For the construction of a retaining wall along Shore Road, Swanage, Dorset. Mr. Thomas Randall, town clerk, Town Hall, Swanage.

TIPTON.—Nov. 30.—For asphaltting playgrounds and alterations to out-offices at Burnt Tree Council school. Mr. E. Richards, secretary, Education Office, Tipton, Staffs.

WALES.—Nov. 30.—For the erection of a school at Willow- town, Ebbw Vale, Mon, including boundary walls, playgrounds, drainage, &c. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Nov. 30.—For the erection of a gymnasium in connection with the county school, Bethel Road, Carnarvon. Mr. Ronald Lloyd Jones, county architect, 14 Market Street, Carnarvon.

WALES.—Dec. 1.—For the erection of a waiting-room, &c., at Victoria station, near Ebbw Vale, Monmouthshire, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

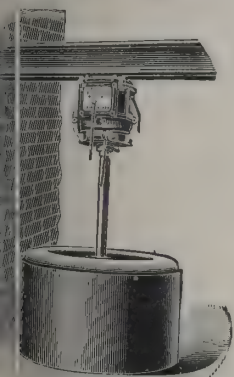
WALES.—Dec. 2.—For the erection of forty-two houses at Penrhwi-ceiber. Mr. T. Richards, 1 Foundry Terrace, Mountain Ash.

WALES.—Dec. 3.—For the erection of a librarian's house adjoining the library, Cymmer, Porth. Mr. William Thomas, secretary.

WALES.—Dec. 3.—For the erection of house and business premises close to railway station, Llanberis. Mr. Henry Thomas, architect, 7 Castle Ditch, Carnarvon.

WALES.—Dec. 7.—For the erection of bakehouse, slaughter- house, stables and coach-house, at Ynysybw. Mr. D. Dalis Jones, secretary, 45 Robert Street, Ynysybw.

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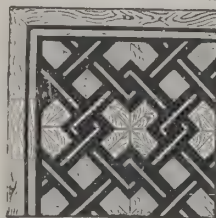
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FULL LIST, and dates when they appeared,
of THE CATHEDRALS which have been
published on Application to The Publisher.

WIGAN.—Dec. 12.—For the erection of swimming-baths in Library Street. Messrs. J. B. & W. Thornley, architects, Library Street, Wigan.

YORK.—Dec. 2.—For the erection of a pulley repairing shop at York carriage works, for the North-Eastern Railway Company. Mr. William Bell, the Company's architect, at York.

YORK.—Dec. 4.—For the erection of auction mart, offices, pens and additional roofing at the cattle market. Mr. A. Creer, city engineer, Guildhall, York.

TENDERS.

BRADFORD.

For the erection of branch stores and two through houses at Chapel Green, Little Horton. Messrs. JOHN DRAKE & SON, architects, Queensbury.

Accepted tenders.

O. Booth & Son, 16 Bartle Lane, Great Horton, mason	£876	0	0
J. Towers, Great Horton, joiner	431	12	0
S. E. Jackson, 103 St. Stephen's Road, Bradford, plumber	240	0	0
F. Crabtree, Southfield Lane, Great Horton, slater	60	0	0
W. H. Charnock, Cardigan Street, Queensbury, plasterer	55	0	0
H. Mitchell, 161 High Street, Great Horton, painter	45	0	0

BROADSTAIRS.

For additions to Bleak House, Broadstairs. Mr. WILLIAM A. BURR, architect, 65 Chancery Lane, W.C.

Accepted tenders.

J. May, Broadstairs, new boiler-house, &c.	£160	10	0
Pearce & Co., Holloway, greenhouses	146	0	0
Keith & Blackman Co., Ltd., hot-water work	100	0	0

DARTFORD.

For sewerage works in Fulwich Road. Mr. W. HARS, engineer, 8 High Street, Dartford.

Parsons & Parsons	£3,150
T. Adams	2,964
Davis, Ball & Co.	2,550
G. Bell	2,391
J. Jackson	2,280
W. H. WHEELER, Blackfriars Road, London (accepted)	2,193

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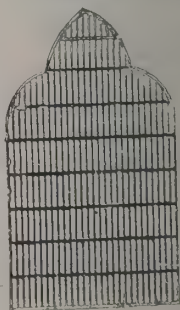
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trations free on applica-

tion. Telephone 2435



ENFIELD—continued.

Ponder's End.

Pie & Co.	£388	0	0
Ugall	337	19	0
Nlor Bros.	252	0	0
th & Co.	231	10	0
rke, Hunt & Co.	229	9	6
Wylingson	228	8	6
ilgson	225	19	0
ery & Co.	224	15	0
er & Sons	213	5	0
ai & Co.	208	10	0
fordshire Fencing Co.	207	15	0
st & Son	200	10	0
ez	200	5	0
bould & Co.	199	10	9
ghan Bros.	197	16	0
ell	193	10	0
& Smith	192	0	0
ward & Sons	192	0	0
LISS, JONES & BAYLISS (accepted)	188	19	6

GERMOE.

works in connection with a water supply at the Church
wn, Germoe, Cornwall.
oy, Meneage Street, Helston (accepted) . £52 10 0

GILLINGHAM.

erection of twenty-six cottages in Burnt Oak Terrace,
illingham, Kent. Mr. ERNEST J. HAMMOND, 21 Bal-
l Road, Gillingham, Kent.
Davison £7,100 0 0
hilby 6,500 0 0
ai & Co. 6,295 0 0
ass Bros. 5,858 0 0
Galer 5,623 10 0
arris 5,434 0 0
ordan 5,070 0 0
ingleton 4,875 0 0
V. Hammond 4,823 0 0
ILFORD, Snodland (accepted) 4,810 0 0
L. Filley (withdrawn) 4,485 0 0

HARROGATE.

For drainage works, commencing at a point near the railway,
crossing Starbeck station, passing along the Knares-
borough Road, and terminating near the property of the
Harrogate Golf club. Mr. EDW. WILSON DIXON, engi-
neer, 14 Albert Street, Harrogate.
W. Appleton £100 0 0
E. Long 91 0 0
C. H. Dickison 83 2 0
G. PARSONS, Harlow Hill, Harrogate (accepted) . 82 0 0

IRELAND.

For the erection of a labourer's cottage, Drumcollumb, Sligo,
for the Rural District Council. Mr. A. T. HERON, B. E.
Union, Ballisodare, co. Sligo.
J. Anderson, Ross Riverstown, co. Sligo . . £102 0 0
For sewerage works in the Main Street and Strand Street,
Wicklow. Mr. JOHN PANSING, surveyor.
J. Kelly £884 18 6
G. Dixon 690 0 0
W. Carroll 687 0 0
W. ROSE, Abbey Street, Wicklow (accepted) . 531 17 5

IRTHLINGBOROUGH.

For the construction of waterworks at Iρθlingborough. Mr.
J. WAUGH, engineer, Bradford.

Contract No. 1.—Cast-iron pipes.

Staveley Co.	£1,813	12	6
Clay Cross Co.	1,812	15	10
Stanton Iron Co.	1,311	0	0
Cochrane & Co.	1,810	2	6
Watson-Gow	1,782	17	6
J. & S. Roberts	1,774	7	6
Sheepbridge Co.	1,757	1	0
PARSONS (accepted)	1,743	12	0
A. G. Cloake	1,707	5	

Contract No. 2.—Suice-valves, air-valves and hydrants.

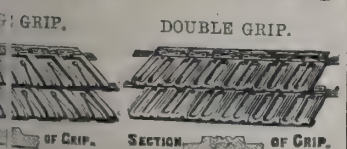
Glenfield & Kennedy	458	10	6
Alley & Maclellan	453	7	3
Lees & Sons	434	12	0
Birtley Ironworks	418	0	0
Lister & Co.	398	4	0
BLAKEBOROUGH & SON (accepted)	383	10	0

G. W. HOBMAN'S
IMPROVED KENTISH
TAR PAVING,
Special Stone & Mosaic,
Boulded or Plain,
LABS OR LAID IN SITU.
Manufacturers & Contractors.

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RA-COTTA WORKS,
CLEETHORPES.
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CHIMNEY POTS, VENTILATORS,
VASES, &c.
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THE BEST AND CHEAPEST
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The Farnley Iron Co. Ltd. Leeds.
Glazed Bricks.

The Company work their own Mines of Fire-clay,
Coal, and Iron, and manufacture also
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Depot—L. & N.-W. Railway, Broad Street, E.C.

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STANCHIONS AND GIRDERS

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MOULDINGS

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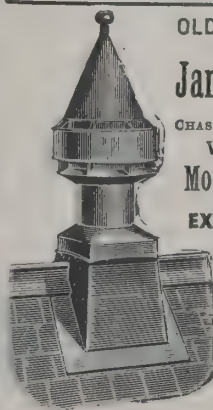
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VAL DE TRAVERS
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COMPRESSED OR MASTIC,
IS THE BEST MATERIAL FOR ROADWAYS,
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Breweries, Lavatories, Tennis Courts, &c.

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HAMILTON HOUSE, BISHOPSGATE STREET
WITHOUT, LONDON, E.C.



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ESTABLISHED 1852.

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CHAS. WATSON, F.R.S.A., & HILL & HEY)
Ventilating Engineers,
Mount Street, HALIFAX.

"EXCELSIOR" EXHAUST AND
SYPHON VENTILATORS

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Architecture.

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mates, &c., forwarded on
application.

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"Ventilator, Halifax."

FALDO'S ASPHALTE

Unsurpassed for Horizontal and Vertical Damp
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The Best Material for
Paths, Floors, Roofs, Stables, Cowsheds,
Coach-houses, &c.

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1851.

Every description of Asphalt laid and supplied.

T. FALDO, 283-285 ROTHERHITHE STREET,
LONDON, S.E.

LEEDS.

For alterations and additions to Oakwood bakery, Roundhay.
Messrs JAMES CHARLES & SONS, architects, 98 Albion
Street, Leeds.

Accepted tenders.

B. Dixie, Leeds, bricklayer and masonwork.
E. Davey, Leeds, carpenter and joiner.
F. L. Armitage, Leeds, plumber and glazier.
W. Watson, Headingley, plasterer.
Sharp & Harper, Holbeck, slater.
H. Lambert, Leeds, painter.

LONDON SCHOOL BOARD.

For erecting three brick structures for temporary school
accommodation in the first instance, Torrison Road site,
Catford.

J. Smith & Sons, Ltd.	£4,758	0	0
Thomas & Edge	4,310	0	0
T. D. Leng	4,197	0	0
J. & C. Bowyer	4,052	0	0
E. P. Bulled & Co.	4,047	0	0
F. & H. F. Higgs	3,946	0	0
W. Downs *	3,787	0	0

For sanitary works, Prospect Terrace school, Gray's Inn
Road.

Barrett & Power	£297	0	0
T. Cruwys	258	0	0
Durbin & Katesmark	247	0	0
J. Peattie	239	0	0
Stevens Bros.	223	0	0
R. P. Beattie	218	0	0
F. Bull *	205	0	0

* Recommended for acceptance.

For heating apparatus, South Grove new school, Mile End.

Adams & Son	£993	0	0
J. Defries & Sons, Ltd.	928	2	9
J. & F. May	910	0	0
Brightside Foundry & Engineering Co., Ltd.	893	0	0
C. Kite & Co.	850	0	0
Comyn Ching & Co.	808	10	0
B. Harlow & Son	787	0	0
J. Williams & Sons, Ltd.	738	0	0
J. Grundy	650	0	0
W. TRUSWELL & SON (accepted)	644	15	9

LONDON SCHOOL BOARD—continued.

For heating apparatus, Ashburnham new senior mixed school,
Chelsea.

Wenham & Waters, Ltd.	£466	0	0
Stevens & Sons	450	0	0
Wippell Bros. & Row	425	0	0
Palowkar & Sons	384	0	0
G. Davis	360	0	0
J. Wontner-Smith, Gray & Co.	352	1	0
C. Kite & Co.	350	0	0
Bates & Sons	329	1	0
G. & E. BRADLEY (accepted)	329	0	0

For heating apparatus, Telferscot Road new school, Balham.

J. Sloper & Co.	£890	1	0
Stevens & Sons	765	0	0
Adams & Son	692	0	0
Werner, Pfeleiderer & Perkins, Ltd.	658	0	0
J. Defries & Sons, Ltd.	648	0	0
R. H. & J. Pearson, Ltd.	647	0	0
J. Wontner-Smith, Gray & Co.	619	1	0
W. G. Cannon & Sons	598	0	0
Brightside Foundry & Engineering Co., Ltd.	597	0	0
J. Esson & Son	596	0	0
G. & E. BRADLEY (accepted)	481	0	0

For additional heating in girls' department, Belvedere
school, Borough Road.

Wippell Bros. & Row	£205	1	0
Palowkar & Sons	173	0	0
J. & F. May	166	0	0
J. Defries & Sons, Ltd.	165	0	0
J. Grundy	140	0	0
W. G. Cannon & Sons	139	0	0
Rosser & Russell, Ltd.	135	0	0
J. ESSON & SON (accepted)	129	0	0

For additional heating, Canterbury Road boys and
school, Old Kent Road.

Teale & Somers	£117	0	0
J. Sloper & Co.	104	0	0
Brightside Foundry & Engineering Co., Ltd.	69	0	0
J. C. Christie	65	0	0
J. Esson & Son	64	0	0
W. Simmonds	58	0	0
W. G. Cannon & Sons	56	0	0
G. & E. BRADLEY (accepted)	55	0	0

HAM HILL STONE. DOULTING STONE.

THE HAM HILL AND DOULTING STONE CO.

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ARTIFICIAL STONE For Stairs, Steps, Sills, Copings, Heads, Windows, Dressings, &c. Fireproof Floors and Stairs.

F. BRADFORD & CO. HOMERTON, LONDON, E.C.

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DAMP and DEADENS SOUND. Also for Damp Walls.

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W. SALTER & CO. SEYSSSEL AND LAVA ASPHALTES

Horizontal and Vertical damp course; flat roofs, basement, and other floors, &c.; or any other
Asphalting work. All communications to—

587 & 589 HARROW ROAD, KENSAL GREEN.

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LONDON SCHOOL BOARD—continued.

For structural alterations at various schools to be carried out during the Christmas holidays.

Sirdar Road, Chelsea.

Thompson & Beveridge	£709	0	0
London School Furniture Co.	684	10	6
Cowley & Drake	654	0	0
W. Hammond	640	0	0
General Builders, Ltd.	609	0	0
Stevens Bros.	608	0	0
W. R. & A. Hide	606	15	0
F. T. Chinchin & Co.	597	15	0
G. Neal	574	0	0
Marchant & Hirst	569	0	0
E. B. Tucker	508	0	0
E. TRIGGS (accepted)	497	0	0

Newington Green, Finsbury.

Parrott & Isom	£796	0	0
E. Lawrance & Sons	671	0	0
G. S. S. Williams & Son	642	0	0
J. Grover & Son	573	0	0
McCormick & Sons	532	0	0
A. Porter	513	0	0
L. H. & R. Roberts	507	0	0
Sheffield Bros	497	0	0
C. DEARING & SON (accepted)	474	0	0

Chatham Gardens, Hackney.

H. Line
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Sayer Street (special school), East Lambeth.

Maxwell Bros, Ltd.	£757	0	0
W. Downs	713	0	0
General Builders, Ltd.	592	0	0
J. Marsland & Sons	545	0	0
E. Triggs	535	0	0
W. V. GOAD (accepted)	497	0	0

LONDON SCHOOL BOARD—continued.

York Road, Finsbury.

H Line	+ 15 per cent. on schedule		
Sheffield Bros.	£351	0	0
G. S. S. Williams & Son	346	0	0
C. Dearing & Son	330	0	0
McCormick & Sons	322	0	0
M Pearson	310	0	0
London School Furniture Co.	291	11	0
W DENSHAM & SONS (accepted)	265	0	0

Battersea Park Road, West Lambeth.

North of England School Furnishing Co., Ltd.	£450	0	0
R. E. Williams & Sons	295	0	0
R. S. Ronald	250	0	0
R. A. Jewell	247	10	0
Lathey Bros.	203	0	0
E. Triggs	199	0	0
E. B. TUCKER (accepted)	199	0	0

Baker Street, Tower Hamlets.

Parrott & Isom	£227	0	0
A. J. Sheffield	155	0	0
A. E. Symes	154	0	0
G. Barker	149	0	0
H. BOUNEAU (accepted)	142	0	0

Gill Street, Tower Hamlets.

Parrott & Isom	£561	0	0
Vigor & Co.	435	0	0
H. Bouneau	430	0	0
G. Barker	418	0	0
A. E. Symes	399	0	0
A. J. Sheffield	388	0	0
J. F. HOLLIDAY (accepted)	314	10	0

MARKET BOSWORTH.

For drainage works in the parish of Barlestone, Market Bosworth. Mr. WALTER MORTON SYKES, surveyor.

W. Crane & Son	£170	0	0
R. Shipman	124	10	0
W. Moore	110	0	0
T. Daniel	108	9	6
F. C. Hewes	104	10	0
Beresford & Son	94	10	0
H. W. BECK, Market Bosworth, Nuneaton (accepted)	93	0	0

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WELDON STONE tools with facility, and combines CHEAPNESS
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This beautiful long-lost art revived.

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HAND POWER.

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ANNEALED STEEL SHEETS.
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AND
PLAIN WORKING-UP
SHEETS.

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5 FENCHURCH STREET, E.O.

MENSTON.

For the erection of two pairs of semi-detached villas at Menston, Yorks. Mr. WILLIAM H. SHARP, architect, 239 Rooley Lane, Bradford.

Accepted tenders.

M. Cowling & Son, Menston-in-Wharfedale, mason	£1,100	0	0
Scott & Jeffray, Menston-in-Wharfedale, joiner	550	0	0
J. H. V. Clapham, 314 Bowling Old Lane, Bradford, plumber	239	17	0
R. & T. L. Nelson, Leeds Road, Ilkley, slater	139	0	0
Walsh Bros., Cassfield, Guiseley, plasterer	120	0	0
A. Bramley, Weeton, Huby, near Leeds, decorator	37	0	0

NANTWICH.

For the erection of an infirmary and nurses' home at the union workhouse, Nantwich. Mr. C. DAVENPORT, architect, 152 Hospital Street, Nantwich.

C. W. Davenport	£8,740	0	0
Micklewright & Sons	8,237	0	0
J. Williams	8,108	0	0
J. Morrey	8,037	0	0
W. Townson & Son, Ltd.	7,850	0	0
F. Matthews	7,760	0	0
G. Bullock	7,700	0	0
Buchall Bros.	7,480	0	0
Cox & Vaughan	7,420	0	0
T. Huxley	7,300	0	0
P. Manley	7,220	0	0
J. Gallimore	7,198	0	0
J. T. GRESTY, Nantwich (accepted)	7,179	0	0

ST. AUSTELL.

For the carriage and trenching and laying of about 3,000 yards of 3-inch diameter cast-iron water-pipes from Tywardreath to the Tresare reservoir of the Fowey waterworks. Mr. T. H. ANDREW, engineer, 1 Trevarrick Villas, St. Austell.

T. Doney	£488	13	4
Oliver & Menear	276	0	0
W. H. SMITH & SON, Alma Vale Road, Clifton (accepted)	179	3	4
J. H. Mitchell	134	17	6

SALISBURY.

For the erection of new business premises, &c., The Canal, Salisbury. Mr. F. BATH, architect, Crown Chambers, Salisbury.

Jenkins & Sons, Ltd.	£9,793	0	0
H. Lovatt	9,557	0	0
B. E. Nightingale	8,880	0	0
Holliday & Greenwood	8,777	0	0
Webb & Co.	8,770	0	0
Vincent & Folland	8,600	0	0
W. H. Lorden	8,590	0	0
George & Harding	8,560	0	0
STEPHENS, BASTOW & CO, LTD., Bristol (accepted)	8,364	0	0

SCOTLAND.

For street works in Market Street. Mr. WM. WATSON, burgh surveyor.

P. Soutar	£659	14	10
D. Shaw	554	3	6
R. Taylor	510	10	1
Martin & Macfarlane	502	12	9
W. Wilson	444	17	4
R. Laing & Co.	402	3	3
J. Strachan & Son	383	13	9
T. S. DICK, Broughty Ferry (accepted)	360	11	8

SWADLINCOTE.

For the erection of a fire station, dwelling-house, stabling, shedding, &c., in the Darklands Road. Mr. THOMAS KIDD, surveyor.

J. Godfrey	£2,732	19	2
W. Goole	2,578	7	6
T. Barlow	2,381	7	3
T. Boss	2,297	8	7
J. F. Price	2,226	0	0
J. Waterfield	2,190	15	3
G. Hodges	2,149	0	0
Clarke	2,145	7	10
C. Jones	2,118	14	7
Cartwright Bros.	2,060	18	0
A. Brown & Son	2,047	0	0
Cuthbert	2,043	17	11
E. Clarke	2,004	6	5
LOWE & SONS, Burton-on-Trent (accepted)	1,967	0	0

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E. Bradshaw & Son,
322 Fawcett Road, SOUTHSEA.

BRISTOL:

C. Bradshaw & Son,
Chapel Street, St. Philips Marsh

WALES.

For the construction of a storage reservoir and filter-beds of about 262,500 gallons capacity, the construction of a service reservoir of 50,000 gallons capacity, the laying of about 6,160 yards of cast-iron socketed pipes, with valves, hydrants, &c., at Llanwrtyd Wells, Brecon. Mr. R. L. BAMFORD, surveyor, Wildemarsh Street, Hereford.

J. M. Willis	£5,488	5	5
Celtic Acetylene Co.	4,757	17	1
Bridgman	4,718	2	10
Johnson Bros.	4,434	5	6
Fitzmaurice & Co.	4,177	5	6

WINSFORD.

For cutting 3,077 yards trench (3 feet deep) for water-main in Over Winsford, Cheshire. Mr. JAMES WILKINSON, surveyor, Market Place, Winsford.

Bennie & Thompson	£163	7	4
J. Burnham	134	12	4
J. Downham	129	7	0
T. Rowland	100	8	5
S. Hutton	87	16	6
T. Dooley	75	3	0
H. Garner & W. Owen	71	15	0
J. Gott	66	2	6
J. FOWLES & SONS, Winsford (accepted)	49	10	0

WORCESTER.

For the construction of sewage disposal works for the Corporation. Mr. T. CAINK, engineer.

Contract No. 2.—Construction of disintegrating tanks, distributing tower, effluent carrier, &c.

R. H. B. Neal	£14,430	0	0
J. & T. Binns	14,056	0	0
A. G. Osenton	13,826	5	0
J. Dickson	13,436	6	0
Stokes Bros.	12,470	0	0
G. Bell	11,921	0	0
Currall, Lewis & Martin	11,710	10	11
Bentley & Lock	11,020	6	10
R. W. Fitzmaurice & Co., Ltd.	10,879	8	6
Johnson & Langley	10,750	1	9
A. Jewell	10,465	11	2
T. Vale & Sons, Ltd.	9,983	12	9
A. BRAZIER, Bromsgrove J. & (accepted)	9,589	13	9

CORRESPONDENCE.

SIR,—Our business, originally started for the manufacture and sale of the B. & S. patent folding-gates, has increased to such an extent, and other productions introduced by us now form so large a proportion of our business, that our title, "The B. & S. Folding Gate Company," is now a misnomer, and the cause of misunderstanding. In the future, therefore, the business will be conducted under the personal name of Arthur L. Gibson & Co.—Yours faithfully,

ARTHUR L. GIBSON.

19, 20 and 21 Tower Street, Upper
St. Martin's Lane, London, W.C.

VARIETIES.

At Bangor on Monday the new operating theatre and board-room erected in connection with the Carnarvonshire and Anglesey infirmary were formally opened.

In the course of carrying out repairs to the roof of a residence at Loud Sutton, in Lincolnshire, the workmen discovered a large hole in which the bees had deposited a quantity of honey. Over two pailfuls were taken out in a fine condition.

The massive granite pedestal for the statue of Queen Victoria, which is to be erected in Wellington, New Zealand, was shipped from Aberdeen on Saturday. It is 17 feet high, 17 feet 10 inches square at the base and weighs 40 tons. On the sides of the main block will be four fine bronze subject-panels. The granite comes from the Kemnay quarries.

The town clerk of Leeds (Mr. W. J. Jeeves) has tendered his resignation to the finance committee of the Leeds Corporation. Mr. Jeeves, who was formerly town clerk of St. Helens, was appointed town clerk of Leeds on May 3, 1899. He has just been called to the Bar, and it is his intention to practise at the Parliamentary Bar.

The eighth winter meeting of the British Association of Waterworks Engineers will be held on Saturday, December 12, at the Geological Society's rooms, Burlington House, W., at 11 o'clock, A.M. The Council and officers for 1904 and new members will be elected. Professor Henry Robinson will read a paper on the "Storage of Flood Water." Mr. Alfred J. Jenkins will read a paper on the "New Reservoir for the

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THE PASTEUR FILTER

Hoylake and West Kirby Waterworks," and Mr. Neil J. Peters will also read a paper on the "Cogan Extensions of the Cardiff Corporation Waterworks." After each paper a short discussion will take place.

At the inquest held on the bodies of the four men who died in consequence of injuries received owing to the collapse of the viaduct on the Cheltenham and Honeybourne new railway at Stanway on the 13th inst., the jury returned a verdict of "Accidental death" in all four cases, adding, however, the following rider:—"We are of opinion (1) That, considering the state of the weather, sufficient time was not given for the lime-mortar to set before the centres were removed; (2) that arches of this kind in the winter months especially should be set in cement mortar; (3) that the steam crane was carried further on to the centre of No. 10 arch than was advisable, having regard to the fact that the support of the crane roadway did not extend to the next pier." The inquiry was then closed.

It is a great satisfaction to single out an article of real and lasting utility that one can choose as a Christmas present for any friend young or old. The "Swan" Fountain pen is a gift which will not be merely admired on Christmas Day and then put away and scarcely ever looked at again; on the contrary, it will be placed in the pocket or on the desk, and its first use will probably be the dashing off of grateful thanks to friends for their kind remembrances. The convenience of this valuable pen will grow daily more apparent and indispensable, and as it is good for years of writing, the recipient will often regard it as a mark of the donor's regard. Mabie, Todd & Bard's goods are famous for their quality, while the obliging system of exchange insures every "Swan" possessor being perfectly suited. A fully-illustrated catalogue of pens, ranging from 10s. 6d. to 20s., will be sent post free on application to 93 Cheapside, London.

A NEW reredos has been erected at a cost of over 700l. by the subscriptions of the congregation in St. George's Church, Edgbaston, and has just been dedicated by the vicar (Canon Mansfield Owen). The reredos, which is of oak and covers the whole of the east wall of the chancel below the window, is divided into five parts, the centre being higher than the sides. The top is 20 feet above the altar steps. There are a number of niches with canopies, and it is hoped that all will in due time be filled with figures. In the centre niche has been placed a beautifully carved figure of Our Lord in the act of

blessing, the gift of Mrs. W. N. Fisher. The side niches and canopies will contain figures of the four evangelists, two of which have already been given by Mr. Joseph Barrows and Mr. C. Rainsford. The lower portion of the reredos is filled in with tracery in panels, and a bold moulding about a foot wide, richly decorated with shields and vine leaves, runs on the two sides and top of the centre portion.

THE cottage homes erected by the Salford Guardians at Culcheth were opened on the 19th inst. The village consists of twenty-four homes, each designed to accommodate twelve children. The homes are arranged in eleven pairs of semi-detached cottages and two single cottages. Each cottage contains a kitchen, day-room, lavatory and bath-room on the ground floor, and two dormitories, having six beds in each, a room for the foster-mother, and a spare room on the first floor. Near the entrance gates are placed the schools—a mixed school for 180 children, and an infants' school for 100, connected by a covered way. The offices and workshops' block contains superintendent's offices, board-room, stores for groceries, hardware and milk, bakery, tailors, shoemakers, plumbers and carpenters' workshops, engine and dynamo-room, where electrical energy for lighting purposes will be generated, boiler-house, laundry and swimming-bath. Water has been obtained on the site, and the water-tower forms a prominent feature of the buildings. Near the offices is the superintendent's house, and not far away is a small hospital of four wards having four beds in each ward.

COUNTESS CARRINGTON opened on Saturday last another portion of the County Council's scheme for housing the working classes. The new building, which will be known as Carrington House, is a lodging-house to accommodate 800 men. It has been erected in Mill Lane, Deptford, on the site of what was once known as an insanitary area, and has cost 51,500l. The site has an area of about 39,793 superficial feet, with a frontage to Mill Lane of about 300 feet. The building, of red brick relieved with Portland-stone dressings, is six storeys in height, exclusive of basement, the five upper storeys comprising 814 cubicles. In the lodgers' section of the ground floor have been provided spacious dining, reading and smoking rooms, &c. In addition to Carrington House, which has been named after Lady Carrington, wife of the present chairman of the housing of the working classes committee, twenty-four cottages, to be known as Sylva Cottages, each self-contained, with a small garden in rear, and providing accommodation for 144

WAPICTI

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Manufactured by **ASPINALL'S ENAMEL, LTD.** New Cross, London, S.E.

STOKE NEWINGTON SYNAGOGUE.

COWLEY MANOR: BALL-ROOM--BILIARD-ROOM.

PURLEY LODGE, BOSCOMBE, BOURNEMOUTH.

THE RED HOUSE, BOURNEMOUTH.

TRADE NOTES

WE have received from the Metallic Paint Co., Ltd., of Mount Stuart Square, Cardiff, samples of their paints. The "E. G." solution, which is specially adapted for painting laundry, hospital, asylum, conservatory, engine-house fittings, radiators, laundry appliances, hot and cold water-pipes, &c., has been used with marked success at the Newport and Monmouthshire, and many other hospitals, corporations, and railway companies' engineering works. It has a silvery appearance which is most attractive. When used on radiators or hot-water pipes it has no smell, a matter of vast importance, as many other paints used for this purpose are often very objectionable; it will stand constant washing without injury. The Metallic Paint Co. also supply a particularly good black enamel, known as "Phoenix" black enamel, and a superior red oxide which they term "No. 1 Special." The price of the "E. G." solution is reasonable and the covering properties of the paint satisfactory. The result is undoubtedly successful, the silvery appearance of the finish being most effective. They warn their customers against spurious and worthless imitations, and it is well to see that packages bear the signature of the inventor—"H. Moreton."

MARBLE arrolithic has been selected for the paving of the new operating theatre at Guy's Hospital, and is being laid by Arrolithic Ltd, 18 Berners Street, London, W.

THE Saxon Portland Cement Company, Ltd., are to be congratulated on the result of working for their financial year ending on September 30 last. The company is able to continue the substantial dividend of 10 per cent, with 2½ per cent. bonus, and to apportion the remainder of its profits as follows:—Debture sinking fund, 14·5 per cent.; reserves, 19·4 per cent.; balance carried forward, 19·7 per cent.

APROPOS of a fire which occurred two or three days ago at the premises of Messrs. Hamilton & Manson, Melville Street, Glasgow, which was successfully extinguished by the "Titan" patent automatic sprinkler with slight damage, Messrs. George Mills & Co, proprietors of the "Titan" sprinkler, have received the following letter from Messrs. Hamilton & Manson:— "Your favour of the 21st inst. to hand this morning, and we have pleasure in testifying that at our recent small fire the 'Titan' sprinkler acted very promptly and extinguished the fire with very little damage. We may say we have always found your sprinkler most satisfactory." This is the third fire which has occurred at these premises, all of which have been

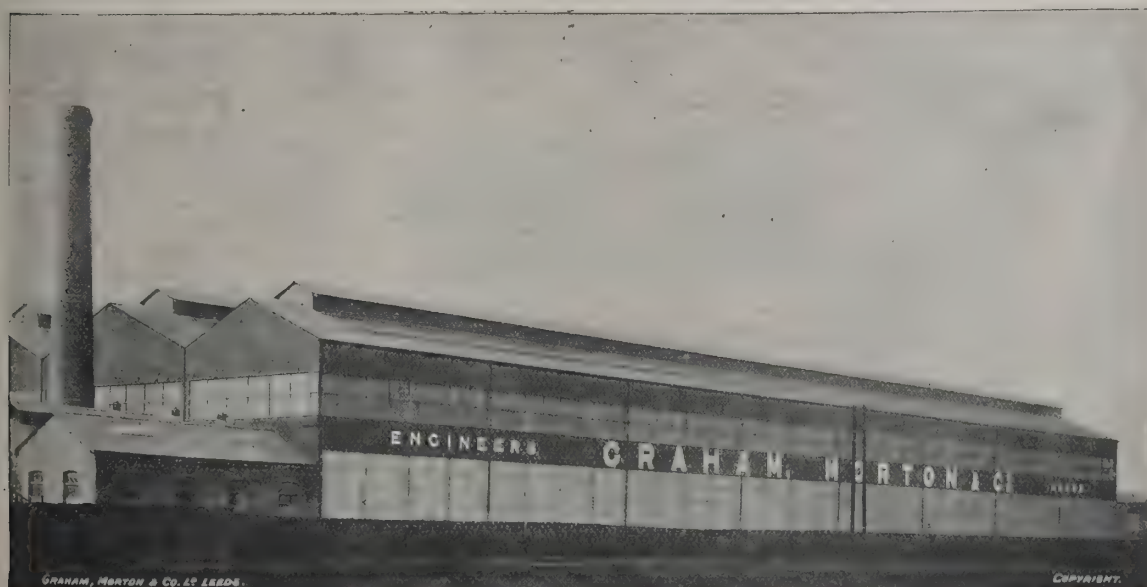
SOLE PARTNERS:—MAURICE GRAHAM and JOSEPH MORTON.

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GRAHAM, MORTON

& CO., Ltd.

Head Office and Works—HUNSLET, LEEDS.



The above Photograph shows our new Engineering Works at Leeds. The whole of the Steel Structural and other work has been made and erected by ourselves. First sod cut May 16, 1903. Works opened Oct. 30, 1903.

STEEL STRUCTURES & ROOFS

successfully extinguished by the "Titan" sprinkler with little or no damage.

MESSRS. SAM DEARDS, LTD., of 34 Old Broad Street, and Victoria Works, Harlow, Essex, have lately secured and carried out the following orders:—Messrs. Brooks & Co., Farringdon; Selwyn Avenue schools, Walthamstow; parade shelters, Bridlington; Royal Engineers, reconstruction of barracks, Colchester; Windsor Street gas works, Birmingham, for meter repairing shop and stores; Brimsdown electric-power station; ironwork and glazing at Bromley, Kent; Hornsey Urban District Council depot; Charing Cross Hospital extensions; Messrs. Foy & Gibson, Finsbury; Messrs. Seward & Co., Gloucester; Sudbury destructor buildings; iron buildings, Croydon; Hare & Co, Holborn, &c., &c., for their patent "Superior" glazing system.

ELECTRIC NOTES.

AFTER considerable opposition the sanction of the Local Government Board has been received by the Clacton-on-Sea Council to the borrowing of 15,225*l.* for an electric-light installation.

THE Croydon Rural Council are about to promote a Bill in Parliament for powers to extend the Croydon electric tramways from Purley to Smitham Bottom, and another branch from Purley to Whyteleaf.

THE most considerable gap left in electric tramway communication between Liverpool and Leeds is on the Yorkshire border. At a Local Government Board inquiry at Todmorden relative to the application by the Todmorden Corporation for borrowing powers for 21,000*l.* for electric lighting and power purposes and 6,000*l.* for an electric refuse-destructor it was stated that there was no intention of laying electric tramways at present, but something might be attempted in the way of electric omnibuses. There was no opposition to the scheme.

"THE Practical Electrician's Pocket Book and Diary for 1904" has just been published, price 1*s.* This admirable little work has now reached its sixth year, and shows a record of steady progress and improvement, never failing to keep pace with the most recent developments of electrical practice. In this, as in previous issues, pains have been taken to keep it abreast of the times, and many alterations and additions have

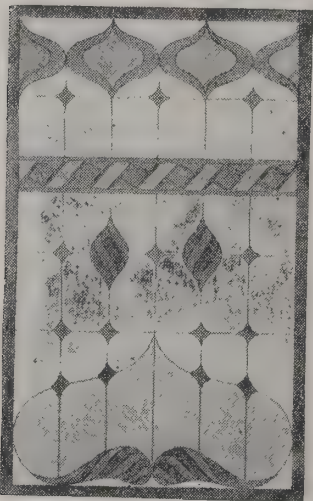
been made to it. Copies may be obtained from the publishers, Messrs. S. Rentell & Co., Ltd., 36 Maiden Lane, Strand, W.

THE Clyde Valley Electrical Power Company will apply power to supply electricity for lighting and power purposes to the burgh of Johnstone, N.B. The gas is under the power of the Municipal Corporation, the capital is over 20,000*l.*, and the town has completed considerable extensions for future demands, while the price has been reduced to 2*s.* 8*d.* per 1,000. It is understood that the village of Howwood is about to apply to Johnstone for the supply of gas, while the Corporation at present, besides supplying Johnstone, lighting Elderslie Quarrelton, and lately they have added Brookfield, a new suburb of Johnstone. Many are in favour of the new illuminant.

THE lessees for the electric lighting of Hamilton, N., under the Town Council (Edmundson's Electricity Corporation Ltd.), whose resident engineer and manager is Mr. T. Colson, announce that owing to the liberal patronage extended to them, having connected 9,000 lamps to their main in nine months, they have been able to effect a very considerable reduction in their scale of charges both for electric lighting and power. The reduced rate for lighting, which comes into force as from November 1, is a flat rate of 4*d.* per unit, and for power 2*d.* per unit for the first hour, 2*d.* per unit for the second hour and 1*d.* per unit for every succeeding hour per day. The company are presently fitting up 50 Gilbert arc lamps in Cadzow Street and Townhead Street. On the Town Council's inspection, and on their approval the lamps, it is expected, will be adopted for lighting general throughout the burgh.

THE finance and Parliamentary committee of the Stepney Council has decided to recommend the Council to apply to the London County Council for loans amounting to nearly 50,000*l.* for the purpose of effecting improvements in the borough. 12,400*l.* is required for the improvement of Narrow Street, Limehouse, in the vicinity of Eagle wharf; 3,200*l.* for the widening of Dean Street; 2,288*l.* for the widening of Bell Lane Whitechapel; 18,246*l.* in respect to Blyth's wharf and the widening of Narrow Street in that neighbourhood; 6,000*l.* for the acquisition and demolition of the historic Vine House Mile End. Owing to the disinclination of the London County Council to pay anything towards the cost, other improvements are to be postponed for the present.

CLOISONNE GLASS



A new decorative material transparent and opaque.

The CLOISONNE GLASS CO.

66F Berners St. Oxford St. London W.

prices from 3*s.* per square foot



LIVERPOOL.

Liberal Commission allowed to BUILDERS AND ARCHITECTS for introduction of Business.

Total Security, £3,700,000.

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ASSURANCE CO Ltd

FIRE OFFICE

19 LOMBARD STREET LONDON, E.C.

ESTABLISHED 1782.

MODERATE RATES.

ABSOLUTE SECURITY.

LIBERAL LOSS SETTLEMENTS.

PROMPT PAYMENT OF CLAIMS.

Electric Lighting Rules Supplied.

LOSSES PAID OVER

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GIBBS & CANNING, LTD., TAMWORTH.

ARCHITECTURAL

TERRA-COTTA

IN ALL COLOURS.

SANITARY PIPES.

GLAZED BRICKS.

For Index of Advertisers, see page x.

BUILDING AND BUILDERS.

erection of the new Corporation Halls, Langside, Glasgow, which are situated within part of the Camphill lands, at the corner of Pollokshaws Road and Langside Avenue, is rapidly nearing completion, and it is expected that will be ready for occupation early in December. There is a large hall to accommodate about 750, a lesser hall to accommodate fully 300, with buffet-rooms and kitchens for each hall, the necessary artistes' rooms and cloak-rooms. There are a number of smaller rooms suitable for holding classes and meetings of societies and committees. The whole buildings are being lit throughout with electric light and ventilated by means of electrically-driven fans. It is intended to have a number of Corporation recitals on Saturday afternoons in the hall, as soon as they are ready for occupation. These halls were formerly the National Bank buildings in Queen Street, the masonry has been taken down and re-erected just as it stood in Queen Street in perfect condition, only one or two details requiring to be renewed. Of course, the whole interior has been rearranged to suit the purposes to which the building is now to be put.

THE London and North-Western Railway Company's plans in regard to the proposed improvement of the Exchange Station, Manchester, are, according to the statutory notice which was published in the *Gazette*, as follows:—To extend to a distance of 5 yards or thereabouts, on the south-eastern side thereof, the bridge carrying the company's Liverpool and Manchester railway over Bury Street. To extend for a distance of 7 yards or thereabouts, on the south-eastern side thereof, the bridge carrying the said railway over Legendre Street. To make a new bridge over Gravel Lane, Trinity Market and Blackfriars Road, commencing at a point on the north-west side of Gravel Lane, 32 yards or thereabouts northward from Bury Street, and terminating at a point on the north-east side of Blackfriars Road, 32 yards or thereabouts north-eastward from the bridge carrying the said railway over Bury Street. To extend for a distance of 23 yards or thereabouts, on the south-eastern side thereof, the bridge now carrying Salford approach over Greengate, and to stop up and discontinue and extinguish all rights of way over the undermentioned streets, roads, highways and places, and to appropriate and use sites or portions of the sites thereof for the purposes of the company's undertaking—that is to say, Union Street, Harding Street, Salford Approach, King's Head Yard and all other streets, roads, thoroughfares, courts, passages and

places situate within the area bounded by Blackfriars Road, Chapel Street, Greengate and the Company's Exchange station. To acquire, by compulsion or agreement, and to hold certain lands lying on the south-east side of and adjoining the company's Liverpool and Manchester Railway and Exchange station between Deal Street, Chapel Street and the Cathedral Approach.

EFFECTIVE ADVERTISING.

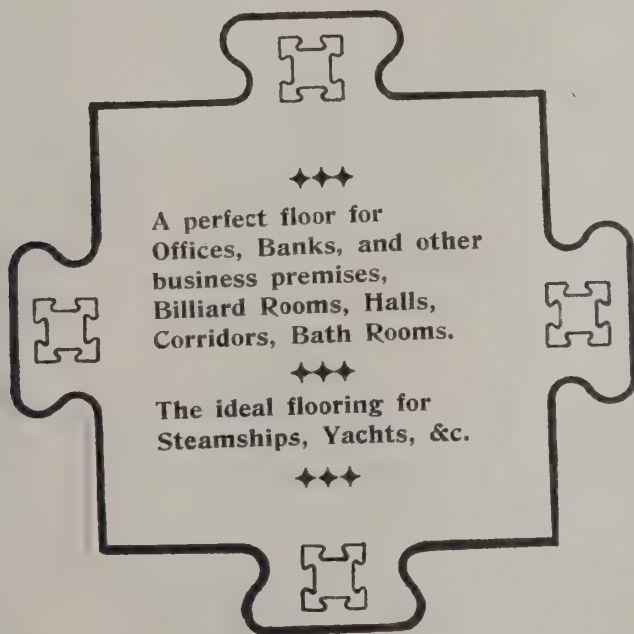
THE value of the artistic quality in advertisements is now, we believe, generally recognised, and whereas but a comparatively short time ago painted lettering, not always too perfectly executed, used to suffice, we now look for something of a much more elaborate nature.

Mr. W. G. Pether has made it his mission to supply the need thus created, and at his works at Nos. 58 and 60 Banner Street, E.C., may be seen an extensive assortment of newest designs in "Brilliant" glass, metal, wood and other letters, in all of which quality and good workmanship are evident.

One of Mr. Pether's latest introductions is his "Empire" letter, which is of notably handsome design. The body of this letter is cast in a special metal alloy, while the face, which may be in brass, copper, tin or even silver, and can be enriched with stamped or repoussé ornament, is cast on, thus forming a homogeneous whole, the example which we admired at the works being a bold and effective rendering in "Empire" style. This period, however, although it gives its name to the pattern, need not necessarily be followed. The "Carrara," which is another of Mr. Pether's recent introductions, is also a handsome and effective letter. It is made in porcelain, and can be finished in any colour to order, and gilt either wholly or in part. An attractive form of this letter is in white and gold, the face being in lustrous white, with the deep-bevelled shade and sides finished in highly-burnished gold.

A specialty of Mr. Pether's, who is introducing several new kinds of tablets, &c., is that he is able to work to architects' own sketches, and retains designs so produced as the exclusive property of such architects, to whom alone they can be supplied in any quantity. Another improvement introduced by Mr. Pether is his method of fixing wood letters, by which the expense and unsightliness of iron rails across the backs of the letters are dispensed with, and the face of the letters is protected from the effects of the weather, the rain draining down behind the letters without coming into contact with the gilding.

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THE INVENTIONS EXHIBITION, BRIGHTON.

AMONG the various objects to be seen at the Inventions Exhibition, which opened on Wednesday last at the Grand Aquarium, Brighton, under very favourable auspices, special mention may be made of the exhibits at the Stand occupied by Diespeker, Limited, of Holborn Viaduct, comprising interesting specimens of their patent British glass mosaic, which, owing to its comparative cheapness, should now, it is claimed, enter largely in the decoration of theatres, restaurants, hotels, churches, public and other buildings, where rich-looking mural decoration is deemed essential. The applicability of the principle to the outside as well as the interior of buildings is amply demonstrated, and evidence is moreover afforded that it can also be adopted with advantage in the manufacture of glass mosaic sign letters, which are so extensively used for shop fronts and other purposes. The introduction of this British glass mosaic is regarded as an invention of a significant character, inasmuch as it is a new home manufacture of an artistic kind that will tend to the beautifying of homes and public buildings at a relatively small cost. The specimens exhibited of this "Opus Tessellatum" comprise, among others, an "Allegorical Design of Venice," an "Allegorical Roman Frieze," and a representation of "St. Nicolo di Bari."

Some capital specimens are also shown of Diespeker's patent marble mosaic stairs, which, besides having a nice appearance, give a good foothold and are very durable. We understand that these staircases have been supplied by the firm in question for the Walthamstow Theatre, Chelsea Palace and South London Music Hall (Messrs. Wilson & Long, architects); the National Hall and the Pavilion Theatre, Glasgow (Mr. Bertie Crewe, architect); the Empire Theatre, Newcastle (Mr. F. Matcham, architect); the Horticultural Hall, Westminster (Mr. E. J. Stubbs, architect), and the new Board schools, Canterbury (Mr. W. J. Jennings, architect). An example, moreover, is shown of Diespeker's patent mosaic inlet steps, which have been specially designed to meet the requirements of a staircase where the noise of busy tramping feet is undesirable, and where a good foothold is likewise assured.

Nor should mention be omitted of other specialties exhibited, such as Diespeker's patent mosaic bath, mosaic wall lining and dado, besides specimens of Venetian marble mosaic floors and of a dome treated in plain gold, &c., the whole of which present an artistic appearance.

FIREPROOF CONSTRUCTION.

IN view of the constantly increasing number of enormous blocks of buildings, such as hotels, flats, schools, warehouses, &c., and the great height to which they are carried, the need that the construction should be entirely fireproof becomes daily more pressing. It is not sufficient that the materials employed in the actual structure itself be fire-resisting; it is also essential for true safety, that the whole of the joinery and fittings be of an unflammable nature. Hitherto this desideratum has been difficult, if not impossible, of attainment, the employment of wood chemically rendered fireproof having entailed largely increased expense, to say nothing of the British workmen's well-known unwillingness or inability to depart from the old well-worn track in favour of anything new. This difficulty is now, however, thanks to the energy displayed by The Non-flammable Wood and Fabrics Company, Ltd., of Townmead Road, Fulham, S.W., overcome, and more than this, a positive saving can be effected by the use of the prepared wood, as will shall demonstrate later.

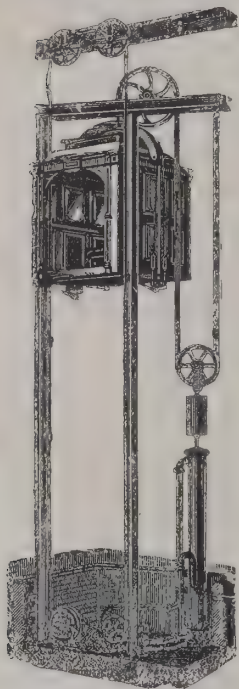
The Non-flammable Wood, &c., Company, is about to be reconstructed on very much wider lines, and the directors have already erected on their extensive riverside premises at Fulham a large range of workshops, which they have fitted up with the latest and most improved woodworking machinery, all of which is electrically driven.

Here they are prepared to turn out every description of carpentry and joinery in fireproofed wood of every description. The process of fireproofing makes absolutely no difference in the appearance or durability of the wood, which takes paint, polish, &c., exactly the same as untreated wood, and an extremely important fact to note is that while the doors, stairs, window-sashes, mantels and other joinery made of fire-resisting wood can be supplied by the Non-flammable Wood, &c., Company at a cost of only 15 per cent. above that of ordinary wood, insurance companies will allow a rebate of 30 per cent on all buildings, including hazardous risks, where the non-flammable wood is employed.

The Non-flammable Wood and Fabrics Company, Ltd., are now in a position to contract or sub-contract for all the woodwork (carpentry and joinery) of a building complete and fitted up as required, and will be glad to supply estimates for jobs of any magnitude.

It is intended to erect a new Primitive Methodist chapel in Croft Street, Lincoln, to replace the present wooden structure.

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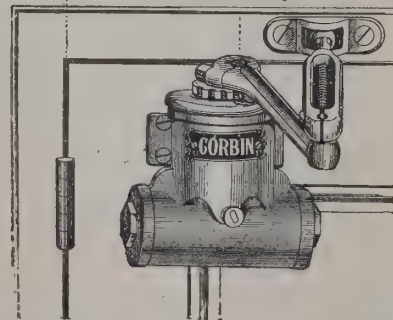
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ELECTRICITY AT STOKE-ON-TRENT.

COLONEL A. G. DURNFORD, R.E., of the Local Government Board, held an inquiry last week at Stoke-on-Trent with respect to an application by the Town Council for sanction to borrow a sum of 38,781*l.*, viz. 30,640*l.* for an electric-lighting scheme and the provision of a refuse destructor in connection with the electricity works, 1,877*l.* for the purposes of public walks and pleasure grounds, 5,550*l.* for the improvement of High Street, 42*l.* for works of sewerage, 336*l.* for the provision of a steam fire-engine, 221*l.* for the provision of a steam disinfecter, and 115*l.* for the construction of a wharf wall to the canal at Field Place in connection with the proposed destructor works. The town clerk (Mr. J. B. Ashwell) stated that the electric-light works were to be erected on land already belonging to the Corporation, and that the area for electric lighting was the area of the borough. A memorandum in favour of providing electric lighting for the borough had been signed by 88 per cent. of the manufacturers and most of the tradesmen, and there was likely to be a large demand for the light and for electric power. Mr. A. Burton (borough surveyor) and Mr. C. J. Tiddeman (electrical engineer) explained the plans for the buildings, and described the plant it was proposed to lay down for the production of electricity and for the destruction of refuse. In reply to Mr. J. Massey, the town clerk stated that to guard against loss on the undertaking during the first few years two years' grace in the repayment of loan and interest had been asked for. The town clerk explained, with regard to the proposed improvement of High Street, that the widening was necessary owing to the Board of Trade having allowed the Potteries Electric Traction Company to lay a double set of rails there, notwithstanding the opposition of the Town Council. Mr. Moncur (county surveyor) stated that the County Council was in accord with the proposal, and was of the opinion that, as the Tramway Company had brought about the necessity for widening the road, they should be made to contribute something towards the cost. Formal evidence was given in support of the other proposed loans, some amusement being caused by the statement that the manual fire-engine, which it was intended to replace by a steamer, was probably one hundred years old. In reply to an appeal by Mr. C. F. Robinson, the Inspector promised to send in his report as early as possible, and said that no doubt the Local Government Board would do all it could to expedite the matter. The

Inspector subsequently visited the sites of the proposed works and improvements.

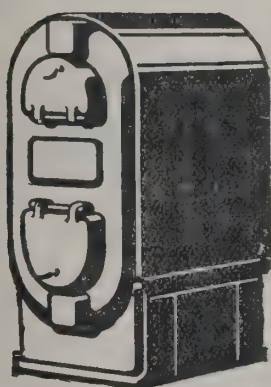
THE ENGINEERS' CLUB.

UNDER the foregoing title a new association has been formed for the promotion of social intercourse between members of the engineering and allied professions. The programme at present arranged includes a smoking concert at the Westminster Palace Hotel on Friday, November 27, and a children's party, followed by a Cinderella dance, at the Caxton Hall, Westminster, on Saturday, December 12. An attractive list of other social gatherings to follow is being prepared. The club has been founded under the auspices of the Junior Institution of Engineers, but membership is open to the profession generally upon proper introduction. It is hoped, in the future, to be able to engage permanent rooms so that members may enjoy the usual advantages of a club-house. Mr. Fred. S. Pilling, 20 Victoria Street, Westminster, S.W., one of the joint-hon. secretaries, will be pleased to answer any inquiries.

CONTRACTORS' CLAIMS.

IN the King's Bench Division, Dublin, application was made before the Lord Chief Baron, Mr. Justice Kenny, Mr. Justice Barton and Mr. Justice Wright, in a case in which Messrs. H. & J. Martin, Ltd., builders and contractors, are plaintiffs, and Messrs. Arnott & Co., Ltd., of Henry Street, are defendants, and which was several days at trial before Mr. Justice Madden and a city special jury.

Serjeant Dodd, on behalf of the plaintiffs, said he had to apply to the court to reverse an order made by Mr. Justice Madden at the trial, and to allow judgment to be given for the plaintiffs. The case proceeded upon a trial of issues of fact, and if the matters of fact had been determined in such a way as to lead to the assessment of an amount of damages, it was arranged between counsel and assented to by the judge that the matter should be sent for adjudication, and that details should not be given until the question of principle had been discussed. The action was by the plaintiffs against Messrs. Arnott, with Mr. George P. Beater, who was their architect, as a second defendant. The case arose out of a



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contract for the building of Messrs. Arnott's new premises in Henry Street, the contractors for which were the plaintiffs, who proceeded with the work on a signed contract and specifications. It appeared that Mr. Beater wrote to Messrs. Martin telling them about the contemplated erection of the buildings, and suggesting to them to tender, saying that the bills of quantities had been made out by Messrs. Gribben & Butler, who could supply them to plaintiffs. Accordingly the latter got the documents on payment of 10%, and their case now was that these bills of quantities obtained from Messrs. Gribben & Butler were taken out on a different specification from that which Mr. Beater said they were taken out on. That was the short matter in the case, and plaintiffs claimed 5,000% damages in respect of the extra work imposed upon them in fulfilling the actual contract, which was for 18,400%. They struck at the root of the contract, while defendants maintained that they were bound by it. The question for the court, therefore, was whether there was evidence to support the findings of the jury, and whether on those findings the plaintiffs were not entitled to an inquiry by a proper officer as to damages, or to a new trial in the alternative. No evidence was called for the defendants, and the jury found that Mr. Beater was a partner with Messrs. Gribben & Butler in taking out the quantities; that the work provided by the contract and specification differed from the bill of quantities; that Mr. Beater knew the quantities were taken out on the document relied on by the plaintiffs; that Mr. Beater represented to the plaintiffs that the quantities were taken out on the specifications, but that he did not do so fraudulently. They also found that Mr. Beater acted as agent for the defendants. On these findings a verdict was entered for the defendants, and Mr. Justice Madden allowed either side to move for judgment on the defendants' counter-claim, which was for 1,850%, being for penalties at the rate of 25% a week for seventy-four weeks' delay in carrying out the contract. Counsel maintained that on behalf of the plaintiffs they had proved not actual fraud, but what was equivalent to fraud, and that the case should not have been sent to the jury without hearing defendants' case and their explanation.

Mr. O'Shaughnessy, K.C., stated the case for the defendants, who maintained that the plaintiffs were bound by their contract. If this case was to be carried at all by the plaintiffs it could only be carried on the direct issue of fraud. There was no halfway house. The case had been confused by raising the argument that defendants had to do more work than they

imagined they would have to do, but in the end it came round to this—whether the claim made by these plaintiffs could be sustained in point of law. The party who alleged fraud must prove it as he alleged it, or in substance as he alleged it, and he (counsel) submitted that the plaintiffs had failed to do that here. There was nothing to show that they had not entered into the contract with their eyes open, and in the action they had entirely failed to sustain the allegations set out in their statement of claim, because admittedly the plans showed everything that was required to be done. Counsel contended that there was no evidence to show that the specification called Mitchell's specification, on which the plaintiffs relied, was, as plaintiffs alleged, the original specification or had been copied from it. Unless it could be shown that it was, plaintiffs had really no case. It was the only thing they had to take them out of the rule which bound them by the contract. Counsel pointed out that the principal witness examined as to this document had only given two or three instances of similarity between it and the contract specification, and a comparison of the two would show that there were more matters in the contract specification which were not in Mitchell's than there were in Mitchell's which were not in the contract specification.

Mr. Henry, K.C., in reply for the plaintiffs, dealt with three questions which the Lord Chief Baron suggested, viz. the proper measure of damages; secondly, the three items—the alleged alterations in the specification for the heating chamber, for the extra work arising out of the extra height of the pillars wrongly supplied by independent English contractors, and that arising out of an alleged alteration as to the amount of plastering work; and thirdly, as to the counter-claim for penalties for delay. The Court reserved judgment.

ARCHITECT'S RESPONSIBILITIES.

At the City Sessions, Dublin, before the Recorder, a case was heard in which Mr. Mathew Farrell sued Mr. George Tighe Moore, architect, to recover 50% damages for injuries sustained by the negligence of defendant—who was employed by the plaintiff to superintend and see certain work done by a builder and give certificate for it—in giving certificates for work not done.

The case for the plaintiff was that he employed Mr. Moore to certify the building of a house at Glasnevin by Messrs.

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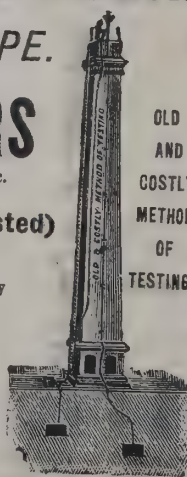
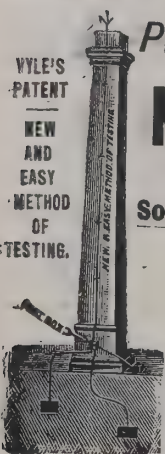
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For Index of Advertisers, see page x.

Scott & Co., which was to be finished in June 1902. Instances were given by the plaintiff in which he alleged that the work had not been carried out in accordance with the specifications. He was kept out of possession of the house for nine months. The contract price was 800*l*., while the law costs in an action he brought against Messrs. Scott in connection with the matter were 700*l*.

Mr. Butler, an architect, said he believed 100*l*. better house could be built for the money.

For the defence, Mr. Moore stated that the matters complained of had been dealt with by allowances or by the defects being afterwards put into repair by the contractors.

Counsel for the defendant submitted that no action could lie against the architect after he had given his certificate unless fraud was proved.

The Recorder pointed to the hardship that an unfortunate man should have to pay 700*l*. for having these matters now before him tried. He did not think their jurisprudence was so faulty as to say that if a builder and an architect were alike guilty of gross negligence there was no remedy if the architect gave a certificate. He gave a decree by consent for twelve guineas.

INCORPORATED SOCIETY FOR PROMOTING THE ENLARGEMENT, BUILDING AND REPAIRING OF CHURCHES AND CHAPELS.

THIS Society held its usual monthly meeting, the first of the present session, on Thursday, November 19, at the Society's House, 7 Dean's Yard, Westminster Abbey, S.W., the Rev. Canon J. Erskine Clarke in the chair. There were also present Lieutenant-Colonel the Hon. G. H. W. Windsor-Clive, the Hon. Richard Strutt, the Revs. Canon J. Allen, D.D., S. A. Donaldson and Canon Utterton, Messrs. E. Lee Warner, C. K. Norman, J. E. Ollivant, Basil E. Richardson, F. H. Rivington, Lewis Wigram and the Rev. W. B. L. Hopkins, secretary. Grants of money were made in aid of the following objects, viz.:—Building new churches at Bristol, St. Aidan, 130*l*., for the first portion; Catford, St. Andrew, Kent, 200*l*.; Clydach, St. Mary the Virgin, near Swansea, 175*l*., and Kippington, St. Luke, near Sevenoaks, Kent, 100*l*., and towards enlarging or otherwise improving the accommodation in the churches at Bettws Evan, St. John, Cardiganshire, 15*l*.; Brechfa, St. Teilo, near Carmarthen, 20*l*.; Feckenham, St. John

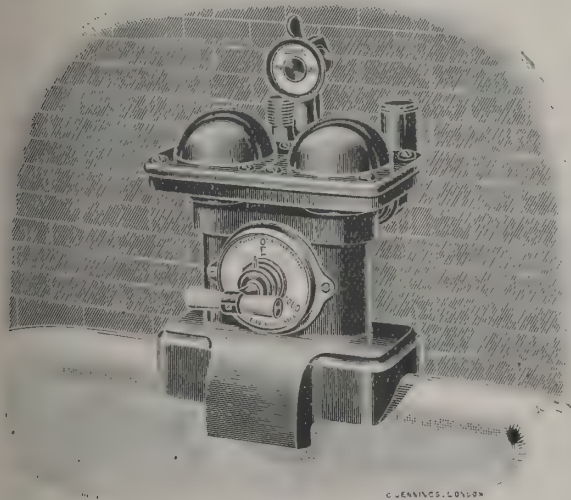
the Baptist, near Redditch, Worcester, 20*l*.; Haverfordwest, St. Mary, Pembrokeshire, 75*l*.; Hornsey, St. Peter, Middlesex, 50*l*., making in all 175*l*.; Leicester, St. Mark, 50*l*., and Thornham, All Saints, near King's Lynn, Norfolk, 40*l*. Grants were also made from the Special Mission Buildings Fund towards building mission churches at Aldersbrook, St. Gabriel, near Wanstead, Essex, 50*l*., and Gorefield, near Wisbech, Cambs, 20*l*. The following grants were also paid for works completed:—Cotteridge, St. Agnes, King's Norton, 200*l*.; Tilbury, St. Chad, Gravesend, 100*l*.; Darwen, St. George, Lancs, 143*l*.; Upton Park, St. Alban, Essex, 150*l*.; Saintbury, St. Nicolas, Broadway, Worcs, 10*l*.; Cardiff, All Saints, 100*l*.; Waverley Park, St. Silas, Surrey, 900*l*., on account of a grant of 1,000*l*.; Muswell Hill, St. Andrew, Middlesex, 300*l*.; Weston-on-the-Green, St. Mary, near Bicester, Oxon, 10*l*.; Hartshorne, St. Peter, near Burton-on-Trent, 20*l*.; Haslemere, St. Christopher, Surrey, 120*l*.; Penrhicweiber, All Saints, Glamorgan, 40*l*.; Gosberton, near Spalding, 30*l*.; Weaste, near Manchester, 40*l*.; and Tranmere, St. Paul, near Rock Ferry, Cheshire, 30*l*. In addition to this the sum of 557*l*. was paid towards the repairs of twenty-eight churches from trust funds held by the Society. The Society likewise accepted the trust of a sum of money as a repair fund for the church of St. Columba, Bradford. The grants voted at this meeting have nearly exhausted the funds at the disposal of the committee. Liberal contributions are earnestly invited to enable the committee to vote substantial grants, and to continue the valuable work which this Society has so successfully carried on during the past eighty-five years.

THE SURVEYORS' INSTITUTE.

At the Surveyors' Institute on Monday evening a paper was read by Mr. Herbert T. Scoble on "Industrial Decentralisation an Important Factor in the Solution of the Housing Problem." The lecturer considered that a review of present circumstances with regard to economic production was singularly opportune. Past conditions were briefly examined, Mr. William L. Madgen's pamphlet on "Industrial Redistribution" was favourably commented on, and a criticism of the "Garden City" project from a business point of view followed. Like many other schemes (More's "Utopia," Bellamy's "Looking Backward" and Blatchford's "Merrie England," to mention

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a few of the best known), the practical carrying out of the theorist's view presented, he said, great difficulty. A city, he argued, must be complete in every respect, and until all the varied parts worked harmoniously together nothing much worth doing could be accomplished. Some points in Mr. Howard's garden city scheme were considered in detail, the lecturer arriving at the opinion that owing to the enormous expense attached to the realisation of the scheme it was practically impossible. His comparison of the advantages and disadvantages of town and country with regard to factories and labour showed a substantial balance in favour of the latter, though exceptional cases would occur from time to time and should not be taken into account. Short descriptions of two recently-erected factories, one rural and one suburban, lent weight to the lecturer's contention that decentralisation paid, and that most substantial economies were made in the handling of goods, in rent, rates, insurance against fire, &c.

Bournville, he said, dated from 1879, but it was not until 1895 that any great progress was made with the village. It was now administered by a Trust, and it was satisfactory to learn that notwithstanding the provision of large gardens, the erection of semi-detached houses, or of groups not exceeding four in number, a return of 4 per cent. was secured after payment of all outgoings. In constituting the Bournville Village Trust (the lecturer went on) the founder, Mr. George Cadbury, stated that he was desirous of alleviating the evils arising from insanitary and insufficient accommodation, and of securing to workers in factories some of the advantages of outdoor village life, with opportunities for the natural and healthful occupation of cultivating the soil. The operations of the Trust not being confined to any one locality, various suggestions as to the use to be made of the funds were put forward, amongst others such dwellings as may be erected to occupy about one-fourth of the sites on which they stood, the remainder to be used as gardens or open spaces and factories and shops, to be limited to one-fifteenth of the total area of the estate. From a private census taken in December 1901, Mr. Scoble had learnt that of the householders living in Bournville 41·2 per cent. worked in Messrs. Cadbury Brothers' factory, 40·2 per cent. in Birmingham, and the remainder, 18·6 per cent., in the villages of King's Norton and Selly Oak. The provision of comfortable homes and good gardens was sufficient to attract numbers of workers in Birmingham, and that the gardens were successfully cultivated was borne out, he said, by the following comment from the *Economic Review*:—"There are 43½ acres under

cultivation, and at the ascertained average yield per acre of 59*l.* 8*s.* 8*d.* per annum this gives a total of 2,585*l.* 7*s.* per annum. Under ordinary methods of farming the yield was previously less than 5*l.* per acre per annum—that is, the total yield of the 77 acres which are at present opened out used to be about 385*l.* per annum. Thus at the present time these 77 acres produce more than six times the value of their former produce, and in addition, at the same time, house under ideal conditions a population of nearly 2,000 people." The yield per acre, the lecturer resumed, was worked out from the return per garden, which after making allowances for all outgoings, showed a net gain of 1*s.* 11*d.* per week. The average garden covered some 600 square yards, and the estate gardeners prepared and planted the same so that the tenant on entry had not to convert a howling wilderness, brought into undue subjection in parts by building operations. The rows of fruit trees at the end of the gardens formed a very pleasant screen between opposing backs. The cottages built before 1901 had mostly parlour, kitchen, scullery and three bedrooms, and the usual conveniences, while some of the larger houses had an extra bedroom and a bath-room. Latterly several cottages of a different type had been erected, and these contained one large living-room, scullery with bath embedded in the floor to economise space, three bedrooms, and in some cases an attic. The rents ranged upwards from 5*s.* 6*d.* per week, rates included.

In considering the effects of decentralisation as regards manufacturers, workers and the community, Mr. Scoble quoted a case where by removal to the country manufacturers of machinery were enabled to reduce the price of their goods by no less than 20 per cent. Mr. Scoble's view was that by migration to rural or semi-rural districts the manufacturer would be in a position to produce more cheaply; that if he studied the interests of his workpeople, which by the way were no less his own, comfortable houses would be erected for them; and that, by virtue of the lessened cost of manufacture, more successful competition in the home, colonial and foreign markets may be expected. The establishment of factories in the country and the housing of labour in the immediate vicinity would do more to solve one of the most pressing problems that had to be dealt with—namely, the housing of the working classes—than the erection by municipal or philanthropic effort of tenement buildings in or dormitory towns near our industrial centres, or the provision of transit facilities, which must inevitably lead to greater congestion.

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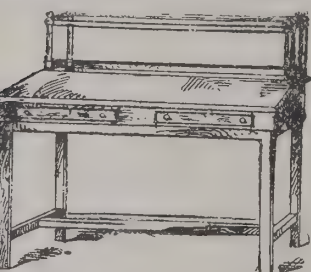
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VENTILATION IN WEAVING SHEDS.

THE report has been issued of the joint conference of employers and operatives held at Blackburn last month to consider certain suggestions made by the Employer's Association relative to ventilation in weaving sheds. Captain Hamilton Smith had been appointed by the Home Office to investigate the conditions of the various systems of ventilation and ascertain the attitude of the trade towards them.

The case for the employers was that the trade had done its best to meet the requirements of the Act, which fixed the standard of purity of the atmosphere in weaving sheds at nine volumes of carbon dioxide in 10,000 volumes of air. Owing to the changes in the atmospherical conditions the employers thought they were entitled to consideration beyond what the Act laid down for them. They wanted a margin. Having spent a big sum of money in having tests made, they contended that they were being asked to do what was impossible. They never found a shed, whatever ventilation it might have, that could be got down to nine volumes and maintained at nine.

The operatives' representatives, on the other hand, declared that they could prove that at a number of mills the carbon dioxide was less than nine volumes, even less than eight. They did not object to new tests, but asked that the employers should in advance bind themselves to abide by the result.

Mr. Higson, who presided, said that the employers wanted to demonstrate that they were unable to maintain a standard of nine volumes. If they could not make good that contention they would haul down their flag.

With respect to the appointment of an expert to conduct an examination, Captain Hamilton Smith said that Mr. Scudder was a chemist as to whom there seemed to be general agreement.

CHESTERFIELD ELECTRIC-LIGHT INQUIRY.

MR. R. H. BUCKNELL, Local Government Board inspector, held an inquiry at Chesterfield on Friday morning relative to the application by the Corporation for sanction to borrow 15,000*l.* for the electricity undertaking.

There were present Councillor C. P. Robinson (deputy-mayor), chairman of the electrical-energy committee, Mr. J. Middleton (town clerk), Mr. R. L. Acland (electrical engineer), Mr. Geo. Broomhead (borough accountant), Mr. C. G. Broom-

head (assistant overseer), and Mr. C. W. Hadfield (committee clerk).

Mr. Middleton informed the Inspector that the population of the borough in 1901 was 27,185, its area was 1,219 acres, its assessable value was 92,673*l.* 8*s.*, the outstanding loans on all accounts, remunerative and otherwise, were 80,119*l.* 1*s.* 10*d.*

The Inspector asked for a short history of the electrical undertaking.

Mr. Middleton said that the "Chesterfield Corporation Electric Lighting Order" was granted in 1894, and on April 16, 1900, an inquiry was held into the application to borrow 25,000*l.* to start the undertaking. The estimates were altered and increased, and the Local Government Board sanctioned a loan of 29,674*l.* That was the only sanctioned loan in connection with the undertaking. Operations were commenced, and they began to supply current on October 3, 1902. It had been necessary in order to complete the installation to add to it in several ways, and at the end of December, 1902, they had spent on capital account 31,274*l.* 4*s.* 4*d.*

The Inspector: Approximately 1,500*l.* more than the sanctioned loan.

Mr. Middleton: Yes. Proceeding, he said that at December, 1902, there were 192 consumers, who took current equivalent to 15,208 eight candle-power lamps, and at the end of last October there were 291 consumers taking power equal to 22,855 eight candle-power lamps. The increase was still going on. There was no stand-by plant, and last year the Corporation were bound to add to the machinery, and it was now running and supplying current. The loan now applied for was made up of the following estimates:—Extension of boiler-house, &c, 1,000*l.*; a 200 kilowatt dynamo, boiler and condenser, 5,500*l.*; extensions of mains, 7,000*l.*; and meters and demand indicators, 1,500*l.*

The Inspector: There is only one point, and you know what I am going to say, and it is regarding the doing of the work before the sanctioning of the loan. The Board are getting more and more particular about that every day, for the simple reason that often certain authorities get into the habit of at all times carrying out work and then applying for a loan. That reduces the inquiry to a farce, and the Board very strongly object to their inspectors holding inquiries that are farces. Seeing the way that the undertaking was growing, it would have been easy to foresee that an increase of plant would be necessary, and if the Corporation had written to the Board pointing out that it was becoming so great that they desired to

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erect new plant immediately at a cost of 10,000*l.* or 15,000*l.*, some of the trouble would have been got rid of, and the Board would have replied, "Go on with the work and we will send down an inspector as soon as possible."

Mr. Acland, in reply to the Inspector, said that close upon 11,000*l.* of the 15,000*l.* applied for had been spent between October 1902 and September 1903.

The Inspector: It was obvious in October 1902 that further money was wanted, but it was not until August 11, 1903, that the Town Council passed a resolution authorising the borrowing of the money. I hope, Mr. Middleton, you will persuade your Council to look a little further ahead and give us a chance to hold an inquiry before spending the money.

Mr. Middleton: We appreciate that, but there is a difficulty in getting machinery when we want it.

The Inspector: I recognise those difficulties, but it does not get over the fact that when we come down we find the work done—I admit we don't often have to find any fault—and it does not give us any power to do anything.

Mr. Middleton: It does not, but I think this is the only instance where we have done anything before holding the inquiry.

The inquiry then terminated and the Inspector proceeded to inspect the electricity-generating station.

IMPORTANT SEWERAGE WORKS IN EDINBURGH.

FOR a long time past the condition of the sewers in Princes Street has been a source of trouble to the burgh engineering staff, as well as to the inhabitants of that thoroughfare. Flooding at various points of the main artery at intervals, the escape of sewage gas and the disagreeable presence of rats in the branches and on the ivy-clad ridge of the West Gardens have been, says the *Scotsman*, the chief sources of trouble and complaint, and in order to rectify these the Town Council some time ago, on a report by Mr. Massie, the burgh engineer, resolved to improve or do away altogether with the old and unsuitable sewers and replace them with sewers more adapted to the requirements of the present day. The date of the construction of the old sewers cannot readily be traced. No doubt a commencement had been made with them when the Nor'

Loch was drained, and that the work of laying them down had been pushed forward bit by bit as Princes Street was gradually built upon. These old sewers and the contributing branches from St. Andrew Square, South St. David Street, Hanover Street, Frederick Street and George Street were originally rough rubble-built, with arched roofs and flat stone sills, averaging in size 3 feet by 6 feet, the branch connections and road gullies being small-built drains laid with very little attention either to line or gradient. Careful examination revealed the fact that the sewers were in a very bad state; the joints in the masonry were open, and there was a considerable deposit in the sewers. By the month of May last, it may be recalled, what may be described as the East Princes Street Gardens portion of the scheme, extending from Waverley station to the Mount was completed. Here the burgh engineer's jobbing squad did the work that was necessary, short of total reconstruction. The flat stone sills were cut out and new sills substituted, composed of half-pipes and concrete, all properly graded. The rubble-built branch drains were reconstructed in pipes, sufficiently graded and connected to the sewer, while the side walls and arch were picked, pinned and carefully pointed, and all the openings at the branch drains built up. In West Princes Street Gardens, on the other hand, matters were such that it was found necessary that a new sewer should be put in, and the work, which is being done by contract, was entered upon a fortnight ago, and is likely to be in progress for several months to come. The old Nor' Loch sewer has been rubble-built, varying in size from 2 feet 6 inches by 4 feet 6 inches to 2 feet 9 inches by 6 feet, with arch cover and flat stone sills. It drains an area of about 170 acres, and requires to discharge in heavy rains 5,626 cubic feet per minute, but, as it is not capable of carrying this volume of sewage, it has, as has been indicated, repeatedly burst, with the result that flooding of the Gardens ensued. The new sewer will be of brick and concrete, circular-shaped and 4 feet 6 inches in diameter, and the junctions with the branches from Princes Street will be reconstructed and properly trapped. When the work is completed, which, it is expected, will be towards the end of February next, the old sewer will be removed, and the Gardens immediately restored to their normal condition. The total cost of the scheme is about 7,000*l.* In excavating for the new sewer, a sharp look-out has been kept for relics of the old Nor' Loch, but so far nothing has been found but a small toy boat made of oak, which, possibly, some youngster of old Edinburgh sailed in a bygone day.



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THE WEEK.

THE imposing presence of the late Sir FREDERICK BRAMWELL will be missed in Parliamentary committee-rooms, the Law Courts, the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Royal Society, the Royal Institution, the Society of Arts, the British Association and other places where representatives of practical science congregate. Up to a few years ago he might be called ubiquitous, but the rush from place to place did not seem to affect either his health or his good-humour. He was always ready to treat on the varied subjects which came within his province, and in civil and mechanical engineering he could claim to be omniscient. It was a pleasure to listen to him while giving evidence before a Parliamentary committee or in a patent case in one of the courts. He would have been an ideal professor in an engineering college. He possessed the power of inventing impromptu examples and illustrations which threw a light on his case. On one occasion when he was to appear as a witness concerning the advantages of subways in the Metropolis he saw some labourers digging a trench at the foot of Great George Street. On his way to the House he had some glass tubes filled with the earth which was thrown up. Before he answered any questions he produced his tubes and told the committee they could judge of the condition of the earth, which was permeated with gas, close to the walls of the Houses of Parliament. He went to the table and partly drew one of the stoppers. That was sufficient. An order was immediately made that the tubes should be taken outside. The counsel for the gas companies and other opponents of the measure did not make much headway on that day. It was only one instance of Sir FREDERICK BRAMWELL'S readiness in bringing evidence that could not be controverted to support his statements. It is no wonder he was in demand as a witness, as an arbitrator and as a general consulting engineer. Many inventions have been successful through his suggestions, and none of his contemporaries was so widely connected with the engineering of the nineteenth century. It would, however, be difficult to discover any sample of a mechanical or structural kind which will bear his name. His opinions were accepted as authoritative, and the vast extent of his business is never likely to be known, but hereafter the reason for his prominence among engineers may be questioned. He deserved the honours he received and the confidence which investors felt in him. He was born in 1818; he was the son of a London banker and a brother of the late Lord BRAMWELL. He died on Monday last and the baronetcy is now extinct.

THE destruction of the Artillery Theatre at Woolwich on the 18th ult. may be considered as involving the London County Council to some extent. It does not in any way serve as a test of the regulations which the Council formulated. The building was mainly intended for the army, and by an Act of Parliament was excluded from the jurisdiction of the County Council. The disaster, however, exemplifies the necessity for stringent regulations. The building, it appears, was erected in the early part of the nineteenth century, and for a time served as a chapel. For thirty-five years theatrical performances were held in it. The site was a good one and the building was nearly isolated. But the arrangements were not of a kind adapted for a structure used for theatrical performances. The stage and auditorium were practically in one fire risk, the only separation between them being a screen of wood, plaster and canvas, and the stage was enclosed by the dressing-rooms and stores for scenery and properties. The stage and auditorium were under one roof, and the premises were lighted throughout by means of gas. Hydrants were placed in various parts of the house, but the pipes with which they were connected were not charged with water, and it was three quarters of an hour before a proper supply could be obtained. Had there been a brick proscenium wall, and with an efficient fire-resisting screen such as is required for modern theatres, there is little doubt that the fire might have been confined to the stage. It is believed

that if the theatre is rebuilt the military authorities will adopt regulations similar to those enforced in the Metropolis.

In the annual of the German Archæological Institute there is a paper by Dr. LUDWIG BORCHARDT upon the condition of the buildings in the islet of Philæ. At the desire of the Egyptian Government he was appointed in 1895-96 to prepare a report on the ruins. His acquaintance with Philæ is not of yesterday. He says it is impossible to judge as yet of the effect produced by the water of the Assouan reservoir on the ruins. The larger and higher buildings, of which the lower parts only are inundated, may long remain. But those on the northern side of the island must now be considered as lost to archæology. In that part there were at one time a great many houses which probably belonged to the Byzantine period. There were also the remains of some extensive official buildings, two churches, a cloister and a structure that was erroneously described as a triumphal arch of DIOCLETIAN. Not far off was a temple of AUGUSTUS, which, according to a Greek inscription, was erected thirteen years before our era under the prefecture of RUBRIUS BARBARUS. There was a statue of an emperor in front of the temple which probably commemorated AUGUSTUS. A part of the northern wall of the cella, in existence a year ago, is now invisible. Whether it is overthrown is not determined.

THERE can be no questioning ADDISON'S competency to describe the practice of English church-going in his time. His account of a Sunday with Sir ROGER DE COVERLEY may be accepted as referring to what was general in country churches. According to him, "as soon as the sermon is finished nobody presumes to stir till Sir ROGER is gone out of the church. The knight walks down from his seat in the chancel between a double row of his tenants that stand bowing to him on each side." The occupation of the chancel by the owner of the parish, we may therefore assume, was not uncommon in England in the early part of the eighteenth century. A paper read by Professor COOPER before the Ecclesiological Society of Scotland reveals that the "lairds' lofts" were often found in the same place. Many of these lofts were erected at the east end of the church in the chancel, immediately over the spot where in pre-Reformation times the altar stood. The reason of this was that in the general spoliation of church property the rectorial tithes passed into the hands of the proprietor, and with them went naturally the chancels of the churches, which it had always been the duty of the rector to maintain. On that account, as well as for other reasons, the lofts are considered by him to have their historical value as witnesses of the relations which throughout the greater part of two eventful centuries subsisted between the lairds and the Church. They possess also in many cases no small artistic merit, and in the severe exclusion of other ornaments they are often the only internal decoration of the churches where they are found.

THE avenue in the Champs-Élysées is probably the finest example of its kind in Europe. The majority of visitors to Paris believe it terminates at the Arc de Triomphe, but it has been continued, although in a less grandiose form, to Courbevoie. It is now proposed to prolong the avenue to the Carrières-Saint-Denis, and ultimately to the terrace of Saint-Germain. It would consequently have a length of ten English miles, and would be the shortest distance between the Place de la Concorde and the terrace which HENRY IV. commenced and LOUIS XIV. finished. The Chamber has voted a sum of 700,000 francs to enable the work to be embarked upon. It is needless to add that the sum will be only a fraction of the cost. It is expected that at least ten millions will be required. That amount will not appear excessive in view of the fact that it will be necessary to construct three bridges across the Seine. At present the usual way for those who have time to visit Saint-Germain is by one of the river steamboats, and the journey is repaid by the sight of the scenery passed through, as well as by the unrivalled view from the terrace. In the course of time Saint-Germain will be no more than one of the suburbs of Paris.

THE WATER-COLOUR SOCIETY.

ARCHITECTURE is largely represented in the Winter Exhibition of the Society of Painters in Water-Colours. The public, however, is more likely to be attracted by the collection of drawings by members and associates presented to the KING and QUEEN on the occasion of their Coronation than by views of old buildings. There are fifty-nine drawings in that collection, besides an illuminated dedication designed by Mr. R. ANNING BELL. They are arranged in two large frames. Apparently there has been no attempt at competition, and it may be said there is an average not only of size but of quality which helps to give from its uniformity a decorative effect to the series. The majority of the artists have presented something corresponding with the classes of subjects associated with their names. Consequently it is a collection that hereafter will be considered as fairly representative of the Society in 1903.

At the opposite end of the room the central position is occupied by Mr. W. MATHEW HALE'S *The Passing of Arthur*. The idyll was the earliest of the Arthurian cycle treated by TENNYSON. But at a later time the poem was not superseded by any other version. It will be remembered that as the wounded king painfully arrived on the shore of the level lake "there hove a dusky barge, dark as a funeral scarf from stem to stern," and when the king was placed in it the barge "with oar and sail moved from the brink, like some full-breasted swan," until it seemed like one black dot against the verge of dawn. The poet described the scene as happening at night, and the lament of the queens in the barge rises to the stars. Mr. HALE assumes the time to be early morn. The sky shows great red streaks that seem to be overspreading the yellowish dawn, and are nearly suggestive of ARTHUR'S face. So many detached and strongly marked elements excite surprise, and on that account rather diminish the mystery which should belong to the event. The task, no doubt, is extremely difficult, and more effect would have been gained if the red appeared in larger masses. On such an occasion some liberty is allowable to an artist. The great lake and the dark boat, with the surrounding mountains, have the qualities that are called for, but the poet imagined a moonlight scene, and MACLISE'S drawing so represents it. Not far from Mr. HALE'S drawing is the single contribution by Mr. CLARENCE WHAITE, *Solitude*—"Midst a vast solitude." We see the summits of a mountain range partly enveloped in grey clouds and mist, and with nothing to suggest the existence of life in organic form. The artist has several times withdrawn the spectator to remote places, but we cannot recall any of his drawings more suggestive of a primeval world which was sublime in its vastness and coldness. Mr. CHARLES GREGORY'S *Where Silence Reigns* has also a suggestion of aloofness in autumn, but the couple of figures introduced give the scene a modern character.

There are many landscapes, and of varied character. Mr. THORNE-WAITE'S *The River below Aysgarth*, is exquisitely coloured, but the sky suggests alterations by the artist, and a dimmed effect, which is disowned by the rest of the work, is the result. Mr. COLIN PHILLIP'S grey drawing, *Mist Effects after Rain—Loch Lomond*, realises its title, and appears to be a genuine record of something observed. His principal work is his *MacGillicuddy's Reeks*, as seen beyond the clear Lough Caragh. The *Sunny Summer Day in the Highlands*, by Mr. R. W. ALLEN, shows a great expanse of low hills, with a stream running through the valley. But it is more sombre perhaps than is necessary. The land corresponds in colour with that in the *North Sea Coast*, as if Scotland never varied. Mr. J. W. NORTH'S *Trout Stream and Honeysuckle* is faithful to his customary limitation of colours. The vegetation prevails, and is so treated as to appear at a little distance as if it were a mere bunch of greenery. Warkworth Castle is becoming a favourite subject, and is well rendered by Mr. SAM EVANS. Mr. ROBERT LITTLE'S *Sunrise on the Tiber* introduces one of the old bridges, which, in spite of the wear and tear of traffic, is in a stronger condition than the high fort seen on one side. The French school is suggested by Mr. J. PATERSON'S *Golden Autumn*. There could hardly be a greater contrast than is afforded by Mr. J. JESSOP HARDWICK'S *The Banks of the Greta, near Greta Bridge, Yorkshire*, and Mr. ALLEN'S *North Sea Coast*, which

are hung side by side. The English view seems to belong to another clime, and is rendered with an appreciation of its beauties. There is another landscape by the artist from the same district, besides some delightful drawings of flowers.

Mr. NAPIER HEMY displays great force this year. Indeed, one would desire to see him express the sea in a quiet mood. *On the Crabbing ground* might be a boat cut out of a much larger drawing, owing to the energy of the men in it to whom the sea serves as a foil. *A Destroyer* would make TURNER or STANFIELD believe there is no longer naval architecture. It is a type of a scientific rather than an artistic age, and no sea serpent could be more hideous than the modern war engine.

The figure subjects are not numerous this year. The *Original Design for the Painting of Claudio and Isabella*, exhibited at the R.A. in 1853, by Mr. HOLMAN HUNT, possesses a pathetic interest. It may now seem incredible that fifty years ago a reform of painting was considered possible by means of an intensity of expression for which a distortion of the figure was necessary. But hereafter the historian of art is likely to say that such a work reveals the influence of the Gothic revival, of stained glass and Mediæval sculptured figures which were then in their ascendancy. In that drawing the effects of mental emotion are expressed. The more modern system is suggested by Mr. LIONEL SMYTHE'S delightful drawing illustrative of a subtle verse of DANTE ROSSETTI, another pre-Raphaelite, viz.:—"The mother will not turn, who thinks she hears her nursing's speech first grow articulate; but breathless, with averted eyes elate, she stands, with open lips and open ears, that it may call her twice." It is a charming representation of a field strongly illuminated, with a young woman and a baby, while from its brightness it at once attracts the attention of the visitor. But supposing the verse from ROSSETTI were not at hand to refer to, would any ordinary spectator realise what was the subject? Would ROSSETTI himself have approved of the selection of that particular verse by a painter? We know that mother and child are pleased, just as we know something horrible must have been suggested to the prisoner and his sister in Mr. HOLMAN HUNT'S drawing. But in both cases a certain initiation into the mystery is requisite to prevent the two works from becoming puzzles. Mr. J. R. WEGUELIN'S *Echo* is the nude figure of a girl standing in the open air and repeating sounds. Mr. HOPWOOD'S *The Village Baker* is an argument in favour of a rigorous administration of sanitary laws, and once more repeats the old fact that sanitation and picturesqueness do not go together. The artist is represented by several other drawings, among which an old woman, *Dinner Time*, deserves to be pointed out. *The Carpenter's Shop* by him is admirable for its light and shade, and deserves commendation, although perhaps more shavings are introduced for the sake of effect than is necessary. Mr. R. W. MACBETH has three drawings, of which the most popular will be *A Ray of Sunshine*, women with a baby, which is charming in drawing, colour and sentiment. There are two large cartoons for paintings at Welbeck Abbey, by Mr. LEWIS DAVIS, the subjects being *Love Active* and *Love Passive*. They appear destined for circular panels and have children for figures. Mr. GLINDON'S *Faint Heart* is not without humour.

Among the architectural drawings the largest is Mr. T. M. ROOKE'S *West Front and Tower of the Church of St.-Pere, Sous Vézelay*, a work which is always admired by lovers of Gothic. It has been subscribed for in order to be presented to the Birmingham Art Gallery, and is probably the first drawing of a building favoured in that way. Mr. ROOKE generally is taken as an exponent of pre-Raphaelitism, but in this case his treatment is distinguished by unusual breadth. He shows other drawings from Vézelay and elsewhere, one being the sculpture on the west front of Auxerre Cathedral. Mr. REGINALD BARRATT has five drawings from Venice. It is needless to say that justice is done to the buildings. But the water of the canals is less successful. Miss CLARA MONTALBA continues to be faithful to the city with which her name should be associated like CANALETTI'S. One of the views is of the Ducal Palace. Mr. HERBERT MARSHALL derives inspiration from Chartres, Saumur, La Rochelle, Rouen, Chinon, St. Emilion, as well as from London. *The Grey Saumur*

likely to be judged the most pleasing. Mr. S. J. HODSON is also some foreign views, but the series of City scenes on Whit-Monday, including *St. Paul's as Seen from the Roof of St. Bartholomew's the Great*, deserve to be secured in the Guildhall Art Gallery. To many they would be a revelation of the occasional quietude of the great city and its busiest part. Mr. WALLIS exhibits a view of the temple at Philæ. Mrs. ALLINGHAM has also ventured to Venice, and has given a drawing of S. Giorgio Maggiore and a view from the far end of the Giudecca, which are unexpected novelties.

On the screens are a great many excellent drawings. Mr. RACKHAM, who is gifted with more versatility than is usual with water-colour artists, contributes a series of illustrations as *Greek Stories*. The subjects selected are most difficult, being *Jason subduing the Bulls of Ætis*, *Antæus*, *Hercules and Cerberus*, *Theseus and the Minotaur*, *the Dragon of the Hesperides*, *Theseus and Corynetes*. They show vigorous draughtsmanship and an interpretation which does not recall that of the Greeks or of FLAXMAN, or of any modern artist. The Classic scenes usually found in the Society's exhibitions are marked by their prettiness. Mr. RACKHAM is more vigorous, and would appear to have a world of Classic illustration before him which has been neglected, that is, interpretation in a northern spirit. The Winter Exhibition may not on the whole be considered as possessing extraordinary merit, but there are many attractive works to be seen on the walls.

PLINY THE YOUNGER AND BUILDING.

THE reputation of PLINY THE YOUNGER has suffered because he is supposed to have imitated PILATE by allowing injustice to be done through his want of decision of character. He was appointed governor of Bithynia and Pontus. Some Christians in his province were tried and convicted for acting illegally. Although he was a studious man, and had taken a prominent part in the Roman courts, PLINY professed to be ignorant of the doctrines of the Christians, and whether they were injurious to mankind. He acknowledged the torturing of two deaconesses, and failed to obtain a confession of guilt. But he did not give the converts the benefit of his doubts. He evaded responsibility by asking the Emperor TRAJAN to instruct him about what was to be done. At the worst PLINY regarded the sect as superstitious, but he was resolute about having the members executed unless they abjured their belief. Like other Romans, he was not perfect, and the liberty of thought he would allow to other men was exceedingly limited.

While we admit his moral weakness, we must entertain respect for a man who was an enthusiast about building. It is now impossible to say whether he was peculiar in that way or whether he resembled a great many other Roman gentlemen who were cultured and wealthy. If it were not for his delightful letters, which, fortunately, have been preserved, we should know nothing concerning PLINY's love of building. Some of his contemporaries may have had a similar hobby, but accounts of them have not reached us. The historians or satirists would not condescend to notice such an expenditure of money, and no contractor's bills of the first century have come down to our time.

As our readers are aware, there were two PLINYs. The elder was distinguished as a credulous lover of science or of natural curiosities. He was also a statesman. His nephew, called the YOUNGER PLINY, was a lawyer, an official, and might be considered a practical philosopher. The uncle conferred his name upon him and constituted him his heir. Having held high offices, which in those days were opportunities for a man to enrich himself beyond the dreams of avarice, the second PLINY was enabled by means of his wealth to render many services to the people of Como, where he was born, as well as to the Romans. He rebuilt the Temple of Ceres, engaging for architect MUSTIUS, to whom he allowed the fullest liberty of action. It is doubtful whether he did not construct several other temples. He also erected various public baths. In one town he re-erected the houses which had been destroyed by fire; he completed a theatre; he made aqueducts, a canal, sewers, and appears to have been

generous in the promotion of public works. From surviving inscriptions it would appear that people were indebted to him for many structures of which there is no mention in the letters. In a communication to a friend whom he congratulated on his resolve to erect buildings, PLINY says that he possessed several houses on the shore of the Lake of Como. One of them was entitled "Tragedy," partly because it stood on elevated ground, and partly, no doubt, on account of its dignified appearance. Another was known as "Comedy." He inhabited either according to his mood. From one he could see the whole extent of the beautiful lake. From the other he had only a partial view, but there was compensation in the circumstance that he was able to fish in the waters without leaving his chamber. PLINY endeavoured always to provide sufficient space in his own grounds to permit him to take long walks as well as places for other forms of exercise. As he became a philosopher, he wished to secure a luxurious retirement whenever he desired, but he was not selfish, and by temples, schools and libraries he sought to elevate the people from whom he shrank. Indeed, in his Laurentian villa it was necessary to provide a special refuge to which he could retreat. It was a small lodge standing within a court enclosed from a garden. It was so secluded the voices of the young slaves could not reach it. When the period of Saturnalia came round he could there enjoy peace, and while the remaining premises were in uproar follow his accustomed studies.

Among PLINY's mansions we have only descriptions of two from his own hand—the Laurentian villa and his Tuscan country house. However able a writer may be, it is difficult, except in the simplest cases, to realise from words alone either the planning or the appearance of a building. Several attempts have been made to produce a restoration on paper of the two buildings, but it cannot be said that conviction has followed the study of any of them. M. AMPÈRE, who believed there was a close connection between Roman buildings and Roman history, imagined that the modern villas closely resembled those of ancient times. But the details given by PLINY do not correspond with any prince's house which has survived.

It is believed that the villa at Laurentum occupied a part of what is now the estate of the CHIGI family, near Ostia, which is about fourteen miles from Rome. The fragments discovered are not of great importance. PLINY, in his letter to his friend GALLUS, told him the place could be reached in the evening after a day spent in business in Rome. A portion of the road was too sandy for carriages, but was pleasant for riding. The house was described as spacious and commodious, but not too sumptuous. The aim was to attain a mean between simplicity and grandeur. There seem to have been several courts with buildings around, and an analysis shows there were many varieties of rooms. The only drawback to the site, according to PLINY, was the absence of springs to form natural fountains, but as he could employ wells he did not suffer. Although so near the sea, the water had not the least saline taste. He points out that as there are three public baths in the village a guest who arrived unexpectedly could go there instead of waiting while the baths in the house were warmed.

PLINY evidently wished to make his friend familiar with the course he would follow in passing through the different rooms. This manner of description is open to the inconvenience of not suggesting what part would appear most commanding to a visitor on his approach. There was an atrium and then a portico which was supposed to stand about a circular court ("Deinde porticus in O-litteræ similitudinem circumactæ, quibus parvula sed festiva area includitur"). However arranged, the portico was safe against wind and rain, for it was glazed probably with alabaster or some transparent material. Then came another court of larger size surrounded by lodgings. There was also a triclinium or dining-saloon, so planned that when the wind blew from Africa and the sea lost its violence the waves approached the foot of it. On all sides were doors or windows which gave the inmates several fine outlooks. Evidently the enjoyment of land and sea views must have had much influence on the architect. PLINY was evidently a great admirer of landscape. There were also rooms adapted for use in winter and a gymnasium where the servants were able to take exercise. It would be necessary

to study the assumed site of the villa at Laurentum in order to arrange the rooms which were adapted for residence at various seasons. As became a scholar, PLINY possessed a library. The wall was curved so that the sun might pass through the windows during a great part of its course. Manuscripts were precious in those days, and the cupboards to contain them were placed in the thickness of the wall. The works were of a kind which allowed of perusal with pleasure more than once. Near the library was a dormitorium or sleeping place separated by a passage with a partition, which allowed the vapour to be communicated at such a heat as was desired. There were also rooms for freedmen and slaves, and they were kept in a condition to be ready for use by guests if required.

PLINY evidently takes the triclinium for a centre, for he says that on the other side of it there is a large chamber leading to one which can be used occasionally as a dining-room, and receives light from the sea as well as from the sun. Then there was another chamber which, on account of its height, was agreeable in summer, while in winter it was enclosed against all winds. In this part of the residence were the baths on a spacious scale; they were adapted for swimming in addition to ordinary tubbing, the water being of varying degrees of temperature. There were rooms for perfuming and rooms remarkable for their richness of adornment. From one of the bathing-rooms it was possible to obtain a view of the sea. After the bath a game of ball or tennis could be enjoyed in an apartment genially heated. Next two pavilions, or summer houses are described, which not only provided means for enjoyment of the views, but contained suites of apartments. From one triclinium, where the sound of the waves was only heard in times of great storms, there was a view of the gestatio, where equestrian or carriage exercise was taken, and the garden. The gestatio was enclosed with box or, in places, rosemary ("Gestatio buxo aut rore marino, ubi deficit buxus, ambitur"). It is remarkable that at the present time rosemary is still found in abundance along the coast of Laurentum. In an inner part of the gestatio vines were planted, with a walk, which was so soft it could be traversed without wearing sandals. Fig and mulberry trees were found to grow better than any other variety. Another dining-room was placed in this part, and near it was a crypto porticus, or closed gallery, so long it might have served for a public building. Many of the windows looked out on the sea, and they were only opened when the air was tranquil and the weather fine. There was a xystus, or place of exercise, which was fragrant with the odour from banks of violets, and PLINY believed the ground was not only sheltered, but kept warm by the aid of the crypto porticus. Close at hand were the rooms in which PLINY found most enjoyment. He calls them *amores mei*. One of the reasons for his preference was, he says, that he had them constructed. We might suppose from the words that the vast villa was not entirely PLINY'S creation. His rooms were well exposed to the sun, and by means of curtains or glazed doors he could have not only extensive views of the gallery and great rooms, but could extend his own sanctum. There was his sleeping chamber, where there was always profound silence, undisturbed by the noises of the house or the agitation of the sea.

From the description it might easily be concluded that the villa at Laurentum covered a large area. But some commentators hold that it was not comparable in size or richness either to the great villas of Rome or to those of the surrounding districts. SCAMOZZI considered that the plan was rectangular, with a length about two and a half times the width; but on that point there can be only speculation. What is most important in the account is the light it throws on the commodiousness of a Roman villa. Evidently the buildings were low, but occupied an extensive site; and where, as at Laurentum, there were fine prospects care was taken to adapt the house to the enjoyment of them. Although so much despotic power was wielded by a master, it is apparent that quiet was difficult to insure in a large household. PLINY is said to have been kind to his slaves, but there is evidence enough in Roman literature to show that even with severe masters the slaves were not disposed to be silent.

It is not possible to decide where was the Tuscan house which the second house described by PLINY was situated.

It has been supposed to be near Tifernum Tiberinum, the site of the present town of Città di Castello. PLINY said that the place possessed a temperate climate, and as a great many old people inhabited the district there could be no doubt of its salubrity. The larger portion of the house was exposed to the south. He had a great portico at the entrance which led by a vestibule to a vast dining-room, which was suited for feasts. There were also *diæta*, or combinations of a bedroom and a dining room, where guests and other residents of the house might take their meals in privacy. On many occasions they went to the triclinium. In this case also the outlooks were valued, but they consisted only of woods, gardens and mountains without any sea view. A staircase stood near the baths leading to a gallery, and from the rooms adjoining were other attractive prospects. Although only a private house, there was a hippodrome, which is described as very large. It is evident that the trees were clipped in fantastic forms, such as the letters of the name of the owner, or the house, or the gardener. Some appeared as if they were boundary stones, others as if bearing fruit. In order to heighten the effect by contrast certain trees were allowed to grow wild. There was also a triclinium in the open air with a trellis supported by marble columns, and close at hand was a fountain. In the garden were marble benches with a small fountain near each. Here also PLINY acknowledges his affection for any house he commenced, and especially when he was able to complete the principal embellishment. But he tells his friend APOLLINARIS that any description he can furnish is far below the original.

The mansion was adapted to his manner of living, or *vice versa*. Although he awakened early, he says he kept his windows closed until he arose. Then he summoned his secretary, to whom he dictated or sent away if he had to work or to meditate. From his bedroom he went either to the closed gallery or to the xystus, or place for open-air exercise. He next retired for meditation or dictation, or afterwards was borne in his litter, and occasionally slept during the journey. He spent some time in reciting as loudly and as distinctly as he could some Latin or Greek oration, so as to strengthen his chest rather than his voice. Perfumed essences were poured on him. He took exercise, and then he bathed. Next he dined, and during dinner a comedy was read or some musicians performed. Afterwards he walked about with his guests, some of whom were sure to be learned men. The evening was spent in quiet conversation, and the day thus passed most quickly. His Tuscan house he preferred as a summer residence, and his Laurentian villa for winter.

It is apparent that PLINY desired to own several properties, not from ostentation but from prudence. He looked to the future, and he considered a man was unwise in so unstable a world to be confined to one place. He deemed it also judicious to buy land which was near his estates. But on one occasion he evidently feared he might be unable to work the property advantageously. The soil was exhausted by neglect, he wrote to a friend, and as he never had one of his slaves working in fetters on any of his estates, he was afraid labour would be too costly. The agents, he remarked, asked three millions of sesterces—about 25,000*l.*—for the property, and there was no doubt five millions had been formerly given. The friend he wrote to will, he said, no doubt inquire in the first place, Can PLINY find three million of sesterces? To this he answered that although his wealth is mostly invested in land, yet there was some lent out on interest and there would be no difficulty in his raising a loan. His mother-in-law was rich, and she told him he might regard her money as his own. The only question for his friend to decide was whether the investment was advisable.

In that transaction PLINY resembles a modern Englishman, who was desirous to enlarge his landed estate in order to secure himself against a neighbour who would not be welcome, but at the same time would like to obtain immunity without loss to himself. Indeed, in many respects PLINY seems to belong to our time. It is to be regretted, however, that he did not condescend to record more particulars of his transactions in building. A few letters about his architects and workmen would form a record which the world "would not willingly let die," for that class of information is now unattainable.

THE LATE E. J. MARTIN.

ON Monday the funeral took place at Kensal Green of Mr. Edward James Martin, M.Inst.C.E., F.R.I.B.A., late secretary to the Government of Bengal in the Public Works Department, who died at Brighton on the 24th ult. Appointed to the Indian Civil Service in 1859, Mr. Martin served in the Punjab in the Buildings and Roads Branch as assistant and executive engineer till 1869-70, when he was transferred to the North-Western Provinces and posted to the Rajputana State Railway. He afterwards officiated as engineer-in-chief of the North State Railway, and of the Rangoon and Irrawaddy Valley State Railway, and also as *ex-officio* manager of the latter line, being transferred to the Railway Branch in Bengal in November 1878, and appointed engineer-in-chief of the Central Bengal system of State Railways. In January 1880 he was promoted to be superintending engineer of the third class of transference to the Bengal Provincial Branch. The following year he was employed on special duty under the chief engineer in Bengal as Government architect, was promoted to be second class in 1882, and deputed to Indore on special duty in 1884. Mr. Martin reached the rank of superintending engineer of the first class in December 1885, was officiating chief engineer and secretary to the Government of Bengal in the Public Works Department from June 1888 till May 1889, when he was appointed second chief engineer, and from January 1890 till his retirement in 1891 was chief engineer and joint secretary to the Government of Bengal.

CHURCH ARCHITECTURE AT TOYNBEE HALL.

THE subject of a long and interesting lecture by Mr. Thomas Francis Bumpus at the Toynbee Hall on Monday evening last was "Some Gothic Cathedrals in England, France and Germany of the Romanesque and Early Pointed Epochs." A pleasant surprise awaited his audience, when at the conclusion of his remarks upon the architecture of the Transitional period, Mr. Bumpus, observing that "architecture was frozen music," and that by some mysterious agency the two arts were allied, proceeded to the grand pianoforte and played a selection of music from the office books of the Western Church, appropriate, as far as possible, to the views presented to the audience. The company was much gratified by this novel aparture, and wishes were expressed that such a selection might be introduced into Mr. Bumpus's next lecture, which is announced for January 25, the subject being "Gothic Art at its Height: Its Decline and Fall."

Some of our musical readers may like to have the names of the pieces played, and the views represented:—

The Kyrie Eleison, from a Mass according to the Use of Amiens. (Here a view of the choir of Amiens Cathedral, looking west, was shown.)

The Office of Compline, as sung daily in the cathedral at Paris. (View of Notre-Dame, looking east.)

The Hymn for Festivals of Apostles and Martyrs, "Sanctum meritis" (View of Bayeux Cathedral, whose bells play this melody every quarter of an hour.)

"Sanctus" and "Agnus Dei," from the "Missa de Angelis," frequently heard in French churches. (View in Bourges Cathedral.)

The Hymn of St. Bernard of Clairvaux, "Jesu dulcis memoria." (Interior of the Cistercian Abbey Church, Fontigney.)

The hymn "Pange lingua gloriosi." (Nave of the Cathedral of Meaux, near Paris), and

A very taking Gallican melody to the hymn, "Iste confessor Domini colentes," from the Rouen books. (View in the south aisle of Rouen Cathedral.)

THE LONDON WALL.

AT a meeting of the Society of Antiquaries last week Mr. Philip Norman read a paper, illustrated by lantern-slides, on "The Roman Wall of the City of London at Newgate." To show the general direction of the Roman Wall, Cassar's map of about the end of the sixteenth century was exhibited, and with it a tracing from a recent map, from which the course of the wall and Mediaeval gates could be made out. It appeared that in the Middle Ages the City authorities utilised the Roman Wall for defence, raising it by the addition of a parapet. An analogous case of adaptation was to be seen in the bastion at Cripplegate Churchyard. Mr. Norman dealt chiefly with a piece of the old wall, about 20 feet long, which was recovered in October, and was gradually being cleared away, though probably some of it would be left for a few days longer. He described the structure of the wall from the foundation of puddled clay upwards, dealing with the courses on the inner and outer faces and the bonding tiles, with the rubble filling

between the two surfaces. The wall was 9 feet in height, of about the same thickness, and the top some 18 inches below the level of Newgate Street. The south-west corner of the seventeenth-century gateway was then shown. In its foundation fragments of Kentish rag, similar to the material of the wall, and tiles were discovered, and there was also found a chamfered plinth which had formed part of a Roman building, and this, Mr. Norman said, was the only portion of a Roman gateway which had yet been met with. Some discussion followed, and the author was thanked by the meeting for his paper. Blocks of stone, fragments of mortar and pieces of the plinth clamped together with iron were exhibited on the table. The small Roman remains met with during the progress of the works have been deposited in the Guildhall Museum.

PALÆOLITHIC ARTISTS.

IN the course of an address delivered in Edinburgh on "Man as Artist and Sportsman in the Palæolithic Period," Dr. Robert Munro said in an environment of primitive resources and limited culture, the early wild hunters developed a genuine taste for art, and cultivated its principles so effectually that they have bequeathed to us an art gallery of some 400 pieces of sculpture and engraving, so true to their models that many of them bear a favourable comparison with analogous works of the present day. They adorned their persons with perforated teeth, shells, coloured pebbles, and pendants of various kinds. They depicted the animals, with which they were familiar, especially those they hunted for food, in all their various moods and attitudes, often with startling fidelity. Harpoons, spears and daggers, of horn and bone, were skilfully engraved, and sometimes the handles of the last were sculptured into the conventional form of one or other of their favourite animals. They also, in some instances, adorned the walls of the caverns they frequented with incised outlines of the neighbouring fauna, and made actual colour paintings of them in black and ochre, or in one of these colours. The discovery of so many art specimens is of considerable importance among the more notable facts disclosed by these anthropological researches, as it proves that the origin of the artistic faculty was independent of, and prior to, the evolution of religion, ethics, politics, commerce and other elements, of which our modern civilisation is built up. The other characteristic feature in the lives of these people was that they lived exclusively on the produce of the chase; for, without agricultural and pastoral avocations, what else could they do but organise daily hunting or fishing expeditions? To capture the big game of the district was a formidable task, requiring, not only great strength and agility of person and limb, but also strong and well-made weapons. During the later stages of the Palæolithic civilisation their principal prey consisted of reindeer and horses, both of which animals then roamed in large herds throughout Western Europe, thus rendering themselves more liable to be ambushed, trapped or speared by their wily enemies. It is not likely that they would take the initiative in attacking the hyæna, lion or cave-bear, except in self-defence. That, however, these formidable creatures were occasionally captured by them is suggested by the fact that their canine teeth were highly prized as personal ornaments, or as a memento of their prowess in the chase. The weapons used by these hunters were harpoons, generally made of reindeer horn, spear and lance heads of flint and short daggers of bone or horn. Before these weapons were invented, it is difficult to imagine that any member of the genus Homo would have the courage to attack such a formidable animal as the mammoth, armed only with a *coup de poing*; but yet there are facts which suggest that such was the case. When the physical conditions which called these accomplishments into existence passed away, and the peculiar fauna of the glacial period disappeared from the lowlands of Central Europe—some by extinction and others by emigration to more northern regions or to the elevated mountains in the neighbourhood—we find the inhabitants of these old hunting-grounds in possession of new and altogether different sources of food. Finding the former supplies becoming so limited and precarious that it was no longer possible to live a roaming life, now gathering fruits and seeds and now hunting wild animals, they fell somehow into the way of cultivating special plants and cereals, and rearing certain animals in a state of domestication. Whether this new departure was a product of the intelligence of the descendants of the Palæolithic people of Europe, or derived from new immigrants into the country, is a debatable question. At any rate, the expedient was eminently successful. It was in reality the starting-point of Neolithic civilisation, and henceforth there was a rapid increase in the population. They cultivated a variety of fruits, wheat, barley and other cereals; they reared oxen, sheep, goats, pigs, horses and dogs; they became skilled in the ceramic art and in the manufacture of cloth by spinning and weaving wool and fibrous

textures; they ground stone implements so as to give them a sharp cutting edge; in hunting the forest fauna of the period they used, in addition to spears, lances and daggers, the bow and arrows; they built houses both for the living and the dead—thus showing that religiosity had become a governing principle among them. But of the artistic taste and skill of their predecessors they had scarcely a vestige, and whatever they did by way of ornament consisted of a few linear scratches arranged in some simple geometrical pattern.

MODERN ENGLISH ART.

THE Hermione Lectures in Dublin were this year delivered by Mr. D. S. MacColl.

The course began with William Hogarth, who was said to have started English draughtsmanship in black and white, and the lecturer referred at some length to the question of dramatic painting and caricature art raised by Hogarth's practice. Having described the youth of Hogarth, who was born in 1697 of a family from Westmoreland, it was said Hogarth, who was born in the middle class, lived for that class and worked for it. Early access to a neighbouring painter gave him an opportunity he longed for, and Hogarth himself mentioned one material advantage he possessed beyond his competitors, namely, the early habit he acquired of retaining in his mind's eye without copying on the spot whatever he intended to imitate. He began work in an humble way by engraving on copper and silver, after which he got work to do on the frontispieces of books. His illustrations in "Hudibras" were crude specimens of his early work. Next he learned under Sir James Thornhill, with whose daughter he ran away. In those days there was no Royal Academy or gallery, and few schools of painting, but Hogarth's schools were the streets, the churches and the theatres. He had an extraordinary talent for seeing whatever was grotesque and humorous, and he also possessed the faculty of fixing a scene in his mind's eye, and reproducing it faithfully on canvas. The life of London lay around him, and there he found his fascination and his talent. In conclusion the lecturer mentioned a remarkable criticism made to him by the late Mr. Whistler, a man opposed to Hogarth's views, when he said, "Hogarth, there is your English master," a remarkable testimony.

The subject of the second lecture was Turner, and the lecture included a discussion of the older scenic and historical ideas that persist in Turner's treatment of landscape, and the modification of that treatment due to his original study of natural forms and lighting. Turner, the barber's son, who became a great painter and afterwards a millionaire, was one of those characters who could only be done justice to by a great novelist. Turner, on the side of his art, was so keen and so fine that the rest of us were blind and blunt and stupid compared with him. On another side perhaps some of them might have points in comparison with Turner—that was his social side, which he cultivated so little. He cut himself loose from anything that did not concern his art, and therefore he remained on that side undeveloped. Having referred to the extraordinary titles of some of the pictures of the artist, the lecturer went on to say that they had to imagine Turner as a man of extraordinary development on one side and a man imperfect on the other. As to the best book on Turner, he recommended Mr. Monkhouse's book, but there was a more or less official life by Mr. Thornbury; but, above all, he recommended Ruskin, who as a critic was first of all the masters of modern painters. Ruskin stated that Turner, of all painters, stuck closest to the natural facts, and was freest in combining and arranging those forms to suit his ideas of a picture. What they found in Turner was imitation for beauty's sake. Perhaps his most extraordinary power was that of representing objects not only near, but at nearly all distances where they could scarcely be seen. Just like Shakespeare and Handel, he was in a sense a great plagiarist, and there was a great distinction between his water-colour and oil-paintings. It was now believed that Turner studied under Reynolds, and undoubtedly he was influenced first of all by the naturalistic Dutch school and the French seventeenth-century heroic school. The lecture was illustrated with views of some of Turner's works, which showed the difference in his style of treatment after his visit to the Continent.

In his third lecture Mr. MacColl read passages from Constable's writings, in which the painter set out his own ideals as to what he understood by the "natural" in art. Like Turner, Constable had his own followers in the Royal Academy, but while Constable thoroughly appreciated Turner's genius, there was a certain opposition of theory and a very marked difference of practice between them. Turner was a citizen of the world, and had the romantic temperament of a Byron, loving all that was most sublime in nature, and evolving, at the same time, great scenes and studies out of dreamland. On the other hand, Constable, was a regular stay-at-home, caring for

no country but England. Like Rembrandt, he was born and remained the homely miller's son. He was, of course, an educated man, but his education only served to send him back to the scenes and places of his childhood. In this respect he resembled Millais. He was satisfied with the green fields and pastoral scenery of his native county. The mainspring of his art was home affection. A second point of divergence between Turner and Constable was that the latter avoided historical, legendary and mythological subjects. He painted one historical scene, "The Opening of Waterloo Bridge," but it took him fifteen years to satisfy himself with it. He believed that the poetry of light and shade and the movement of the clouds was enough to give the simplest subject a beauty of its own. He saw fairy-like beauty in the squalid banks of the Thames at night, just as he would see it in Venice or Valparaiso. He found his inspiration without travelling to famous scenes of history or invoking memories of ancient Rome. Turner's work suggested the bright dawn and the more brilliant sunrise. There was but little of that in Constable's pictures. He painted of summer effects. He liked the rich and heavy green of the summertime. The hour he chose was when the sun was high in the heavens. The influence of Gainsborough on Constable must have been very great indeed. Only the other day the lecturer saw a collection of Constable's early drawings, and they were entirely in the manner of Gainsborough. At his death some of Constable's grandest work remained in his hands. It needed much courage to take up local English landscape as a subject, but Constable determined to do it and succeeded. In conclusion, the lecturer showed limelight photographs of some of Constable's most famous works—"The Hay Wain," "The Cornfield," "The Jumping Horse" and "The Valley Farm."

The last of the lectures treated of the freer forms of imaginative painting revived by Rossetti, and some account was given of his predecessor, William Blake. Mr. MacColl having referred briefly to the youthful history of Rossetti, said he was so little interested in the study of tone that when he saw the works of some modern masters he could not know what they were at, and he described them as all "slosh." Rossetti was not, like Rembrandt, content with any casual beggar's face that he met. He went to the world with a pattern face of his own, and matched it against the heads of the people he met. In all this he corresponded with William Blake. Blake made little attempt to represent the actual world as he saw it; he drew his own idea. Throughout life Rossetti did not altogether cast off the superstition, and to him the retarding superstition, of oil-painting. If he had continued to work without shade or colour he would have been more successful. When it was asked how far the world was ready for Rossetti they had to take into account two currents, both a little of the backward order. They might briefly be called the line of illustrators and the line of decorators. Naturalness to Rossetti meant the putting in of nothing in his work that was not necessary. He was the poetic one of the pre-Raphaelite party of that time, and his conception of things was to paint his own view and not things as others might see them.

EXCAVATIONS IN ROME.

THE following communication from Mr. H. Stuart Jones, director of the British School of Rome, has appeared in the *Times* :—

In the Forum, Comm. Boni, whose patient and methodical explorations continue to merit the highest praise, has once more been richly rewarded. Work has been carried on at different points. In the very early Necropolis, hard by the Temple of Antoninus and Faustina, has been discovered a Greek vase belonging to the class of (so-called) "Proto-Corinthian" lekythi, a proof that burials continued to take place in this quarter as late as, roughly speaking, 700 B.C. The work of restoring the Rostra is almost complete, and Comm. Boni has been able to determine with certainty the position of almost every fragment of its cornice. But the great discovery of the year is that of a large base of concrete which must at one time have supported a colossal monument occupying a central position in the area of the Forum. The base measures about 40 feet by 20 feet, and in its lower portion some of the beams and planks used in setting the concrete are still embedded. It blocks one of the subterranean galleries which Comm. Boni believes to have been constructed by Julius Cæsar in connection with gladiatorial shows. In the upper surface are embedded three large travertine sockets, in which the supports of the monument were fixed. What, then, was this monument? Comm. Boni does not hesitate to identify it as the *Equus Domitiani*, a colossal equestrian statue of Domitian, described by Statius in the "Silvae." The positions of the sockets, he argues, correspond with those of the legs of the Emperor's charger, one foreleg, of course, having been raised. There can, at any rate, be no question that the base occupies precisely the position assigned to it by the poet.

In other words, the statue faced the Temple of Julius, while those of Vespasian and Concord lay behind it. To the right was the Basilica Julia, to the left the Basilica Emilia, while the Emperor's gaze was fixed on the Palatine and the atrium Vestae. The correspondence with the position of the newly-discovered base is so exact that it is difficult to escape from the conclusion drawn by Comm. Boni. The statue, which as in all probability destroyed after the *damnatio memoriae* of Domitian, seems to have been about six times life-size. It is worthy of note that, like the subterranean galleries referred to above, the base contains fragments of black marble which seem to have belonged to the famous "niger lapis."

The interest of these discoveries is, however, far surpassed by that which attaches to the excavations begun in August on the site of the Ara Pacis Augustae, which lies partly under the Palazzo Fiano Ottoboni and partly under the adjoining Via in Vicinia. It should be added that Von Duhn was the first to recognise in 1881 that the sculptured panels found on the site of the sixteenth century belonged to the Ara Pacis, and that Professor Petersen's monograph of 1894 was superseded last year by a much more elaborate treatise by the same author, published by the Austrian Archaeological Institute. In this most excellent and scholarly work the restoration of the monument, some of whose fragments have found their way to our own country, is exhaustively discussed. Had the author deferred his publication until the excavations recently begun were complete, many problems for which he was only able to furnish a solution by acute conjecture would have been solved in a much simpler manner. A high tribute to his sagacity, however, is implied in the fact that, although his restoration has been proved to be inexact in some details, in its main lines it is indubitably correct.

The Ara Pacis Augustae, which incorporated more fully than any other monument the spirit of the Golden Age, commemorated the return of Augustus from the western provinces in 13 B.C. and the completion of his proudest achievement—the establishment of the Pax Romana throughout the Empire. On the day on which the Senate resolved to consecrate the Altar of Peace (July 4, B.C. 13) and that on which it was finally dedicated (January 30, B.C. 9) became festivals of the Roman calendar. The monument included not merely the Altar of Peace itself, but also the precinct in which it stood and the closing wall, whose sculptured panels form the masterpiece of Augustan sculpture. Along the outer face ran two bands of relief, the lower of which consists in conventional systems of garlands, foliage and flowers, instinct with animal life, while the upper and more important frieze represents a procession in which Augustus himself, with his family, as well as the great ecclesiastical dignitaries of Imperial Rome, takes part, as well as scenes of sacrifice or of religious import. The inner face of the monument consists of two bands, of which the lower, if Petersen's conjecture be right, represents the woodwork of a Roman *tablinum*, while the upper is decorated with festoons of fruit and flowers, together with bucrania and instruments of sacrifice.

The interest of the recent excavations centres mainly in two points—first, the plinth upon which the enclosure-wall rested has been rediscovered *in situ*, as well as the base of the monument. Thus the form and dimensions of the monument can be exactly determined. Secondly, numerous panels of the frieze have already been brought to light, and others may be expected to follow in due course. The main interest, of course, attaches to the band representing the procession; and here a slab of high importance has been unearthed in the last few days. It has been mentioned above that the frieze represents Augustus followed by the chief members of the priesthood and of his own family, and the identification of the extant figures has naturally been a fruitful source of discussion amongst archaeologists. The latest views on the subject are given in an extremely able article by Von Domaszewski recently published in the *Archiv für die Kunde des Alterthums* of the Austrian Archaeological Institute. It is there shown that the procession represented is that which took place when the precinct was consecrated in 13 B.C., and many of the individual figures are identified in a convincing manner. The writer is, however, less successful in conjecturing the subjects of the lost panels. The newly-discovered block fills a gap between two slabs at present preserved in the Uffizi at Florence. It is not completely exposed to view, but it is beyond doubt that upon it were represented two at least of the greater figures—perhaps the Flamen Quirinalis and the Flamen Martialis—with their attendants, while Von Domaszewski maintained that the Rex Sacrorum (who may indeed have occupied a position on the as yet unexposed portion) together with Livia and Julia, the wife and daughter of the Emperor, were to be sought in this position. It will be seen that the further progress of the excavations will be awaited with extraordinary interest. Unfortunately the work, which is being carried on under the able direction of Cav. Pasqui, is attended with great difficulties. The base of the monument lies not only 18 feet below the soil, but about 6 feet below the present level of spring water, which constantly streams into the excava-

tions. Moreover, the foundation walls of the Palazzo Fiano Ottoboni and other buildings which traverse the area of the monument must be tenderly dealt with. The excavations will therefore shortly be suspended and the necessary work of underpinning, &c., preparatory to their resumption in the spring will be begun.

In the meanwhile, proposals are heard for a restoration of the monument, which are likely to give rise to much discussion. The existing fragments have passed into many hands, but they might perhaps be re-collected. It is certain, however, that the Ara Pacis can never be restored *in situ*, owing to the change in the level of the Campus Martius. The excavations have disclosed the remarkable fact that at a comparatively early date the Ara Pacis was already some feet below the surrounding surface. It was enclosed by a brick wall, while a flight of steps led down to the entrance of the precinct. The brickwork has been stated with a fair degree of probability to be of the early third century A.D.—a fact which contains a problem difficult of solution.

While it is to be regretted that these interesting excavations, which the director and other managers of the British School of Rome were enabled to visit by the kindness of Cav. Pasqui, will be inaccessible to visitors to Rome during the approaching winter, the reasons mentioned above render it inevitable that work should be suspended until the spring, and the remains of the Ara Pacis must, therefore, for the present remain under water.

BUILDING BY-LAWS REFORM ASSOCIATION.

At a meeting of the Council of the above Association at 45, Parliament Street, Sir Wm. Chance in the chair, the following resolutions were passed unanimously:—

That a by-laws committee, to consider and report on the amendments needed in the existing building by-laws be and is hereby appointed, consisting of the following members:—Mr. W. M. Acworth, Lord Robert Cecil, Mr. A. H. Clough, Mr. A. Graham, Mr. W. Henman, Mr. Mark H. Judge, Mr. E. L. Lutyens, Mr. Arthur Newbold, Dr. G. V. Poore, Mr. H. A. Powell, Mr. Lacy Ridge, Mr. R. W. Schultz, Mr. J. St. Loe Strachey, Mr. E. D. Till, Mr. Thackeray Turner, Mr. C. Turnor, Mr. H. G. Willink, the Hon. Percy Wyndham, together with the Chairman and Honorary Secretary.

That the report of the special committee appointed on May 14 last, as adopted by the Council, be referred to the by-laws committee with a view to the work being continued on the lines therein laid down, especially as regards the following points:—

For the purpose of securing, with as little delay as may be, some relief from the more oppressive of the by-laws now in force in rural districts, the committee to approach the Local Government Board and endeavour to secure their publishing a new set of model by-laws for these districts, embodying amendments which the committee may suggest to the desired end. Further, to urge district councils to amend existing by-laws accordingly.

Following on the above, to prepare a set of draft building by-laws carrying out the recommendations of the special committee that "the by-laws should lay down principles" and that "each by-law should provide that, unless the principle it enunciates is otherwise given effect to to the satisfaction of the local authority, it shall be considered to be given effect to if the requirements set out in the schedule to the by-law are complied with."

As soon as practicable, to deal with the by-laws of urban districts in like manner.

That the above resolution be forwarded to the members of the Association in a circular letter requesting them to inform the by-laws committee of any cases of hardship under existing by-laws, and asking them to make the Association known to their friends, in order that the number of members may be increased as much as possible before the annual meeting in February next.

A Memorial of Hippolyte Taine, the French writer, who was for several years professor of aesthetics in the Ecole des Beaux-Arts, is to be erected at Vouziers. The commission has been given to M. S. Martongan. It will consist of a red granite stele surmounted by a bronze bust. At the foot a female figure of Philosophy leans on Taine's writings.

The Paddington Borough Council have consented to consider the London County Council's projected tramway from the Marble Arch down Edgware Road to Cricklewood, providing the cost of the necessary road-widening is borne by the County Council as part of their tramway policy, and subject to the insertion of clauses in the Parliamentary Bill satisfactory to the borough council. The County Council required the local authority to contribute one-third of the expense of road-widening.

NOTES AND COMMENTS.

AMONG the sections in the Factory and Workshop Act of 1901 is one relating to the repayment of the cost of structural alterations in bakehouses demanded by the local authority. If the occupier alleges that the whole or a part of the expense ought to be borne by the owner, he may apply to a Court of summary jurisdiction, where such order will be made concerning the expenses on their apportionment as appears to be just and equitable. The Willesden District Council pointed out alterations in a bakery at Kilburn which would cost 183*l*. It was admitted that the tenant was liable for 26*l*. But the question was how the remainder ought to be apportioned. The owner or lessor was summoned before Mr. FLOWDEN at the Marylebone police court. The magistrate said he was of opinion that what was required was one or two things before he could be called upon to make any such apportionment as that suggested. Either the alterations found necessary must in fact be carried out and the bill for them be brought before the Court, or if the alterations were not carried out beforehand, the sum which they would cost must be agreed upon between the parties. Counsel for the Willesden authorities declared the decision would have a far-reaching effect, and asked for a case. The magistrate agreed and said it was most unsatisfactory to expect him to determine what sum the alterations would cost. It was a question he hoped he would never be called upon to decide. The summons was adjourned in order that the parties themselves might come to some arrangement. Of late years a great many responsibilities have been cast on magistrates for which their training as lawyers is insufficient to endow them with competence. The apportionment of expenses under the Factory and Workshop Act certainly requires the aid of a technical assessor, and the Act does not appear to give the requisite authority for his appointment.

ACCORDING to the last report of the Commissioners of Public Works in Ireland the total amount of loans authorised for the erection of dwellings for agricultural labourers was 384,304*l*. That is not a very large sum to be expended in forty years, especially when it is remembered what kind of hovels were used by the people. As MOORE said, two thousand years have passed in vain over the dwellings of the Irish peasant, and indeed some of them seem to belong to a prehistoric age. The amount of money which an architect is able to derive from a commission for the erection of labourers' dwellings in any district can only be a very small sum. Yet we find Mr. T. W. RUSSELL, M.P., declaring at a meeting in Dublin of the Statistical and Social Inquiry Society, that if model plans were provided by the Local Government Board instead of employing architects, and if the whole system that had grown out of the Acts was taken by the throat and destroyed, they could build the houses at a moderate rate, and labourers would be able to pay a rent that would not involve any extra cost. The paper which gave rise to his remarks was one by a Mr. SYNNOTT, in which it was advocated that instead of building new cottages the existing hovels should be purchased and repaired. The waste lands and ruinous walls and buildings to be found in or near every country village in Ireland could, it was said, be procured with less friction, and probably at less cost, than slices of country farms. The majority of the Irish cabins cannot be regarded as more than the work of labourers who were neither masons nor carpenters. It seems unwise to dream of transforming them into healthy dwellings. The materials are rarely adapted for use. It should also be kept in mind that the houses erected by means of Government loans become security for the money until the amount granted is repaid. We cannot suppose the officials of the Commissioners of Public Works would be satisfied with the old ruins under new forms. It may be that in some cases the interests of individuals rather than the necessities of a district are considered in applying for loans, and it may also happen that some tenants are favoured and obtain cottages at too low a rent. No measures can put an end to selfishness. But it will be a bad day for Ireland if the Government will not only approve of shams in building,

but will construct examples which would be in reality whitened sepulchres.

In the competition for a women's hospital at Hove sixty two sets of plans were submitted. According to the assessor, Mr. G. T. HINE, there was much merit in the designs, and they were generally in accordance with the conditions. The first premium has been awarded to Mr. DENMAN, of Clifton Terrace, Brighton; and the second to Mr. E. P. HOWARD, of Cursitor Street, London. The designs of Mr. T. J. PENNINGTON, of Hounslow, and Messrs. J. F. QUILTER & F. ANDERSON, of Adam Street, Adelphi, are declared to be equal for the third premium. It is suggested by the assessor that the premium should be divided, or a sum of 20*l*. be awarded for each design.

GEORGE ELIOT says that GOETHE'S house in Weimar is much more important-looking than SCHILLER'S abode, "but to English eyes far from being the palatial residence which might be expected from the descriptions of German writers. The entrance-hall is indeed rather imposing, with its statues in niches and its broad staircase, but the rest of the house is not proportionately spacious and elegant. . . . It is to be regretted that a large sum offered for this house by the German Diet was refused by the GOETHE family, in the hope, it is said, of obtaining a still larger sum from that mythical English Croesus—always ready to turn fabulous sums into dead capital—who haunts the imagination of continental people." GOETHE went to Weimar when a young man on the invitation of the Grand Duke, whom he served as a Privy Councillor. He occupied the house as a tenant for seven years, and afterwards he purchased the interest in it from an army doctor who was the owner. GOETHE'S reputation extended beyond the limits of Europe and indeed he once complained that he gained nothing from the Chinese artists representing scenes from "Werther" on their pottery. One result was that strangers used to consider it was necessary to make a pilgrimage to Weimar so as to have an opportunity of an interview with the poet. He bore the infliction more patiently than would the majority of persons. But GOETHE was a man who believed it was indispensable to enjoy privacy whenever he desired. His own rooms, therefore, were at the back of the house, and he set much value on the garden, in which he could walk, think and experiment. Accordingly it is supposed he had a wall erected in order that he might be free from observation. The local authorities, for some reason which is not very clear, have now decided to remove the wall. The Grand Duke, as protector of the Goethe Museum, can, it is believed, exercise authority and prevent the removal, but does not seem disposed to interfere. An attempt has therefore been made to obtain as many admirers of GOETHE as possible to protest against the vandalism. It is not easy to arouse Germans, especially at a time when foreign trade is in jeopardy, but the agitation is increasing, and the proposal is now looked on as if it were a sacrilege, for GOETHE'S house is still considered by enthusiasts as if it were a temple. In England we have had a sorrowful experience of "improvements," but in Weimar the reasons are insufficient for destroying the character of a residence which will possess interest for others besides Germans as long as the materials of the house and wall hold together.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: CHANCEL, AND SCREEN TO NORTH AISLE.

COWLEY MANOR.—THE HALL.

SEMI-DETACHED HOUSES, CROYDON.

FIREPLACE TO BILLIARD-ROOM TO HOUSE AT WOLVES NEWTON.

DESIGN FOR A HOUSE AT CUDHAM, KENT.

THE APPLIED ART SCHOOL, EDINBURGH.

ONE of the witnesses before the departmental committee of the Board of Manufactures was Sir R. Rowand Anderson, LL.D., architect, who gave the following evidence in regard to the Applied Art School, which owes its existence mainly to his efforts:—

The Chairman: You have been kind enough to prepare a statement for us with regard to the Applied Art School in Edinburgh, and we shall be very glad to hear your views upon it. It would be more convenient if you gave them in your own language rather than answering the questions. I think the matter dates back from about 1889?—Yes.

The citizens then formed themselves into a committee with a view of establishing a school in Edinburgh, and from that time you will be able to tell us the history?—From that time we went on, and I am glad to say we have gone on from good to better, and really we are in a very healthy condition just now. The pupils are all doing very well, and are all very enthusiastic and very industrious. Our only fault is that we have not enough money and not enough space. The printed statement which I embody a good deal of what I would say to you.

Will you tell us the history of this movement in Edinburgh?—At the time this school was started, of course art was under the domination of South Kensington. Those who took this matter did not like that system. They thought it was injurious, there was a want of elasticity about it, that it did not go to the heart of things, that it was more a system of production of drawings instead of drawings as the means to an end, that the system of payment by results which was followed then was a very injurious one, and that the teaching was not sufficiently practical, inasmuch as it did not bring the students into contact with old work of every kind. We have from the very first looked upon that as the most important thing in our teaching, bringing the students into contact with old works, so that they can see the thing—not looking at a piece of paper and seeing a thing drawn upon it, but looking at the thing itself, and taught to measure it, analyse it, and understand why this was done and that was done, and so on. That has been the chief feature of our teaching, and we say it has produced splendid results. I have no doubt. I speak more as an architect than anything else. If you ask any architect standing, he will tell you that all his learning has come from a careful study of old work. Of course, we had no means to carry on a school of that kind, and we came to the Board of Manufactures and asked their aid, and they gave us every encouragement except money, as they had not got it. They offered us accommodation here, and they also offered to share in the management of the school, which we at first accepted, because we thought it a very good thing to have it done in a matter of this kind. They laid it down that we should raise money. Well, we put our hands in our pockets, and asked other people to do the same thing, and we raised a considerable sum of money. Then the Board said, Well, that is all right, and we will do now what we can for you. They then referred the matter to the Secretary for Scotland, then the Marquess of Athol, and he was very sympathetic about the matter, and gave assent to the Board taking up this work and going on with it. I do not know about that time got the residue grant, and we applied for it, explained our case to them, and they were very good to us. They gave us 1,000*l.*, which they renewed for five years. Then I am sorry to say the town began to get into difficulties, and the treasurer laid his hands on every penny he could, and gradually clipped our allowance until he wittled it all away. Fortunately we had a reserve fund. Along with Mr. James Watson was successful in inducing the trustees of the late Earl of Athol, who left a large sum of money for various purposes, to be distributed by his trustees, after explaining the whole case to them, to come to the conclusion that it was worthy of support, and they gave us 1,500*l.* Then a friend of mine in Edinburgh gave 500*l.* and Mr. McEwan, the member for the district, 250*l.*, and a number of others gave various amounts, so that we had a good substantial sum to go on with. We opened a school, and we set out with the intention of employing teachers who were engaged in the work they proposed to teach, because we felt that they were in touch with the outside world and with the requirements of trade, and so we have carried that on ever since, and we believe the result has been a very good one. At that time we made the curriculum extend over four years. That went on very well, and then we thought we would lengthen it. We extended it to five years, so as to coincide with the usual term of apprenticeship, and we have always tried to get the pupils just beginning their apprenticeship, and their education and the teaching of the school go on together. That is a very important feature in our school is this, that we employ them all the time. Take any other school—take the Heriot-Watt school, for example; they have at the start 100 pupils, but they melt away and they never see them again. They are here for a year or two's time and disappear. Perhaps

150 will begin, and they will finish off with five-and-twenty, and even less than that. Now, we keep our students all the time, and unless you can do that in an art school, I don't see what good you can do. Then we have also had some very good inducements for them to remain with us. We have got bursaries for them, although small in amount. That is a thing to look forward to. Any young man who can carry off a bursary carries off what will help him all through his life. He has only to produce the certificate or diploma of our school if he goes to an office to be taken on. I have frequently heard from people in London, architects in London, "We snap up everybody you can send us, because they get such a thoroughly good grounding in a practical way."

That is one of the reasons you are able to keep the pupils better?—Undoubtedly. We won't take a pupil unless he declares he will stay five years with us.

Does it come to this, that your curriculum is a longer curriculum than the Heriot-Watt's?—Yes, I should say the Heriot-Watt curriculum is only three years at the outside.

Is that what you mean when you say you keep them longer?—For example, in the Heriot-Watt College there are 197 pupils in for what is called building construction and architecture. The course of the class is for three years. They start with 197 and finish with twenty-six. Then for ornamental design, the course lasts two years. They start with fifty-five and finish off with one. Only one applies for a certificate. Then here is another statement that might be of interest to you, and that is that the total course of architecture, building construction, ornamentation and design, perspective and modelling, in hours is 824, equal to one year and three-quarters of our school.

Are they all the same age and the same class of pupils?—Oh, well, I don't know about that. These figures are taken from their own printed statistics.

Are you really comparing like with like?—I am comparing what professes to be like teaching with like teaching. The individuals may be younger; I don't know.

At what sort of age do the pupils commence your classes?—Fifteen and sixteen.

It would be fair to assume that those attending the Heriot-Watt course would be a good deal younger than that?—No, I don't think so. I understand under the Factory Act that no one can become an apprentice under fourteen. He cannot enter into any contract of apprenticeship under fourteen, and a great many don't begin until later.

Might those figures you gave of children disappearing from those classes and not finishing possibly mean that the children were being educated at the Heriot-Watt College and their parents removed from Edinburgh and took their children with them?—That might account for a certain number, because workmen move about a good deal, but I refer to the education they offer to architects and designers generally. They are not likely to move about so much as a lad learning engineering or some handicraft.

The two schools are teaching the same thing. That is a fair comparison?—No, they are nominally teaching the same thing, but they don't teach it in the way we teach it. It is not so practical as ours.

I don't mean the system—I mean what they are offering to do for the pupils?—I admit there is a certain amount of overlapping of ours. For example, the school upstairs overlaps, but we want to get rid of all that.

Your argument about the attendance and the way you keep your pupils comes to this, that the whole time the pupil is with you he is learning more and more and acquiring valuable knowledge?—Yes.

And after he has been for a time under the curriculum of the Heriot-Watt tuition he begins to doubt that and finally disappears?—There must be a good deal in that. That is my contention. In my statement I say, "Great importance is attached to bringing the students into actual contact with old work of every kind, and for this purpose the students are divided into sections according to their state of advancement, each under a responsible teacher, and places and buildings within a reasonable distance of Edinburgh are visited every Saturday afternoon, and the time is spent in carefully measuring and drawing whatever is of art interest." That is a very popular work with the students, and wakens them up in a way nothing else does.

The result is that your diploma or certificate enables them to get work at once when they leave you?—The moment they leave us they are certain to get good employment. Then I give you also a statement regarding a very important work we have undertaken, and that is a national art survey of Scotland. Two of our bursars hold a bursary for one year, and they leave an office and devote their whole time to this work of measuring and drawing, illustrating-work of all kinds, and we are now accumulating a collection of drawings that is absolutely unique, and which is very valuable and open for consultation for anyone. Now, it is not merely a collection of stone buildings, but we go into everything—metalwork, woodwork and decorative work. We have got a most interesting and valuable

collection of old furniture from many places, and our drawings of plasterwork are simply unrivalled anywhere.

You are combining the best instructions with the accumulation of a very valuable lot of material?—Yes. Then we also give bursaries, which enable students for four months to go anywhere they like, subject to the approval of the committee, and they have to send in their drawings to the committee after the end of two months. Then, if the committee are satisfied that they have been working well, the other half of the bursary is paid, and at the end of that time they send all their drawings in and they are exhibited. That is having a marvellous influence on young men. Then we have accumulated a very considerable amount of property. Our assets are valued at 5,000*l.*, and it is our absolute property; and as the town has somewhat deserted us, we are very anxious to get on to a permanent footing, and our desire has been always, as I say in my statement, to have "one central School of Art in Edinburgh, as the present system of separate schools leads to a dissipation of energy and resources, and they—the committee—feel that the visit to Edinburgh of the parliamentary committee to inquire into the administration and duties of the Board of Manufactures is a favourable opportunity to consider the possible development of that part of the Board's duties which deals with art teaching, and so bring about the creation of a comprehensive art school in the city of Edinburgh. If the parliamentary committee see their way to recommend this, all monetary difficulties would probably disappear. The combined assets for art teaching of the Board of Manufactures and the Applied Art School, probably worth 10,000*l.*, would be at once available for the equipment of the school. If the Board of Manufactures were relieved of the expense of maintaining the buildings now in their custody, by means of a separate grant for this purpose, and the funds derived from the 'equivalent' granted at the time of the Union in 1707 for the improvement of manufactures, &c., and afterwards devoted by Act of Parliament to the establishment of an Academy of Design, which continued up to 1859 under the exclusive management of the Board, be again made available for an art school, the Scottish Education Department would, it is understood, when satisfied that the school was organised on a proper basis, give a substantial sum. These two amounts, with a contribution from the town and the school fees, would be sufficient to meet the wants of a really good school. Elementary drawing is at present taught at the Board and other public schools, and its development, in so far as necessary for the complete education of a mechanical or electrical engineer, and all who are engaged in scientific or technical pursuits, can and should be provided for in the Heriot-Watt College." There is a natural and distinct line of division between the two. No engineer or scientific man can be said to be completely educated unless he can draw. He must be able to understand a plan and section. He must be able to draw diagrams of all kinds, and he must be able to draw a certain amount of freehand also, so that there is a clear dividing line, and that ought to be taught at the Heriot-Watt; but beyond that, I think, and those who are along with me believe, they should not go. In my statement I go on to say:—"The School of Art which we wish to see established should be a comprehensive one, providing all that education can give to the picture and decorative painter, and all whose work calls in the aid of art; and, in the management of this school, representatives of the arts of painting, sculpture and architecture and the applied arts should be called in to act along with a committee of the Board of Manufactures, as is at present done in the case of the Applied Art School. This school should also have a section devoted to the teaching of those who wish to carry on and develop their art training, but who do not require or intend to follow any occupation necessitating the application of art. Provided elementary teaching is excluded from the course of study, the present building of the Royal Institution, with some slight alterations, contains ample accommodation for a large and complete art school."

You have plenty of room here?—I think so. Of course, the art school could not blossom out into a great establishment all at once. It would take time to grow, but there is ample room here, provided the two schools were combined into one art school.

You mean that the present School of Art in this building should cease to exist in its present form and your School of Applied Art should be absorbed in this larger school you desire to establish?—That is so; we desire that there should be only one school of art here, and that the existing schools should be amalgamated, and there is no doubt there would be a considerable economy in that.

What body manages the Applied Art School at present, and how is it done?—It consists, I think, of about one dozen men—one or two architects, one or two silversmiths, one or two furniture people, decorators and bookbinders and myself. That is the committee. Then they act along with a committee of the Board of Trustees.

Did you originate this scheme that you are describing to

us, or did this body originate it?—Well, I may say I was, to a great extent, the originator, but at the same time it has all done in consultation with this body.

But still it is an unusual and more logical and direct scheme than any other that I know. Upon whom does the origin of that idea depend? Was it the committee?—I suppose I am entitled to take a large share of the credit for the whole thing, and I have worked at it since the commencement ten years ago. I have taken the burden on my own shoulders. At first, we tried to get someone to take the lead in the matter, but we found that we could not afford the salary that we would have to keep a really good man, and rather than see the thing go down, I took on the burden of it, and continue to do so. By my doing so that we have been enabled to acquire so much property. We have got a valuable library now and a valuable collection of casts. We could not have afforded to do so were we paying several hundred pounds a year to someone.

What machinery do you propose, supposing your scheme were adhered to, in case of this amalgamation you suggest?—Somebody would have to be found to take a lead in the matter, because it would come to be a much larger thing, and I have too many other things to attend to to take on such a thing as that; but a man should be found who is a capable organiser, and under him should be teachers—qualified teachers of the kind that we have—all engaged in the teaching they profess to teach, and a committee of visitors should be associated with the Board of Trustees, just as we are doing at present.

But under that committee you think there ought to be a director or manager who would insure continuity and prevent control over the whole organisation?—Yes.

Have you any idea what kind of salary would be required? You have directed this school without salary?—I have done so without fee or reward. As I say, they could never have accumulated this property if I had not; but all that cannot go on for ever. You require to pay a good salary to a good man. I do not know if you would get one much under 400*l.* or 500*l.* He would have to be a man who makes that his life work.

He would give up his whole time?—He would have to give up his whole time, and 400*l.* or 500*l.* is not too much to look forward to for his life work, but I would say that the teachers should not be permanent. I would only keep the teachers for a certain number of years. I believe if you did that the school would have far more vitality and life in the school.

Do you mean that you would hang dismissal over their heads, or only keep them for a number of years?—They would come on that understanding. You could get very good teachers who would be following out their own life work, and at the same time do a few hours' work in teaching. By making changes you would keep up a flow of fresh blood and activity in the school, but I think the head of the school would have to be permanent.

For what kind of subjects would you have these temporary teachers? I mean, how far would you go into the actual technical part?—I say in my statement, "Representatives of the arts of painting, sculpture and architecture, and the applied arts should be called in." Painting from the life, all that teaching can do for painters, would be included. I would say that certain members of the Royal Scottish Academy should have a voice in the matter. Probably if they have any valuable figure-painter he could take an interest in the life school. At any rate, I think it would be only fair to give the Royal Scottish Academy a representation on this Board. Well, teaching in the art of architecture and all its varied ramifications, you would always be able to get one or two young architects. Then I would like to see bookbinding and typography introduced. We tried bookbinding, but I am sorry to say it collapsed, not through our fault, but the Union interfered when they were getting on very well. We had a little pleasure with tools and everything, and it was astonishing what they did, and all of them are now in London getting good employment.

Why did the Union interfere there?—I suppose they wanted to reduce everyone to a dead level of mediocrity.

Were the men you employed working over Union hours?—No; they could not be said to be working over Union hours, because they were not working for hire.

How did they stop them?—The moral pressure of the Union.

How was it exercised?—By boycotting so far, and letting them know that that sort of thing must not be done. They would just be raising up a class of men who might be able to snap their fingers at the Union.

You mean, to produce a better class of work than the Union could produce?—Yes.

Did they actually communicate with you?—No.

Is it only a general impression which you have on the subject?—The story comes to me from a bookbinder who was one of our committee, saying that the Union brought pressure on them not to remain at this school.

And had the bookbinder in his employment boys educated

school?—I am not prepared to say to what extent their pressure went, but the story given to me was that the Union had a practical bookbinder as teacher?—Yes.

any coercion put on him?—I have no doubt there was, I am not prepared to define the coercion. I give you the statement as given to me by the bookbinder, who said that the pressure brought pressure to bear upon them.

did not come?—They did not come.

size of class had you?—About eight.

they all go away?—Yes.

ere they finished their curriculum?—Yes; well, you can scarcely say a curriculum, because we started an experiment. The bookbinding class was not under any rules and regulations as the others.

is your idea of the governing body of this new school?—The governing body would be the Board of Manufactures and a body of outsiders engaged in industrial arts, including painters, sculptors, architects, bookbinders and silversmiths.

to be selected?—Well, it is pretty well known in the district who are the best men for a thing of that kind.

ur idea that the School of Applied Art should be put into that?—Certainly.

ed those who are the governing body on the School of Applied Art continue to be on the governing body of the new school?—Certainly.

n you would have representatives from the Board of Manufactures?—Yes.

would you have any other representatives on?—I don't know. I don't quite see what other representatives we require. We want people interested practically in the school.

would they be appointed?—Well, I would say that the present committee had better just continue.

supposing you continue, how do you fill up your death duties?—By consultation among the members, as we have not done.

y election?—By selection. Last year we had a death of one of our members, and we talked the matter over and decided that so-and-so would be a very good man, and got him elected.

ou propose that this new enlarged committee should elect its own members?—Yes; I think it would be better, and who else could appoint?

might say the Secretary for Scotland?—Let the Secretary state listen to this Board. The Board might put some questions before him.

would recommend whom to appoint?—Yes.

posing you have this competent manager of the whole school which you propose to appoint, why do you want this very man?—Then the manager would have it all his own.

wouldn't the present Board be sufficient to prevent the school?—I understood you to say just now, what was the controlling body if you have this man?

understood you to say that you wanted to increase the present Board very much?—No; I think the Board is big enough as it is. What I would say would be that the Board should appoint a committee of their number to deal specially with art education, and that committee of the Trustees would be aided by this outside committee. I think would give great confidence to the public, and that only do that, but would bring to bear upon the work of the school an amount of practical intelligence and knowledge which the members of the Board themselves could not supply.

ut this outside Board be sort of assessors to the present Board in the management of this school?—Very much as it is now. As far as the Applied Art School is concerned, we rely very well and derive the greatest help from members of the Board who have acted on the committee of this school. I don't know if it would be a good thing to have only practical men managing it. I think it would be a very good thing to have a certain element of cultured people not directly connected with any particular art. For example, to hand this school over to a body composed exclusively of painters or architects would never work.

contention is that the plan of amalgamating the school with a certain number of representatives of professions has been successful?—Yes, eminently successful, I don't think anything better could be devised than the old tradition of this place, and you must remember that the Board of Manufactures did a great deal for their day, and they started and carried on the only design in the kingdom for many years, and did a lot of good.

know anything about the other art school in other parts of Scotland?—You have a very excellent art school in Glasgow and they copy us occasionally. I know the headmaster knows he has adopted some of our ways.

Would such a school as you sketch out, if established here, be sufficiently different from the school in Glasgow or any other school in Glasgow to justify the expenditure of national funds upon it, as apart from local funds?—Well, what I hold is that the money granted to the Board of Manufactures was given for art teaching. It has, I hold, been granted by Government for that purpose, but some people think it has drifted in other directions, wholly or in part. I have a very curious statement before me, an extract from "Brydall's History of Art in Scotland, 1889," page 143, in which it is stated that out of the proceeds of the forfeited estates there was a sum of money given "definitely for the purpose of establishing an academy of design in order to promote the taste among the workmen and youth of both sexes in Scotland, hence known as the Trustees' Academy." That is the public statement by him. In any case, the funds of the Board at one time were unquestionably destined to an art school, and what I say is to continue that, only amplify it, and bring it into line with the wants and requirements of the present day.

Supposing there were art schools of the kind you sketch existing already in other parts of Scotland, the school established here would really be only of advantage to the district of Edinburgh, and the money devoted would be absolutely public money?—Glasgow has a very good school, Dundee has a pretty good school, and Aberdeen is getting a good school, but on the other hand, why should you take away the money that has been already granted for that purpose? If you were to ask me if I would go to the Government for a fresh grant for a school of art, I say that I don't see upon what grounds I could do so, because other towns would be entitled to do the same. I can scarcely think that the people in Scotland will object to the money that was voted 100 years ago for this art school being still continued. I don't think so. I don't think the people in Glasgow are jealous of us in that way.

What are your financial proposals? Is what you propose this, that for this enlarged school of art in the future there should be devoted the 2,000*l.* a year under the Treaty of Union, and all the accumulated funds at present in the hands of the Board of Manufactures from that fund?—I would not go that length; no. Supposing that you could devote, say, 1,500*l.*, then I am led to believe that the Education Department, if they were satisfied that this school of art were a really good one, and properly organised, would give a substantial amount. Very well, then, on the back of that, I do not think the town could refuse to give us a grant. Then you would have the school fees, and with that total amount we could run a first-rate art school here.

That is a much more practical financial proposal than what is on the paper here?—Perhaps I should have limited it, but I never thought of impounding all the resources of the Board for an art school. That was not in my mind.

Of course, if you concede that this school could be worked on an expenditure by the Board of Manufactures of 1,500*l.* a year, and they are to discontinue the existing school of art, upon which they pay 1,000*l.* a year, there is some possibility of that sum of money being supplied; but on reading your statement in the paper it seemed to me almost an impracticable one. In your statement you say, "These two amounts, with a contribution from the town." I do not know what ground you have for believing that you will get a contribution from the town or from the Scottish Education Department?—The Scottish Education Department have said that they are willing to support a central school of art, and the town has said practically the same thing.

Such a school of art as you set forth here?—Yes.

Do I understand that your idea is practically the assumption and somewhat wider extension of the School of Applied Art at present in this institution?—Yes.

It does not come to much more than that?—No, it does not come to more than that. It means a school where everyone from the picture painter down to the bookbinder or the printer could obtain an art education.

It largely would be a technical school?—Not technical in the sense of working very much with materials, because it could never do very much in that way.

But still it would be largely a school for giving art training to workmen who designed to go into certain forms of employment?—Yes, we could take in any man who really showed any ability in that way.

Is that the sort of art school that is at present apparently demanded to be furnished by the Board of Manufactures, or by some similar body?—I think that is the school the public want.

We have certainly had evidence laid before us showing us that it is rather a school in which the man who intended to be a painter or a sculptor could get instruction which at present he can only get in London or Paris?—After all, painting is only an item in art; it is not the beginning and end, and Edinburgh can never in our day become a centre for advanced students of painting and sculpture; they will always go to the great art centres of Europe.

You do not mean to include that in your scheme?—Certainly,

I would include all the teaching that is given to painters in Edinburgh at the present moment.

Anything further?—Well, I do not know. For example, they have no costume class here. That would be a very valuable addition.

Your new school of art would be, as Sir John Stirling-Maxwell has suggested, somewhat upon the same lines as that in Glasgow?—I am afraid all art schools must be more or less alike.

Do you expect pupils to come to you prepared?—I certainly would think it a waste of resources to teach elementary drawing. They would get that elsewhere.

Do you think that all elementary work should be learnt in Board schools or other elementary schools?—Yes.

And that they should know that when they come to you?—Yes. It would be a waste of time altogether to teach elementary drawing.

Would you propose to get the co-operation of the Heriot-Watt Governors?—No, decidedly not.

Why?—Because they could not give us any co-operation. The Heriot-Watt College was never intended to be an art school and was not organised on such a footing, and what could they do for art? I cannot imagine anything. If any young man at their school develops any decided art tendencies all that he has got to do is to come here. The constitution of their Trust would exclude the influences which we hold to be essential to a living and progressing art school.

Are they not largely developing their art classes?—By accident more than anything else they have done a good deal, but the Heriot-Watt school was never intended as an art school, and they have not the organisation. They have not the means. For instance, in my statement I say that the equipment of the art school here is worth about 10,000*l*. A really first-class art school would require that. Are the Heriot-Watt to start a fresh school, beginning at the beginning and laying out all those thousands? This is a going concern.

The trustees of the Heriot-Watt College are not prevented by their Act from starting any such thing?—No, I don't suppose so.

And they are an institution whose funds are increasing by leaps and bounds every year by an increase in property?—You know some time ago we were told that the Board were afraid they could do nothing more for us, that there were impending changes coming on, and that the Education Department wanted the Art School to go over to the Heriot-Watt. We said to the Heriot-Watt, "Cannot we come to some kind of arrangement and we will hand over all our assets, provided you will carry on and develop the teaching we have begun and worked successfully?" It turned out they had not a penny. They were poorer than ourselves. They are in debt. They never responded to that invitation.

Have they not laid out a large sum this last year in buildings for a new school?—I don't know the history of that.

It surely would be a mistake to have two schools practically doing the same work?—I think so.

Would there be much taught in your school that the Heriot-Watt College, at any rate, does not profess to teach?—They don't profess to bring their students into contact with old work as we do, and which we hold to be the life and essence of our school. And, then there is the fact that we keep our students; we don't take a student unless he will declare that he is going to remain with us all that time. You cannot have that at the Heriot-Watt.

Why not?—I maintain that the merit of our school is that we keep the students for five years, and we also claim that our teaching is of a much more practical nature than they can give at the Heriot-Watt. Of course, if they choose to start all our methods, you might say they are doing the very same as we are doing. They may do that. I maintain that our school has developed a system of teaching which is not in vogue to the full extent anywhere else, and it is a very practical way of teaching. I don't know if you have looked at this document, where a deputation came from Manchester to inspect what we are doing. I remember meeting the deputation and showing them everything. Their declaration was this:—This is the very thing we have been looking for; we have been to the other schools, but here is the very thing we want. Then you see what Mr Anning Bell, sent down by the Scotch Education Department to inspect our school, says. He gives us the very highest character. Then this work which we are doing in what we call the National Art Survey is not merely the making of a collection of drawings, but it is the work of making that collection of drawings which has such a powerful educational effect on the students.

The Liverpool Architectural Society will hold its fourth ordinary meeting of the fifty-sixth session in the Library of the Law Society, 13 Harrington Street, Liverpool, on Monday next, the 7th inst., when a paper will be read by Miss Ethel Charles, A.R.I.B.A., entitled "Reflections on Architecture."

A MODEL CITY.

IT is not unusual at the present time to hear men who understand the subject expressing regret that Sir Christopher Wren's plan for rebuilding London after the fire of 1666 was not carried out. Apparently the principal obstacle was the difficulty of raising sufficient money at a time when the expenses of the army and navy were considerable. About 130 years afterwards there was another chance of laying out a city on a determined plan, which some compared to a gridiron, when the political capital of the United States was under consideration. According to the marginal explanation on his plan written by Peter Charles l'Enfant, the principle he adopted was as follows:—

1. The position for the different grand edifices, and for several grand squares or areas of different shapes, as they were laid down, were first determined on the most advantageous ground, commanding the most extensive prospects, and better susceptible of such improvements as the various interests of the several objects may require.

2. Drives or avenues, of direct communication, have been devised to connect the separate and most distant objects to the principal, and to preserve through the whole a reciprocity of sight; at the same time, attention has been paid to the laying out of those leading avenues, over the most favourable ground for prospect and convenience.

3. North and south lines, intersected by others running east and west, make distribution of the city into streets, squares, &c., and these lines have been so combined as to intersect at certain given points with those divergent avenues, so as to form on the spaces "first determined" the different squares or areas, which are all proportional in magnitude to the number of avenues leading to them.

The neglect to realise the proposals of l'Enfant has been disadvantageous, and efforts are now being made to improve that in future there will be more attention given to the laying out of streets and open spaces. The project of the construction of the Federal capital for Australia gave occasion for holding a Congress of Engineers, Architects and Surveyors in Melbourne in May 1901. The report of the proceedings has only recently been issued. At the time the site for the proposed capital was not determined, and indeed it is doubtful whether any one discovered by the Commissioners appointed for the purpose, will receive the approval of the Commonwealth. At the Congress at Melbourne could do was to suggest that in selecting a site care should be given to the possibilities of an abundant water supply, having regard to prospective requirements for water and sanitary services, creation of artificial lakes, maintenance of public gardens, fountains, &c., favourable climatic conditions, physical suitability and centrality of position; points which were not likely to be overlooked by any commission of scientific or business men. With more reason it was suggested "that the Federal capital should be laid out in the most perfect manner possible, and that, to avoid the mistakes made in many cities of spoiling the plan by utilising existing buildings, it is desirable that in any site obtained the obstructions be removed that would in any way prevent the adoption of the most perfect design." In other words, engineers, architects, surveyors and allied professions wish to have the clearest field for their operations.

The laying out of a city in the seventeenth or eighteenth century was a simple operation if compared with what has become necessary in the twentieth century. In his inaugural address Mr. George Higgins, C.E., suggested some of the subjects which deserved to be treated at the conference, and the laying-out of the new city, with a view to facilitate traffic and drainage, as well as the attainment of a pleasing appearance, and promoting health; the arrangement of breathing spaces, and the methods of planting parks and public gardens; the most suitable widths of streets and footwalks; devices for diminishing congestion of traffic at street crossings; the type of pavement best adapted to prevent the formation of dust and mud, or, if the formation of dust and mud cannot be altogether prevented, then the best ways of laying the dust and removing the mud; regulations as to lanes and byways; comparison of various systems of tramways; the means for rapidly and frequently removing refuse and waste matters, including schemes and for satisfactorily disposing of such refuse, and for preventing the formation of smoke as far as possible; the question of procuring abundant supplies of pure water, not only for domestic purposes, but also for fire-extinction and street-watering; schemes for architectural adornment, and regulations for the prevention of a too glaring want of harmony of proportion in the various buildings, without, of course, unduly

ing individual taste; the choice of suitable building materials; precautions for fireproofing houses; regulations for building houses from being too much crowded together, such as, for instance, as will prevent houses being so erected that their occupants have to live, during the hours of daylight, in a room lighted by artificial means, a condition of things which is not to have place in a city where the ground remains the property of the Government; regulations also as to the location of all buildings, and for providing ample means of escape in cases of panic; devices for equalising temperature in especially hospitals, so that warmth can be supplied from central sources in winter, and a cool air service provided in summer by some such means as liquefied air; again, the use of gas and electricity, both for lighting and for power; and for laying wires and pipes underground in suitable conduits; questions of street verandahs *v.* awnings; and for permanently fixing the boundaries of blocks of land; and an important question of housing temporarily the armies of men who will be employed in building the city; these, and many other important subjects, may well form topics for discussion at this and at subsequent conferences.

Compared with so vast a programme the proposals which were presented at the Congress must appear as no more than indications of what was required. The first paper was by Mr. McDowall, the surveyor-general of Queensland, and was on "Standard Marks of Reference for the direction of the Line of Streets." It is well to remember that in the East, water is prized, and hence the importance attached to fountains as public monuments. Mr. McDowall suggested that a highly ornamented drinking fountain should form the central standard mark of reference, so that a pedestal could be set over the centre and plumbed over to a reference mark below the surface of the street, with less than a foot of water in each of the radiating streets. They might be copied if desired.

Mr. H. Broadhurst read a paper on the laying out of the new capital. He said:—

"In designing the streets there are several points that I should be borne in mind. The first one is that long straight lines of street in the direction of prevailing winds are generally pervaded with clouds of dust, and should therefore be avoided even at considerable cost. Another is that there are great disadvantages to streets running east and west, being that the high buildings on the north side throw shadows across the street, and in winter this prevents the sun from drying it satisfactorily, lightly constructed streets often suffering seriously on this account if subjected to heavy traffic; the other being that passengers travelling in the early morning and westwards in the evening are blinded by the sun's rays. A third point is being urged more earnestly by the authorities on sanitation, and the desirability of having sunshine in all the rooms of a house. It has been stated that sunlight is a certain antidote to the germs of consumption, and that as long as we continue to live in rooms in which the sun's rays have not been for two hours during the day they are absolutely safe from infection by that deadly disease."

These considerations point to the desirability of creating streets running at an angle of 45 degrees with the true north; for as the prevailing winds in Eastern Australia, where the capital will be situated, are north and south, they will follow the course of a street running at these angles and so to raise clouds of dust such as we used to have in London and still have in some of its suburbs. When the streets are parallel to the course of such a street he is too close to the horizon for his rays to dazzle the passengers, and during the course of the day he shines fully on to every side of a house built to face any street forming the angle indicated by the true meridian.

He would adopt 100 feet as the width of the streets; this, allowing plenty room for an immense traffic, is not too narrow for pedestrians to cross from one side to the other, and it gives a good view of the architectural features of the buildings abutting thereon. In residential portions I would discourage the construction of any lanes, as they more than make up the expense of scavengering; every description of lane is being continually thrown into them, which, if they exist, would be put into the rubbish bin. At the rear in the parts I would make lanes 20 feet wide, putting a limit on the title to prevent them being used as frontages. A minimum allotment must be fixed, as people, if given a chance, will build on anything that the house will stand on, and so of ventilation and everything else. The Victorian Act lays down 1,650 square feet as a minimum, but it appears to be too small—it works out to 16 feet by 100 feet. Now ventilation in a house built on a plot of 16 feet 6 inches cannot be otherwise than defective. A plot of 25 feet by 125 feet is quite as

small as should be permitted. This would allow for a single-fronted house and a cart entrance, the latter being a necessity owing to the absence of back lanes. With a minimum depth of 125 feet it will generally be possible to have the stable, if one is required, at a reasonable distance from the dwelling.

In his paper on "A Twentieth-Century City," Mr. J. F. Noble Anderson sketched a site like that of Athens or Edinburgh, which probably would be difficult to acquire in Australia:—

In the architecture (the term architecture is here used in its widest sense) of the city the two artistic essentials are the strong citadel, the presence of which gives that sense of rest and security which is so essential to the happiness and the health of the population, and the emporium which gives that sense of civic importance and self-respect which is essential to the proper health of the commercial spirit. In most of our nineteenth-century cities, more especially those in Australia, it is the second element alone which has been properly developed. To secure the first element it is almost essential that there should be in the precincts of the city some rocky or mountainous eminence. In these hills (of which, using the Hebrew simile, we may say, "from whence cometh our salvation") are naturally placed the cathedrals and temples of justice; the statues, monuments and record offices, and in the modern town, following the precedent of the later development of the Roman Empire, we may place also our public granaries, our service reservoirs for water supply, our fuel stores, and possibly stored electricity, liquid air and whatever else can be fitly stored, so as to regulate those fluctuations in the current prices which have always proved so detrimental to the interests of the public at large, and the monopoly of whose storage by the few has been the chief cause of the growth of a wealthy idle class in the community. At the foot of this citadel the emporium should lie, on as level land as can be obtained; here the streets should be broad and straight, broken up with numerous open spaces which would be utilised for the growth of flowers, and in the larger squares, where there would be fountains and patches of grass for the disporting of the old people and children. Outside this emporium, and within easy access of the citadel, would lie the larger recreation reserves of the public parks. The great bulk of the population would of course reside in the emporium, only the official class and those having business in or around the citadel being provided with quarters in that select and guarded ward. Whereas in the emporium a wide discrimination would be given to individual taste in the selection of sites and styles for building warehouses and dwelling-houses, official regard being had mainly to such questions as the avoidance of shutting up the poorer quarters in back slums, and the provision for ample daylight in all dwellings and the means of safety in all emergencies, in the citadel, on the other hand, the buildings would be erected by the State, and should be in accordance with one artistic and predetermined motif.

Mr. G. Sydney Jones in his paper insisted that the architecture should be essentially Australian, but subservient to such conditions as the following:—

It should, I think, be insisted on that, without necessarily producing a dull monotony, some uniformity of spirit of design should be compulsory. Nothing worries the eye more than in many of our modern cities to see maybe a Gothic front here, having perhaps on one side as a neighbour a Moorish design, and on the other a fantastic Renaissance front in cement. Each kills the intended effect of its next door neighbour, and the combined effect is remote from pleasant to the passer-by. To avoid this the haphazard planking down of slavishly copied styles should be prevented. Otherwise we shall have in our city a magnificent variety instead of the varied magnificence which should be our aim.

The heights of buildings within certain street lines should be limited. Who that knows New York or Chicago can admire the "sky-scrapers" (in themselves, no doubt, good) whose lines interfere with and largely dwarf buildings which are by no means insignificant; in the vicinity of these "sky-scrapers" the relative lines of nearly all buildings are spoilt. In our Federal city this should be impossible.

I should like to see it one of the building conditions of the city that the main cornices and main string-moulds of buildings in street blocks, while not necessarily being of the same profile, should be at the same level. The value of this, though perhaps seeming to some but a small thing, is really great. If one has in one's mind's eye the extraordinarily eruptive and zigzag effect, and in consequence the disconnected and restless effect which emphasise so many of our modern street fronts, the dignity of a street block is impossible under such circumstances. I would not advocate the dull uniformity of a Regent's Crescent, for instance, or that of the Rue de Rivoli in Paris, where long blocks are treated as in one design; but it is possible to obtain connected and distinct dignity, at the same time retaining individuality in each building by doing what I have

advocated. Instance as examples of what I mean, where good effect is gained even where two or three buildings only which are adjacent are treated in this manner, the National Liberal Club and Whitehall Court in London (Thames Embankment front), as to large buildings, and in a smaller but equally effective manner, Heath's shop in Oxford Street, London, and Duveen's next door to it—the features of each separate building are distinct, and at the same time they are connected, but not too prominently so, by the cornices and string-moulds being run through at the same level; a series of connecting lines is thus obtained which very much helps the effect of each and of the two combined.

I should like to see the side path arcade a compulsory feature in the streets, excepting in special instances. Who that knows Bologna, "the city of arcades," and its arcaded streetways, is not aware of the artistic value of such? In a hot climate like ours these are necessary from a utilitarian point of view. The Federal city should surely be free from such ugly effects as are produced by the ever-varying design and height of the iron-roofed, covered footpaths which offend the eye in all our State cities. I would make it a building condition that all arcades, though in each street they might be distinct and might vary, should be substantial and necessarily part and parcel of the design they front.

Another architect, Mr. Cyril Blacket, treated mainly of the building covenants to be adopted in the new city, and in their preparation he considered that architects, surveyors and engineers of Australian training and experience were best fitted to advise.

Among the "few suggestions" of Mr. G. C. Inskip, past-President of the Royal Victorian Institute of Architects, were the following:—

The site should be convenient as regards Melbourne and Sydney, in a healthy position, on high ground, with picturesque surroundings, and one that can be easily supplied with water and easily drained. If on the bank of a flowing river so much the better. Any attempt to remodel an existing town would be unsatisfactory. The width of all streets and the height of all buildings should be regulated. Perhaps straight streets would be best, but it would not be advisable to have all straight; graceful curves might be given to some. No buildings except public buildings should exceed say 80 or 85 feet in height. The public buildings should be grouped together and placed in a commanding position, and all should have large clear spaces in front of them, especially the railway stations. In these open spaces fountains should be placed in prominent positions, and drinking fountains for man and beast should also be placed in various parts of the city. Private houses should, as far as possible, be detached, with room to move round about them, letting in light and air. The housing of the working classes is a question not to be overlooked in the erection of the new city. The height of the buildings in each street should be regulated according to the width of the street. All very lofty buildings should stand by themselves, so that light and air would be obtained on all four sides, and so that proper means of escape in case of fire would be provided. By keeping the very lofty buildings separate and away from other buildings the appearance of the streets would not be destroyed as is the case in Melbourne. Tree-planting in the streets is of great importance in a climate like this, but the trees should not be planted too near the buildings, as they would shut out the light and air. In very wide streets the centre would perhaps be the better position for them. Open spaces should be provided in a systematic manner. The old fashioned mode of building squares with fenced-in gardens should not be followed, but all spaces should be left entirely open as is now being done in Victoria Parade, East Melbourne, laid down with grass and planted with shrubs and flowers. The public would soon become accustomed to this mode of laying out the ground and neither shrubs nor flowers would be destroyed. The city should also be surrounded with woods, parks and recreation grounds. Kiosks of ornamental design for the sale of newspapers, &c., should be erected in all the principal streets, and comfortable seats should be provided for weary pedestrians. Public conveniences and lavatories, easily accessible, but not thrust into prominence, should also be provided. Electric power should be supplied wherever possible, and coal should only be used where absolutely necessary. Factories should not be permitted within the city, but should be kept at a distance, and confined to one locality, so that the atmosphere of the city would not be polluted. All pipes for water, electric wires, &c., should be placed in subterranean passages, out of sight but easily accessible, and so prevent the roadways from being continually broken up as is now the case in most towns. Verandahs, lamp posts, &c., should all be erected under proper control. Advertising should not be permitted upon any public building or railways.

The paper by Mr. G. Higgins, C.E., on "Eyesores in Modern Cities," showed more recognition of actualities. Pack

buildings close together, he said, and you make land value rise, but through telephones, trams and good pavements the necessity for concentration is now much less than formerly. While advocating a more liberal spacing of buildings Higgins said that "to limit the height of any building, or to enact that its height shall be at least so much, would interfere with industry, seeing that the purposes for which buildings required determine their heights and shapes," and he is strongly of opinion that it would greatly impede advancement in the art of designing buildings to prescribe any fixed style of architecture whatever.

The director of the National Gallery, Mr. L. Bernard Fry, spoke about the "Beautifying of a City." He referred to local examples of the reverse process. Among his remarks were the following:—

In the beautifying of a city an artist's work only begins where the architect, and after him, the sculptor, leaves off. The beauty of a city depends upon the finest natural sites being chosen, and then—these having in the meantime been converted into architectural ones—decorated with sculpture. A painter's province lies in thereafter decorating the interior walls and spaces of such buildings.

According to the architectural origin of all decorative work, the principles which guide the artist are identical with those upon which the architect depends, modified only by the nature of the material used. Symmetry or balance, variety, unity, economy of means, colour, scale, repose, richness of detail, breadth and manly sentiment are all qualities common to architecture and painting. Incidentally it may be noticed that exactly the same qualities go to the formation of style, whether in literature, dress, manners or anything else. A sculptor should be half an architect in order to realise the decorative value of a sculptural site in relation to its surroundings. This is the virtue of decoration, that it is interdependent—that it must be regarded not as an entity (as a merely illustrative picture might be) but, as Ruskin puts it, "related, either in subordination or in command, to the effect of other pieces of art." The wants and necessities of the State must be clearly grasped before we play our parts as artists and beautifiers, and it is well that it is so. It is well that men's manifold requirements constrain us to diversity both in scale and material. It tends to freshen and vary and to humanise all art effort. It is the excuse for differentiation, and the original source of forms. Beauty applied to the thing of use in its simplest form, and beauty applied in its most magnificent measure is developed in identical lines, which differ only in degree of ornamentation and cost of material. From the artist's point of view it is necessary to point out that painting is a representative art, while architecture, like music and dancing, is a presentative art.

If one of the Australian Ministers of Finance were present at the Congress, it would be interesting to hear his remarks about the papers which he heard. All undoubtedly expressing generous sentiments, a desire for the convenience of future generations as well as for the living, and aspirations towards improvements which are not always of the material kind. If it were as easy to lay out symmetrical roads with open spaces at specified distances as to write papers about them, the Federal capital would present few difficulties. But is it certain that the people who are to come would be satisfied if they were constrained to adopt a plan which was fixed for them at the beginning of the twentieth century? Much of the interest belonging to cities is that they resemble organic beings in their growth. That signifies there are periodic changes, and what becomes obsolete is removed. Indeed, at the present time there is an excess of efforts to preserve what takes that form. Why should not a similar law be recognised in Australia? The country is too indebted to be able to provide for more than existing wants in the new capital. The old Parliament Houses of England were on a modest scale, and yet how many events of historic importance were transacted in them? When, through the fire on October 16, 1834, the old buildings became necessary, the sum assigned for the work was only 800,000*l.*, including land, embanking, &c. Australia has too many unfinished public buildings to be prodigal of its Federal capital.

Mr. John Brickwood, a well-known brewer, has offered to present a chapel to the Sanatorium at Midhurst, the foundation-stone of which was recently laid by the King. The chapel will, it is estimated, cost about 20,000*l.* Mr. Knollys has written, on behalf of the King, assuring Mr. Brickwood that His Majesty sincerely appreciates the proposal, and that it affords him much pleasure to take advantage of it.

COUNTY COUNCIL BUILDING SITES.

property committee of the London County Council reports that land on the northern side of Aldwych, between Catherine Street and Drury Lane, has been sold to the Duke of Bedford, and that the sum of £8,000 has been paid into the county fund. It will be remembered that at the auction held in October last certain building plots in the Strand, Kingsway and Aldwych were offered on lease, but no bids were made for them. In consequence of this result, the corporate property committee of the London County Council have been carefully considering the building conditions relating to the leasing of the Council's surplus land acquired in connection with various improvement schemes should be modified with a view to the disposal of the land more expeditiously. As the conditions at present there is no provision made for arbitration. The conditions provides that in the event of any dispute between the Council and the lessee in connection with the erection of buildings, such dispute is to be settled by the Council's architect, whose decision should be final. The committee now report that they are of opinion that, although there are bidders for the plots of land in connection with the Strand improvement at the last auction, the Council do not experience any difficulty in eventually disposing of plots under the existing conditions. They were, however, impressed with the desirability of securing a speedy recoupment in connection with the improvement, and they thought the Council would be well advised to make some concession so as to facilitate the letting of the surplus land. They accordingly commend:—"That the building conditions attached to the letting of the Council's surplus lands in connection with improvement or other schemes be modified, so as to include the following provision:—If, and so often as the same shall happen, any dispute shall arise after the plans and specifications have been approved between the Council and the lessee as to any matter connected with the erection of the said buildings, or the foundations or drainage thereof, or the preparation, laying out, fencing or otherwise dealing with the said land, which matter is not provided for by the said plans and specifications, or any additions to, alterations or omissions from, the same authorised as aforesaid, or the conditions or conditions of approval, every such dispute between the parties do not agree, be decided by an arbitrator named by the President of the Royal Institute of British Architects, whose decision shall be final."

Howell Williams said that the suggested amendment to the conditions would be of very little help to builders who were to build on the Council's land. There had been no reason for this land because of the onerous and irritating conditions attached to a whole. Somehow or other the eighty years' system had got in of recent years, and he would suggest that in order to get this land leased quickly they might offer it for a long lease, say ninety years, and let lessees understand that there would be no trouble about the extension of the term. It was to the credit of the Council that every inducement should be made in connection with this land, for while it was remaining unoccupied as at present they were adding no less than 3,000l. a week to the cost of the improvement.

Mr. White also said the conditions were onerous, and that it was a measure of relief offered by the recommendation was to be throwing dust in the eyes of those who were desiring to build on this land.

The recommendation, however, was adopted.

THE STANWAY VIADUCT DISASTER.

EVIDENCE was given by the contractor at the inquest on the bodies of the four men who were killed or succumbed in the viaduct accident on the Cheltenham and Great Western new railway, at Stanway, on November 13. Mr. J. T. Middleton, managing director of Messrs. W. & A. Scott, of Westminster and Newcastle-on-Tyne, and who gave the evidence to the *Birmingham Daily Post*, said he had been in charge of the construction of public works for upwards of twenty years. The contract for the construction of the new Great Western line from Honeybourne to Winchcombe was given by his firm, and this work had been in progress for about a year. Mr. C. T. Scott was the director immediately in charge of this work, and resided in the vicinity. He said that he had time to time visited the works with Mr. Scott, and that the works had been carried out in accordance with the plans and specifications of the engineer of the Great Western Railway Company, under the supervision of Mr. C. T. Scott, the company's resident engineer. There was not anything special about the works. They included the construction of a viaduct in the parish of Stanway, 2,100 yards in length, consisting of fifteen arches, the span of each arch being 16 feet, having a rise of 16 feet and a width of 27 feet, and being about 40 feet from the ground. On the morning of

the 13th, out of the fifteen arches Nos. 1 to 9 inclusive had been completed, and all the centreing removed from them. No. 10 was completed, and the centreing (or woodwork) was in course of removal. Arches Nos. 11 and 12 were completed, and the centreing still remained in, and about two-thirds of No. 13 was done; No. 14 was being built, about one-third being done, and the centreing in course of removal from No. 10 was being set for No. 15 arch. The arches were built of Staffordshire blue bricks of five rings, and the courses each 4½ inches thick, making altogether 1 foot 10½ inches in thickness. The bricks are banded together right through the whole thickness of the arch in three places, one on each side and one at the crown of the arch. The whole of the work was built with mortar composed of Warwickshire blue clay, lime, sand and furnace ashes, that being in accordance with the specification. As to the method adopted in building the viaduct, this was to turn the arches commencing at the north of the Honeybourne end, and for that purpose five sets of centres were provided, each set consisting of six ribs, these being covered with 3-inch planks. The centres were first fixed in openings Nos. 1 to 5 inclusive, and when these arches were completed the centres were taken out one set after another, and carried forward and fixed in the five spans ahead. A steam crane was used on the top of the viaduct for hoisting materials from the ground, and was stationed generally at the fourth pier behind where the forward arch was being completed. On the 13th inst. this crane was standing on No. 8 pier, No. 12 arch being then completed. The crane was carried on heavy timber, and was supported by trestles on each pier, and on the adjoining arches by four sleepers, two of which were placed on each side of the crown of the arch. Rails were then fixed to allow the crane to travel over a distance of 36 yards. The course adopted for removing the ribs of the arches throughout the viaduct had been that, after the lapse of a suitable period and the arch being completed, the timber roadway had been extended on to that arch and the crane travelled forward to such a position as to be able to reach the rib, which had previously been moved from its position under the arch to a point outside it. The rib was then lifted off its supports and brought to the ground by the crane. The crane had not become attached to the rib at the time the accident happened. After dealing with one rib in this way, the crane returned to its hoisting station, to proceed with its ordinary work, and was brought back again on to the arch, when the next rib was ready for removal. This operation had been successfully carried out during the construction of all the arches already built, the total number of times it was required to be done during the construction of the viaduct being sixty, and it had actually been carried out fifty-eight times, when the workmen were preparing for the fifty-ninth operation and the accident took place.

The weight of the crane was 13 tons, and the rib was about 1 ton 12 cwt. in addition. The proportion of the weight of the crane road resting on arch No. 10 was about 2 tons. The spandrel, and practically the whole of the backing (including brickwork and concrete), was in at the time of the accident. The collapse of No. 10 arch occurred at 8.15 A.M. on Friday, the 13th inst. Four of the ribs of this arch had already been taken away, leaving two to be removed. He understood from the foreman in charge of the work that he had called the crane up from its station, and that it had been on No. 10 arch a short time, when the whole thing collapsed and came down. When No. 10 arch fell the adjoining arches on the north side, having lost their support, speedily followed, No. 9 falling ten minutes afterwards, and No. 8 twenty minutes later. No. 7 did not fall until the following day, and by this time they had been able to support the remaining piers, and thus to prevent any further arches coming down. The completed arches—Nos. 11 and 12—on the south side of No. 10, having the centre still in, remained intact. The building of No. 10 arch was commenced on October 6, and it was finally completed on October 29. The plan described was the usual plan adopted for work of this kind. There was not anything unusual in the design of the arches, or any other part of the work.

Asked if he had been able to form any opinion as to the cause of the accident, Mr. Middleton said:—"I have formed an opinion, and it is that, owing to the extreme wet weather which prevailed during the building of the arch, the lime mortar did not set as quickly as might have been expected, and that it is possible that the working of the crane on the arch on the previous day, when there were three ribs taken out, might have caused the inside ring to slip down a bit. This would probably be followed by the second arch slightly slipping; this would so reduce the strength of the arch that when the crane came on again on Friday morning and began to work the vibration caused these internal rings to drop out. The remainder of the rings would not then be strong enough to bear the weight upon them, and the collapse of the arch was then inevitable. If this were so, the drop of ring after ring would be almost instantaneous, and not observable to the man in charge of the work. They would, in fact, fall like a pack of cards. I cannot account for the collapse in any other way. The arch could not have

come down bodily; it would have had to spread 2 feet to do so, and the only way to do that was to push the piers out of the perpendicular, but it could not have done that in the case of No. 10 arch, because the centreing was in the adjacent arch on the one side and a row of completed arches stood on the other side. The arches on either side, as a matter of fact, kept in position. We have had the piers examined since, and find them perfectly plumb, as they were built, showing that nothing had happened to them which could account for the collapse. I may mention that there has been a slight vertical settlement of these piers, which is accounted for by the saturated foundation, but the amount of the settlement, only about an inch, is not enough to account for the collapse of the arch.

The rule was to remove the rib when the adjoining arch had been keyed in. In carrying out this programme conditions of weather were taken into account. In this case the time that elapsed between the keying of the arch and the removal of the first rib was thirteen days, and two days elapsed between the removal of the first rib and the collapse. Previous centreings had been removed within ten days. Having regard to the weather that was a reasonable time. The fixing and removal of the centreing was done under the immediate supervision of Thomas Sharp, who had had great experience of this kind of work.

In reply to the jury witness said he did not think the accident would have happened if cement mortar had been used instead of lime mortar.

Mr. J. Dee Bank, sub-contractor for the labour of the brickwork, stated that the materials used were sound and of good quality, but he thought the wet must have got into the middle rings of No. 10 arch. Had the rings been set in cement the accident would not have occurred.

Mr. J. C. Blundell, resident engineer of the Great Western Company, deposed that the work was carried out according to the specification, and that he considered the mortar good.

Mr. Middleton, re-examined with reference to the quality of the lime mortar, said he took a sample on the day of the accident, and submitted it to Mr. Bertram Blount for analysis. He now produced the analyst's certificate, which stated that the figures arrived at were those proper for blue lias lime mortar. Witness also stated that he had had the arches gauged, and found that the joints were $\frac{1}{4}$ -inch thick and at the collar $\frac{3}{8}$ -inch. This disposed of a suggestion by one of the jury that, according to a piece of set mortar now produced, the thickness was never $\frac{1}{2}$ -inch.

The jury, after consultation in private, returned a verdict of "Accidental death" in all four cases.



Royal Hibernian Academy Winter Exhibition, 1903-4.

SIR,—A few weeks ago a single letter from me, commended sympathetically to the public by the Dublin press, has been operative, without solicitation or advertisement, to bring to the Royal Hibernian Academy such spontaneous contribution of works of the late Walter Osborne as would constitute in itself a charming and sufficing exhibition. It has been a revelation to his artist brethren to realise the widespread affection of so many persons solicitous for the memory of a deceased friend, as well as to find a large number of works produced in a too short life by an earnest and thorough artist. The paintings and sketches now being hung will exceed in number 250. They illustrate in most interesting sequence the artist's development from the sketches and etchings of Antwerp student days of 1872, to his latest powers in exhibited portraits such as those of the Rev. Canon Smith, Archdeacon Scott, and the Recorder of Dublin of last year.

The exhibition is intended, as promised, to embrace some representative works of the late Catterson Smith, P.R.H.A. A few old master portraits not timed for last year's exhibition, such as two interesting Raeburns kindly offered by Mr. Jameson of Portmarnock, will find a place.

Within the last few weeks have come, from some interested in the revival of miniature painting, suggestions that a show of even a few old master miniatures would be appreciated, and could not hurt the other exhibited works. That is true, and there would seem to be no difficulty about it if even some few of the many private families who hold really fine Irish miniatures painted between 1750 and 1830 would be as generously helpful as other contributors. The Academy knows from its traditions and old catalogues of exhibitions how popular was this beautiful art during a past period, how miniature painters flourished, and how miniatures of the highest merit abound and survive in Irish households unappreciated.

I should be very happy to receive such at 22 Clare Street (used as a collecting office by the Academy for the convenience

and reference of those to whom resort to remote. Lower Abbey Street has been found a trouble). I might add that the Committee of the Academy should have concession, in the case of miniatures, to exercise an expert discretion in selection of those which may be offered for exhibition, and to show a preference for those of which the artist and subject are known, or which indicate intrinsically the high qualities of, as for example, the Irish miniaturists as Comerford, Hone, Robertson, Chinnery, Lover, &c., or of such English artists as Cosway and his followers, specimens of whose work are known to be up and down Ireland.—Yours truly,
THOMAS DREW, P.R.H.A.
Dublin: November 26.

GENERAL.

The Distribution of Prizes to the students of the Royal Academy will take place on Thursday next. The gallery containing the competition works submitted for the prizes will be open to the public on the 11th and 12th inst.

The French Chamber of Deputies on Saturday rejected the motion to remove the cross on the top of the Pantheon by 322 votes against 203.

M. Sortini, the Italian sculptor, who resides in Paris, has been awarded the grand prix and gold medal at the International Art Exhibition at Rome, to which he sent two marble statues and four bronzes.

The Basement of the Petit Palais in Paris was flooded on Sunday owing to the heavy fall of rain. M. Bouvard, architect in charge, had the water pumped out and has repaired the fissures in the foundations.

The Remains of a large Roman bridge have been found at Aschaffenburg. They consist principally of the foundations of piers as well as of piling. Some of the latter are shod with iron. It is supposed the bridge was carried on nine piers.

The French Minister of Agriculture has obtained authority to use three-quarters of the Galerie des Machines for agricultural exhibitions. The remaining portion has been let as an arena for sport. The demolition of the galleries is therefore postponed.

The City and Guilds of London Institute will hold their annual meeting at the Mansion House on January 25. William White, F.R.S., president of the Institution of Civil Engineers and formerly director of Naval Construction, will deliver the address.

An Exhibition of French art of the eighteenth century will be opened in Brussels on January 15. The French Government will lend several remarkable examples of Gobelin tapestry, as well as other varieties of work.

Mr Seale-Hayne has bequeathed about 150,000*l.* for the establishment of a college of science, art and agriculture in the neighbourhood of Newton Abbot, for Devonshire.

An Interior Perspective View of Burgos Cathedral by Mr. A. H. Haig, was sold on Tuesday at Christie's for thirty-guineas.

A New Chain Cable Store and Testing-House is to be erected in Portsmouth Dockyard at a cost of 7,800*l.* The requirements of the Fleet render the present establishment inadequate.

The Stained-Glass Window erected to the memory of Mr. John Hungerford Pollen in St. Mary of the Angels, Bathwater, has been reproduced from those designed by him in 1876 for the Marquis of Ripon's chapel at Studley Royal.

M. Gorguet has been awarded the first prize of 1,000 francs in the competition for the 1904 programme cover of the Paris Opera House.

The Berlin Town Council propose to expend 500,000*l.* year for eight years on wall-paintings, showing scenes from German history, for the elementary schools.

At a Council Meeting of the International Society of Sculptors, Painters and Gravers, held on December 2, Monsieur A. Rodin, the distinguished French sculptor, was elected president, in succession to the late Mr. James McNeill Whistler.

Baths are to be erected on the St. George's Dock side from plans by Mr. A. Saxon Snell, at a cost of about 75,000*l.*

Mr. F. Matcham has been commissioned to prepare plans for another Empire Theatre in Glasgow, which will accommodate about 4,000 people.

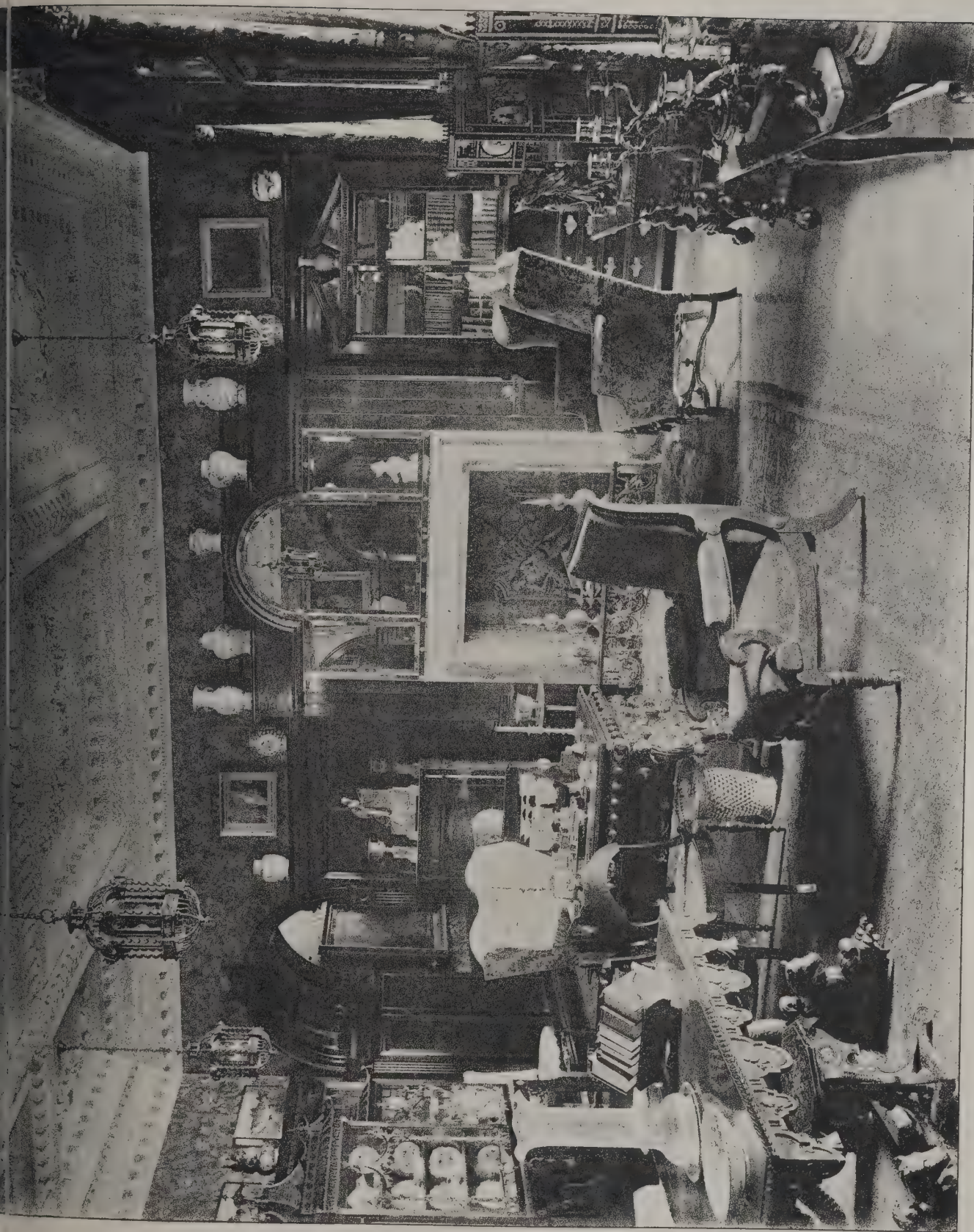
The First Prize in the competition for the Carnegie Library at Rawtenstall was awarded to Messrs. Croucher, Butler & Savage, of Birmingham. The second was divided between Mr. A. T. Butler and Messrs. Stones, and the third between Mr. E. J. Williams and Mr. A. E. Dixon.

The Society of Oil-Painters, Piccadilly, have elected the following members:—Mr. Charles Sims, Mr. H. Van der Weydon, Mr. E. Reginald Frampton, Mr. A. D. McCormick, Mr. Philip E. Stretton and Miss Dorothea Leandau.





The Architect, Dec. 4th 1903.



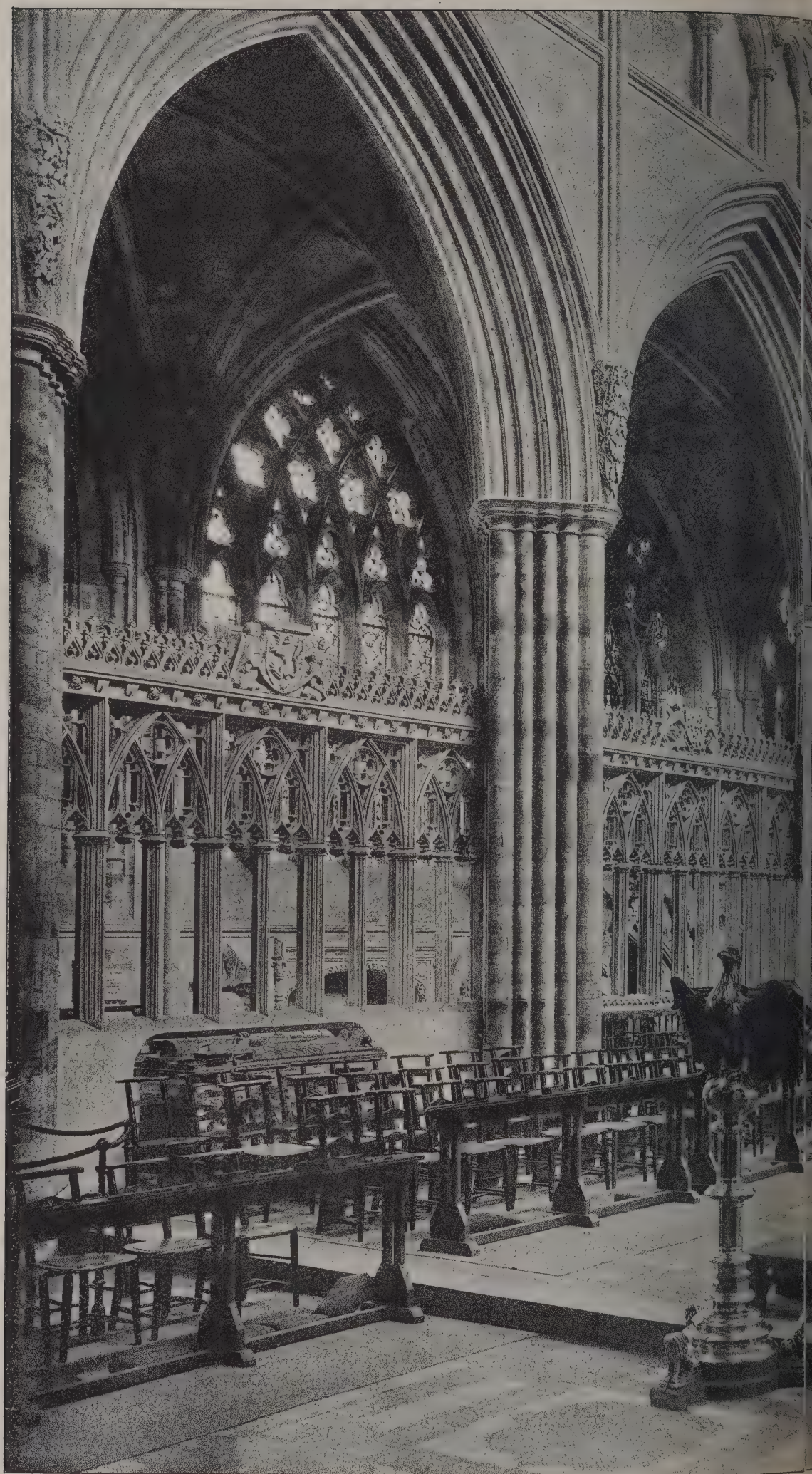
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COWLEY MANOR: THE HALL.

R. A. BRIGGS, F.R.I.B.A., Architect.



THE PHOTODUPLICATION OF THE ARCHITECTURAL DRAWING UNIT 1

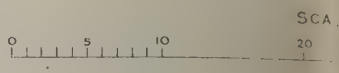


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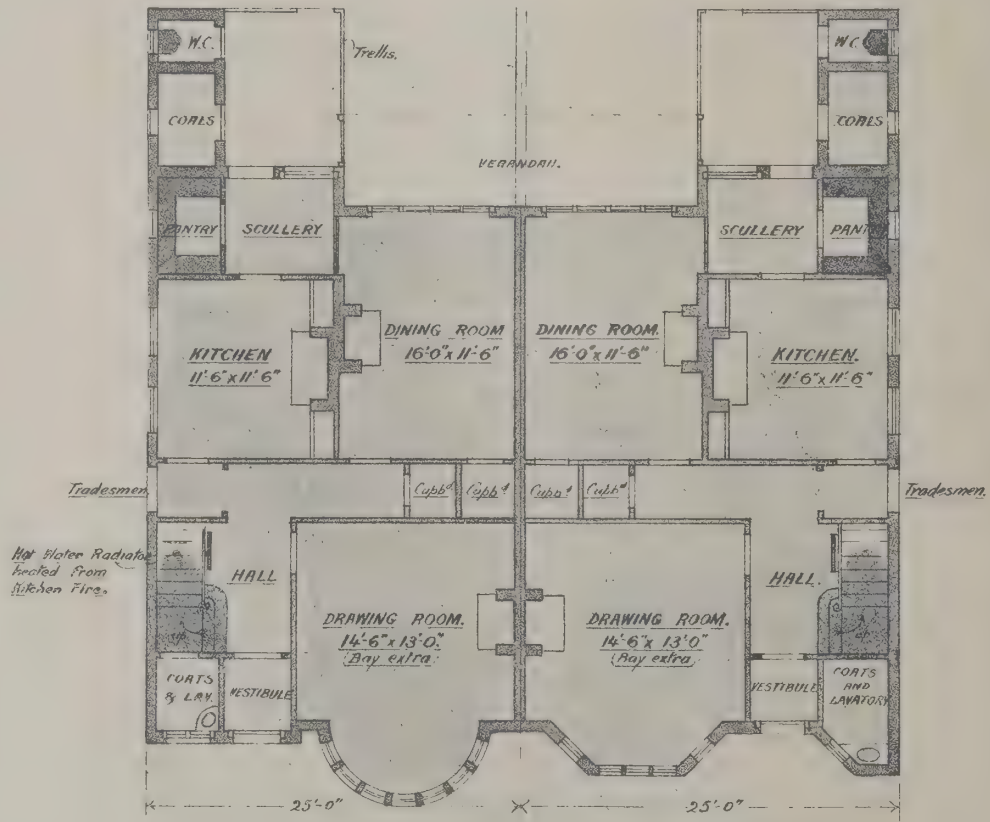
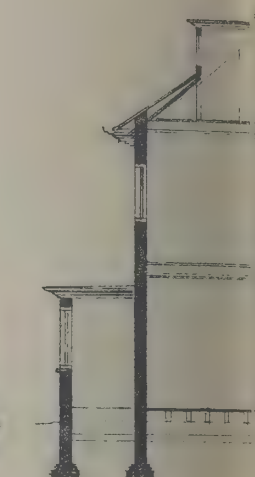


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Semi Detached



ELEVATION, A.



SEE ELEVATION A SEE ELEVATION B

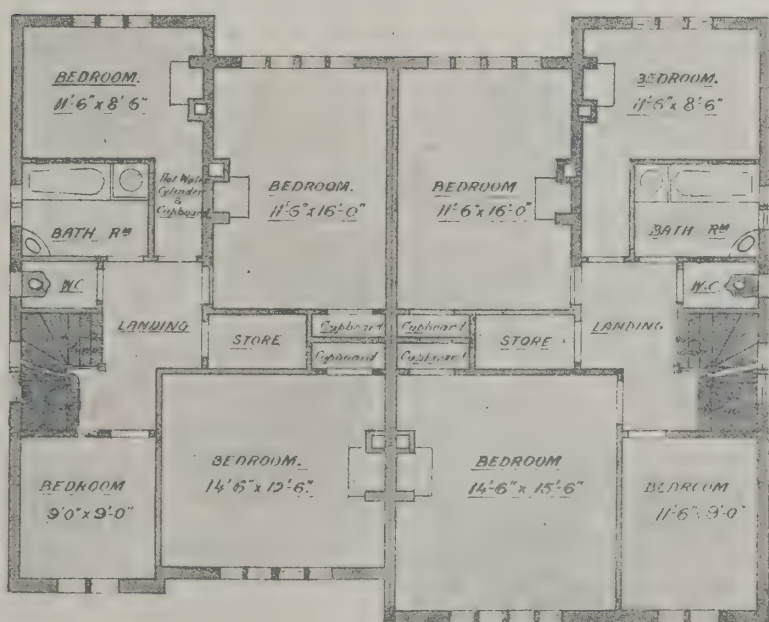
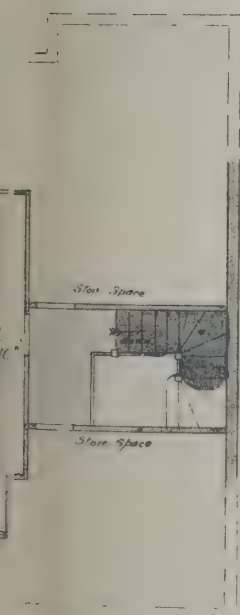
GROUND FLOOR PLANS.

1000.

40 50



— ELEVATION. B. —



SEE ELEVATION. A.

SEE ELEVATION. B.

— FIRST FLOOR PLANS. —

H. O. Wilson - A. B. & B. A.
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 East Street, N. C.

THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

One of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Our Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

A great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

IRE.—Dec. 10.—The Clare Rural District Council invite applications from a competent water engineer to advise them as to a scheme of water supply for the town of Clavering, population, 1,582. Mr. J. Bigmore, clerk, 24 Queen's Road, Clavering, Suffolk.

BIRMINGHAM.—Feb. 1.—The Urban District Council general committee invite designs for new council house and sanitary buildings, to be erected at the junction of Mason's Lane and Banbury Roads, Erdington. Premiums of 50%, 30% and 10% will be awarded for the designs placed first, second and third respectively. Mr. Herbert H. Humphries, district architect and surveyor, Public Hall, Erdington, Birmingham.

LONDON.—Dec. 16.—The Lambeth Borough Council are erecting a public library, with residence for librarian, in the Hill ward of the borough. Architects residing in the borough of Lambeth are invited to send in designs for a public library, with residence for librarian, in the Hill ward of the borough to Mr. H. J. Smith, town clerk, Lambeth Town Hall, Kennington Green, by 12 noon on Dec. 16. General information as to the extent and the accommodation required in the proposed library can be obtained on application to the town clerk.

GLoucester.—Dec. 7.—The Elgin Landward School Board invite competitive plans and estimates for the erection of a school building at New Elgin capable of accommodating 100 pupils. Mr. Hugh Stewart, clerk to the Board, New Elgin.

BIRMINGHAM.—Dec. 7.—Competitive plans and designs are invited for public baths at Selly Oak, near Birmingham. Full particulars of the site for the proposed baths, limit of maximum area, &c., with copies of sketch plans showing the location required, &c., may be obtained on application to the Urban District Council's surveyor, Mr. A. W. Cross, Selly Oak Road, King's Heath, near Birmingham.

GLoucester.—Competitive sketch plans and sketch designs are invited for the Carnegie public library and proposed new school buildings to be erected at Phillip's corner of Upton Road. A premium of 50 guineas is offered for the design, placed first, and 30 guineas for that placed second. Mr. J. Hex, town clerk, Town Hall, Torquay.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 17. returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

BARROW-IN-FURNESS.—Dec. 9.—For additions to cartshed at the storeyard, Ramsden Street. Particulars can be obtained at the office of the Borough Engineer, Town Hall, Barrow-in-Furness.

BERKS.—Dec. 7.—For the erection of a police-station at Wokingham, consisting of five cells, quarters for four single constables, four residences for officers and constables and petty sessional court, with stabling, walls, &c. Mr. Jos. Morris, county surveyor, Broadway Buildings, Reading.

BERWICK-ON-TWEED.—Dec. 7.—For rebuilding house and shop, 106 High Street. Mr. Wm. Gray, architect, 2 Ivy Place, Berwick-on-Tweed.

BIRMINGHAM.—Dec. 14.—For the erection of the superstructure, internal finishings, &c., of the new university buildings at Bournbrook. Messrs. Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

BINGLEY.—Dec. 7.—For the erection of a branch bank and manager's house at Bingley, Yorks. Mr. R. Armistead, architect, 8 Charles Street, Bradford.

BINGLEY.—Dec. 10.—For the erection of a detached villa residence in Bromley Road, Bingley, Yorks. Mr. W. Rhodes Nunns, architect, Market Street, Bingley.

BIRDWELL.—Dec. 9.—For the erection of six houses, The Walk, Birdwell, Yorks. Mr. P. A. Hinchliffe, architect, 14 Regent Street, Barnsley.

BRADFORD.—Dec. 8.—For the erection of three houses and a house and shop at Corban Street, Wakefield Road, Dudley Hill. Mr. J. W. C. Atkinson, architect, 1 Ivegate, Bradford.

BRADWELL-ON-SEA.—Dec. 28.—For the erection of six workmen's cottages (under the Housing of the Working Classes Act) at Bradwell-on-Sea, Essex. Mr. Horace G. Keywood, surveyor, Maldon.

BRISTOL.—Dec. 16.—For alterations and repairs to the workhouse at Clutton. Mr. W. F. Bird, architect, Midsomer Norton, Somerset.

BURY.—Dec. 22.—For the erection of a hospital at the workhouse, Jericho, Bury, Lancs. Mr. Alfred Hopkinson, architect, 15 Agur Street, Bury.

CAIRO.—Feb. 1.—For the construction of three steel bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CASTLEFORD.—For the erection of free library building in Castleford. Mr. G. H. V. Cale, architect, Birmingham.

CLEETHORPES.—Dec. 8.—For the erection of a fire station and horsekeeper's house, &c., in Poplar Road, Cleethorpes, Lincs. Mr. Egbert Rushton, surveyor, Poplar Road, Cleethorpes.

CROYDON.—Dec. 7.—For the erection of two relief stations in Church Road and Sanderstead Road, Croydon. Messrs. Wills & Anderson, architects, 4 Adam Street, Adelphi, W.C.

DONCASTER.—Dec. 10.—For the erection of a house and farm buildings at Belton. Mr. Henry Kelsey, architect, Queen Street, Epworth.

GALLOWAY PLAIN.—Dec. 11.—For alterations and additional buildings and incidental works connected therewith at the isolation hospital, Galloway Plain, near Hertford. Mr. Geo. H. Gisby, clerk, Ware, Herts.

HALIFAX.—Dec. 16.—For the erection of a pair of semi-detached villas in Moor Lane, Illingworth, Halifax. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

HALTWHISTLE.—Dec. 9.—For the erection of Board-room and offices for the Guardians. Mr. John M. Clark, surveyor, Haltwhistle.

HERNE BAY.—Dec. 8.—For alterations and additions to the town hall, viz. new gallery and dressing-rooms, rearrangement of stage, together with general redecoration of the premises, and for the erection of an iron and glass verandah in front of town hall. Mr. F. W. J. Palmer, surveyor, Council Offices, Town Hall, Herne Bay.

HORSHAM.—Dec. 30.—For the erection of stabling, sheds, mortuary, boundary wall, &c., on land adjoining Stanley

Street, Horsham. Mr. S. Mitchell, 14 Market Square, Horsham, Sussex

IPSWICH.—For additions to the nurses' wing at the East Suffolk and Ipswich hospital. Messrs. Brown & Burgess, architects, Princess Street Chambers, Ipswich.

IRELAND.—Dec. 7.—For the erection of two artisans' and ten labourers' dwelling-houses, with out-offices and other appurtenances at Clonmel. Mr. James J. M'Auley, architect, Town Hall, Clonmel.

IRELAND.—Dec. 11.—For the erection of a town post-office at Lurgan, co. Armagh. Messrs. W. H. Stephens & Son, 13 Donegall Square, North Belfast.

IRELAND.—Dec. 12.—For the erection of a church at Murroe, co. Limerick. The Very Rev. J. J. Duan, Murroe.

IRELAND.—Dec. 21.—For the erection of a church at Roseyards, co. Antrim. Mr. S. J. M'Fadden, architect, Queen Street, Coleraine.

IRELAND.—Dec. 31.—For the erection of two detached villas at Hillsborough, co. Down. Mr. Henry Hobart, architect, Dromore, co. Down.

JARROW.—Dec. 7.—For alterations and additions at the Dunn Street school. Mr. T. H. Spencer, clerk, U. D. School Board, Jarrow.

KEIGHLEY.—Dec. 8.—For additions to the high block at the union infirmary, Keighley. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

KENDAL.—Dec. 15.—For providing and fixing a dado consisting of about 2,584 feet super white American figured oak, 855 feet lineal moulded cap and 855 feet lineal of skirting. Particulars on application to the Borough Engineer.

LANCASTER.—Dec. 18.—For the erection of dining-room, dormitory and sanitary block at the County Lunatic asylum, Lancaster. Particulars may be obtained on application to the Clerk of Works at the Asylum.

LEEDS.—Dec. 11.—For the erection of a United Methodist Free church Sunday school, Highfield Avenue, Wortley. Mr. C. Fredk. Wilkinson, architect, 35 Park Square, Leeds.

LITTLEHAMPTON.—Dec. 11.—For the erection of a new coastguard station at Littlehampton, in the county of Sussex, consisting of houses for an officer and twelve men, watchroom, boathouse and outbuildings, &c. Particulars may be obtained from the Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.

LONDON.—Dec. 15.—For the construction of a river station, Old Barge House Wharf, Blackfriars, S.E. Drawings, specification and a copy of the conditions and form of contract may be seen on application to Mr. J. Wager, His Majesty's Office of Works, &c., Storey's Gate, S.W.

LONDON.—Dec. 18.—For the erection of the superstructure of the parcel office, Union Street, E.C. Drawings, specification and a copy of the conditions and forms of contract may be seen on application to Mr. J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.

MANCHESTER.—Dec. 11.—For the erection of office and abattoirs in Tack Street. All particulars may be obtained from the office of the City Architect, Town Hall.

MANCHESTER.—Dec. 12.—For the erection of an exhaust house, pump-house and workmen's dining-room at the works, Rochdale Road station. Mr. C. Nickson, superintendent, Gas Department, Town Hall, Manchester.

MILFORD HAVEN.—Dec. 9.—For the erection of a laboratory at the Milford Haven county school. Messrs. Wood Gaskell, architects, Milford Haven.

PETERBOROUGH.—Dec. 11.—For extension of post-office at Peterborough. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

PORTSMOUTH.—Dec. 16.—For the erection of a wall and door on Corporation land in Woodland Street. Mr. Alexander Hellard, town clerk, Town Hall, Portsmouth.

QUEENBOROUGH.—Dec. 11.—For the erection of a coastguard station at Queenborough, in the county of Kent, consisting of houses for officers and four men and a boathouse. Drawings and specification, &c., may be seen at the Coastguard Station at Queenborough.

SCOTLAND.—Dec. 7.—For the erection of house and chapel at Whiteash, on Letterfourie estate, Buckie. Mr. A. Brown, C.E., 12 Low Street, Buckie.

SCOTLAND.—Dec. 8.—For the erection of one single and two double cottages at Provan gasworks, Glasgow. Mr. Alexander Wilson, engineer, 45 John Street, Glasgow.

SHEFFIELD.—Dec. 19.—For the erection of a lock-up and court-house at Eckington, near Sheffield. Mr. J. Somes, county surveyor, County Offices, St. Mary's Gate, Derby.

SHIPLEY.—Dec. 15.—For the erection of an inclined road house and other works. Mr. T. G. Wilcock, manager, Gasworks, Shipley, Yorks.

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TELEGRAMS: "KRULLETER" LONDON.

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V. LES.—Dec. 7.—For the erection of bakehouse, slaughter-
stables and coach-house, at Ynysybwl. Mr. D. Dalis
secretary, 45 Robert Street, Ynysybwl.

V. LES.—Dec. 11.—For rebuilding 59 High Street, Merthyr.
(M. Davies, 112 High Street, Merthyr Tydfil.

V. LES.—Dec. 12.—For the erection of an arcade and con-
- in Terrace Road, Aberystwyth. Mr. J. Arthur Jones,
- 7 Queen's Terrace, Aberystwyth.

V. LES.—Dec. 15.—For the erection of a minister's house,
- , at Llansaintffraid. Mr. T. Morris, Cambrian
- , Llansaintffraid.

V. LES.—Dec. 21.—For the erection of sixty-four houses at
- . Mr. D. C. Evans, Duke of York hotel, Tylors-

MAN.—Dec. 12.—For the erection of swimming-baths in
- Street. Messrs. J. B. & W. Thornley, architects,
- Street, Wigan.

TENDERS.

ALNMOUTH.

raising up three chambers in connection with the Howle
K sewer at Alnmouth.

BROWN, Alnmouth (accepted). £10 0 0

ASHTON-UPON-MERSEY.

et works in Beech Grove, Westbourne Grove, Brighton
ve, Howell's Avenue, passage between Cross Street
r Howell's Avenue, passage on the north-east side of
hton Grove, passage on the north-west side of Howell's
Avenue. Mr. F. HUTTON, surveyor.

SON, Church Lane, Ashton-on-Mersey (accepted).

BECCLES.

erection of an engine-shed at pumping-station, Pudding
Mr. Mr. ERNEST A. BRINE, engineer, Elmcroft, Ash-
rd Road, Woking, Surrey.

Ey	£241	5	0
Cbetts	236	10	0
AKing	229	7	0
de & Son	218	5	0
Johnson	207	17	6
Estell	205	0	0
ESTELL, Yarmouth (accepted)	204	15	0

BEXHILL.

For the erection upon the West Parade of a Coronation clock
tower. Mr. ROBERT HEMBEROW, architect, 174 Queen's
Road, Hastings. Quantities by Mr. J. T. HALLIDAY,
Bexhill-on-Sea. Accepted tenders.

Gaston & Ransom, Bexhill-on-Sea, tower	£232	16	0
T. Wright & Son, Bexhill-on-Sea, clock	82	0	0

BILSTON.

For heating a portion of the town hall buildings on the
low-pressure hot-water system. Mr. J. P. WAKEFORD,
surveyor.

G. GLYDON & Co., 5 Howard St., Birmingham (accepted).

BIRMINGHAM.

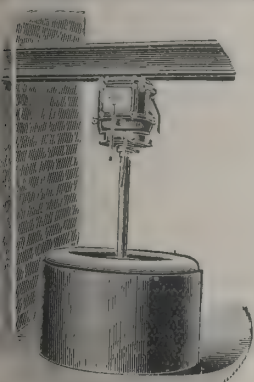
For escape staircase at the Birmingham workhouse. Mr.
W. H. WARD, architect, Birmingham.

Piggott & Co.	£1,436	0	0
J. & A. Law	1,420	0	0
Moorwood, Sons & Co.	1,350	0	0
G. Lewis & Co.	975	0	0
Hart, Son & Peard	950	0	0
A. D. Foulkes	868	10	0
Griffin Foundry Co.	827	10	0
F. W. Suffield	827	0	0
Lion Foundry Co.	798	4	0
G. Wright & Co.	796	12	0
St Pancras Iron Co.	795	0	0
Rowland Carr & Co.	770	0	0
Hassall & Singleton	767	10	6
W. Hayward & Sons	730	0	0
Falkirk Iron Co.	675	10	3

For cleaning, painting and decorating the interior of the parish
offices, Edmund Street, Newhall Street and Cornwall
Street. Mr. W. H. WARD, architect, Paradise Street,
Birmingham.

Dixon & Co.	£629	0	0
C. Jones	575	0	0
Midland Sanitary and Decorating Company	535	0	0
Reeves	515	0	0
Chamberlain, King & Jones	509	3	0
Mattey	451	14	0
Breakspear	450	10	0
Seers & Son	349	8	6
J. Taylor	338	9	6
HORTON & SON, Birmingham (accepted)	324	0	0

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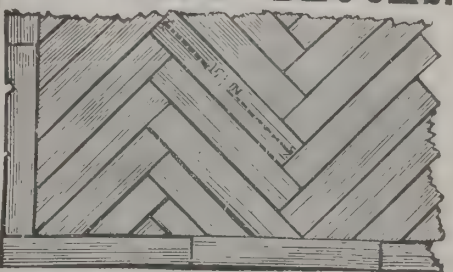
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For the extension of Royal Prince's Parade northwards and seawards, retaining walls, low sea-wall, terrace-work, colonnades, asphalted promenade, &c. Mr. ERNEST R. MATTHEWS, borough engineer.

G. BELL, Manchester (accepted) . . . £20,000 0 0

For the construction of nine timber groynes on the north fore-shore. Mr. ERNEST R. MATTHEWS, borough engineer.

HARMAN & LANGTON, Hull (accepted) . . £800 0 0

BRISTOL.

For the erection of warehouses, &c., Albert Road, St. Phillip's, for Messrs. C. Vaughan & Sons. Mr. A. BARRATT, quantity surveyor, Bristol. Mr. JOHN A. WRIGHT, architect, 6 Unity Street, College Green, Bristol.

T Broad	£2,376	0	0
Eastbrook & Sons	2,368	0	0
A. E. Longden	2,300	0	0
J Perkins & Son	2,295	0	0
A. J. Beaven	2,150	0	0
R. Wilkins	2,064	0	0
Walkerdine	1,895	0	0
W J. BENNETT, Bristol (accepted)	1,770	0	0

For taking-down and re-erecting the side wall of 42 Mary-le-Port Street. Mr. JOHN A. WRIGHT, surveyor, 6 Unity Street, College Green, Bristol.

J Perkins & Son	£470	0	0
E. Walters & Son	410	0	0
G. T. Daltry	394	0	0
W A Ship	355	0	0
Jones & Hill	329	0	0
W & J. Bennet	320	0	0
E. J. Horton	305	8	0
H. W. E. L. Neale	298	0	0
E. Clark	295	0	0
Eastbrook	295	0	0
H. A. FORSE & SONS, 143 Ashley Road (accepted)	295	0	0

DARTFORD.

For the erection of four houses, Green Street Green, Dartford. Mr. W. HENSTON, architect, Dartford.

PURTON & JOHNSON, Fulwich Road (accepted).

For the erection of two houses, East Hill, Dartford. Mr. HENSTON, architect, Dartford.

SUMMERS & PEARSON, York Road (accepted) . £786 0 0

EBBW VALE.

For alteration of the building formerly used as a pattern room on the drill ground into a fire-brigade station. Mr. THOMAS, surveyor.

J. NEWCOMBE, Victoria Road (accepted) . . £139 0 0

ESHOLT.

For the construction of roads and sewers on the St. Levan estate, Esholt. Messrs. EMPSALL & CLARKSON, architects, 7 Exchange, Bradford.

J. A. WALKINSON, Yeadon, near Leeds (accepted).

FRIMLEY.

For sewerage works in Chobham Road, Frimley. Mr. F. UREN, engineer, High Street, Camberley.

C. Mott & Co.	£3,176
Free & Sons	2,500
A. C. Soane	2,384
W. Norris	2,317
J. Coker	2,295
Streeter & Todhunter	2,283
T. Turner	2,073
F. R. Roberts	1,969
J. Jackson	1,960
Cunningham	1,880
H. Prescott	1,841
Osenton	1,817
Craig & Son	1,611
H. Porter	1,586
WHEELER, Southwark (accepted)	1,540
Swaker	1,435
Ragstone Co.	830

ILFORD.

For street works at the rear of the Pavement, Seven Islands, Ilford. Mr. H. SHAW, surveyor.

B. W. GLENNY, Clonsingle, Romford (accepted) . £395 0 0

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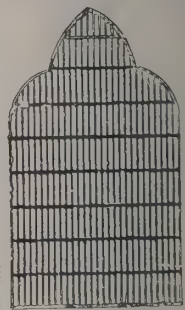
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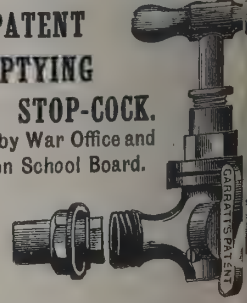
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E. Brown & Son	£68,500	0	0
C. North	66,970	0	0
McCormick & Sons	65,056	0	0
H. Willcock & Co.	62,500	0	0
Patman & Fotheringham, Ltd.	58,973	0	0
E. Lawrance & Sons	57,748	0	0
Perry & Co.	57,637	0	0
Kirk & Randall	56,834	0	0
Dove Bros.	56,755	0	0
W. H. Lorden & Son	55,897	0	0
W. Downs	55,433	0	0
J. Smith & Sons, Ltd.	55,172	0	0
E. D. Percy	55,100	0	0
Perry Bros.	54,987	0	0
C. Ansell	54,300	0	0
B. E. Nightingale	54,300	0	0
F. & H. F. Higgs	52,100	0	0
W. KING & Co. (accepted)	51,267	0	0

LONDON SCHOOL BOARD.

Interior cleaning at the following schools will be executed between December 19, 1903, and January 9, 1904:—

Flora Gardens.

C. F. Kearley	£257	0	0
W. Hammond	248	0	0
F. T. Chinchin & Co.	219	0	0
S. Polden	214	10	0
J. & M. Patrick	202	0	0
G. H. Sealy	197	0	0
W. Hornett	193	0	0
W. Chappell	168	10	0
F. CHIDLEY & Co. (accepted)	160	0	0

Friern.

H. Line	£310	0	0
Lathey Bros.	243	0	0
J. & C. Bowyer	239	0	0
Maxwell Bros., Ltd.	236	0	0
W. Hooper	207	0	0
C. G. Jones	205	0	0
H. Groves	192	0	0
W. READ (accepted)	177	0	0

LONDON SCHOOL BOARD—continued.

Mawbey Road.

W. Downs	£322	0	0
Maxwell Bros., Ltd.	280	0	0
H. J. Williams	246	0	0
W. J. Howie	242	0	0
W. Sayer & Son	214	0	0
E. TRIGGS (accepted)	191	0	0

Kilburn Lane.

General Builders, Ltd.	£284	0	0
W. Densham & Sons	279	10	0
C. F. Kearley	279	0	0
W. Hammond	274	0	0
F. T. Chinchin & Co.	254	0	0
W. R. & A. Hide	234	15	0
F. Chidley & Co.	231	0	0
BRISTOW & EATWELL (accepted)	197	0	0

Ethelburga Street.

W. Johnson & Co., Ltd.	£328	0	0
R. E. Williams & Sons	260	0	0
J. & M. Patrick	230	0	0
R. S. Ronald	215	0	0
R. A. Jewell	208	0	0
Lathey Bros.	207	10	0
E. Triggs	207	0	0
C. GURLING (accepted)	180	0	0

Ecclesbourne Road.

Patman & Fotheringham, Ltd.	£447	0	0
C. Dearing & Son	421	0	0
Macey & Sons, Ltd.	383	14	6
J. Grover & Son	335	0	0
McCormick & Sons	316	0	0
C. & W. Hunnings	284	10	0
Marchant & Hirst	257	0	0
G. BARKER (accepted)	242	0	0

Broomsleigh Street.

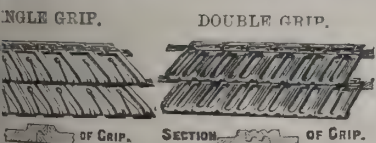
T. Cruwys	£349	0	0
H. Bouneau	303	0	0
Viney & Stone	276	0	0
Stevens Bros.	243	0	0
W. Densham & Sons	223	10	0
W. CHAPPELL (accepted)	195	0	0

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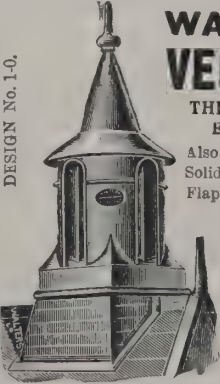
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R. A. Jewell	£263	0	0
E. P. Bulled & Co.	257	0	0
R. S. Ronald	220	0	0
Lathey Bros.	215	10	0
E. Flood	215	0	0
E. Triggs	197	10	0
Hudson Bros.	197	0	0
J. & M. PATRICK (accepted)	197	0	0

Clifton Road.

E. P. Bulled & Co.	£271	0	0
S. Musgrove	177	5	0
W. J. Howie	172	0	0
H. Groves	145	0	0
W. BANKS (accepted)	144	19	6

Eglinton Road.

R. Woollaston & Co.	£330	10	0
W. Jolly	320	0	0
W. J. Howie	255	0	0
Sayer & Son	231	0	0
E. Proctor & Son	230	0	0
H. Groves	220	0	0
P. S. Howard	178	0	0
HAYTER & SON (accepted)	174	8	0

Hawley Crescent.

T. Cruwys	£315	0	0
Bate Bros.	256	0	0
Thompson & Beveridge	213	0	0
Viney & Stone	186	0	0
H. Wall & Co.	181	0	0
M. Pearson	169	0	0
MARCHANT & HIRST (accepted)	167	0	0

Fircroft Road.

W. Johnson & Co., Ltd.	£289	10	0
R. E. Williams & Sons	200	0	0
R. S. Ronald	190	0	0
R. A. JEWELL (accepted)	185	0	0

St. John's, Halley Street.

H. Bouneau	£177	6	6
J. F. Holliday	161	9	0
VIGOR & CO. (accepted)	135	0	0
G. Barker	125	0	0

LISCARD.

For the erection of a Board school in Manor Road, Liscard, Cheshire, to accommodate 1,000 scholars. Mr. EDMUND KIRBY, 5 Cook Street, Liverpool.

Hughes & Stirling	£23,011	0	0
Richard Allen	23,000	0	0
John Bellis	22,405	0	0
Thos. Spencer	22,380	0	0
Peter Tyson	21,438	0	0
J. H. Vickers	21,382	0	0
John Gourley	21,070	0	0
J. Paterson & Son	20,858	0	0
Jones & Sons	20,825	0	0
Peter Rothwell	20,677	0	0
Dryland & Preston	20,509	0	0
Thos. Huxley	19,950	0	0
W. H. Forde	19,755	0	0

POOLE.

For laying a surface-water main, North Lodge Road, Parkston. Mr. JOHN ELFord, borough surveyor.

G. MAIDMENT, Newtown, Poole (accepted). £78 0 0

PORTSMOUTH.

For the erection of an elementary school in three departments—cooking-room, manual instruction centre and caretaker's lodge—in Reginald Road, Eastney, Portsmouth, for the education committee of the Portsmouth County Borough Council. Mr. G. E. SMITH, architect, Southsea. Quotations by Mr. CHARLES W. BALL, Southsea, and 11 Buckingham Street, Strand.

Armitage & Hodgson	£27,439	0	0
Rowland Bros.	25,846	0	0
M. Colthorpe	25,550	0	0
W. W. Evans	25,450	0	0
G. J. Davis	24,523	0	0
J. Harding	24,475	0	0
H. Clark & Son	24,462	0	0
F. Corke	24,360	0	0
J. Crockerell	24,123	0	0
PERKINS & DURRANT (accepted)	23,983	0	0

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ethick Bros.	£3,492	16	8
Potter & Son	2,990	16	11
entley & Loch	2,935	7	9
T. Pearsons	2,929	6	6
ilkinson Bros.	2,863	1	11
eid Bros.	2,826	6	3
W. Campion	2,675	10	6
A. Ewart	2,533	18	8
E. Davey	2,526	19	0
Jackson.	2,503	3	7
Iles	2,466	0	0
T. Catley	2,447	12	9
xton & Jenner	2,436	14	9
G. Osenton	2,434	13	0
F. Tomlinson	2,412	6	5
eggs, Wall & Co.	2,297	11	3
S. Kitteringham	2,251	3	2
Westmoreland	2,244	8	6
Shardlow	2,031	12	6
F. White	2,014	4	10
ivies, Ball & Co.	2,010	5	8

SWINDON.

he supply of about 410 yards run of wrought-iron unclimb-
ble fencing, with gates, to enclose the recreation-ground,
Edinburgh Street, Gorse Hill.
V MILLER & SONS, Wolverhampton (accepted) £149 19 0

WALES.

he erection of a gallery in the Richmond Road Baptist chapel.			
E & A. Frith	£144	10	0
V George	95	0	0
J. Howells	95	0	0
BULTON & WHITING, Pontnewydd, Mon			
(accepted).	87	10	0
L. Williams	86	0	0

WALES—continued.

For rebuilding wall in front of Bethel chapel, Glyn-Neath, and repairing churchyard wall.			
J. Price	£104	5	6
W. HARRETT (accepted)	99	10	0
S. Thomas	95	0	0
For additions to the Hephzibah Baptist chapel, Little Honey- borough, Neyland, Pembroke. Mr. THOMAS WILLIAM EVANS, architect, Charles Street, Neyland.			
Williams	£496	0	0
J. H. Cummings	489	10	0
L. DAVIES, Neyland (accepted)	423	10	0
For the erection of a public urinal at Hanbury Road, and the construction of a footway, about 260 feet in length, on the west side of Albion Road, Pontypool.			
J. Bradford	£85	10	0
W. H. Campbell	85	10	0
J. BURGOYNE & SON, Pontypool Road (accepted)	85	1	8
For the construction of a new road (viaduct and bridge at Pontypridd.			
BOTT & STENNETT, 25 Victoria Street, Westminster, S.W. (accepted)	£12,387	0	0

WALTHAMSTOW.

For the erection of a new billiard-room, &c., at The Limes, Walthamstow.			
S. J. Scott	£475	0	0
Battley, Sons & Holness	370	0	0
Sands, Palmer & Co.	350	0	0
THOMAS DURDEN, 1 Oliver Road, Walthamstow (accepted).	274	10	

WARE.

For street works in Vicarage Road, Ware, Herts. Mr. ELLIOTT SMALES, surveyor, New Road, Ware.			
W. Skipp	£491	17	0
E. Lambie	490	0	0
J. Jackson	405	0	0
D. H. Porter	410	0	0
A. T. Catley	406	0	0
Wallace & Inns	374	16	4
M. S. Kitteringham	361	0	0
E. DEWBURY & SONS, Ware, Herts (accepted)	354	10	0

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TRADE NOTES.

THE Governor and Company of the Bank of England have, we are pleased to learn, adopted Uralite for ceilings and Uralite fire-resisting doors.

THE additions to the Wilts County Asylum, Devizes, are being warmed and ventilated by means of Shorland's patent Manchester grates, by Messrs. E. H. Shorland & Brother, of Manchester.

MESSRS. A. W. PENROSE, electrical engineers, of 109 Farringdon Road, E.C., have secured the entire order for generating-plant, including engine, dynamos, &c., and also that for the two passenger and one goods lift for the new building of Messrs. Harvey, Greenacre & Co., Johannesburg.

THE new baths at Litchurch in the borough of Derby are now approaching completion, and a large turret clock has been erected on the front by John Smith & Sons, Midland Clock Works, Derby. The same firm have recently erected a large chiming clock in the parish church tower at Irby-on-Humber, near Grimsby, both clocks being to the designs of Lord Grimthorpe.

MESSRS. WM. POTTS & SON, clock manufacturers, Leeds and Newcastle-on-Tyne, have received instructions to make and fix a large illuminated clock with four illuminated dials at the Emmerson Buildings, Newcastle-on-Tyne, and a large chiming clock for the West Indies; both of the above will have Lord Grimthorpe's latest improvements inserted.

THE value of expanded steel in fireproof construction is well known to our readers, but architects and others will no doubt be able to derive some useful and suggestive ideas from a perusal of the handsome volume entitled "Expanded Steel in Armoured Concrete and Plaster Construction," which is being issued by the New Expanded Metal Company, Ltd., of York Mansion, York Street, Westminster. This book, which appropriately enough opens with a brief history of concrete construction as employed by the Romans, contains a large amount of valuable information on concrete construction generally and the important part played in it in modern times by "expanded metal," as well as a number of reports of tests of various descriptions, including those of the British Fire Prevention Committee, &c., and is copiously illustrated by diagrams, views of buildings and works in course of construction and finished, in which expanded metal has been successfully employed.

BUILDING AND BUILDERS.

AT the last meeting of the Folkestone Chamber of Commerce Mr. W. White presented elaborate plans for the proposed winter gardens on the sea-front, at an estimated cost of 30,000*l*. The whole scheme is to be brought before the Town Council at an early date. It is estimated that the main hall will accommodate 3,000 people.

SIR RALPH LITTLER presided at a meeting held at the Middlesex Guildhall, Westminster, specially convened to consider the question of the establishment of an open-air sanatorium for incipient consumptive patients in Middlesex. Sir William Broadbent, in supporting the proposal, said that London was the worst provided of any large town in the kingdom with sanatoria. A sanatorium for Middlesex would be a great advantage, but to share it with London would be of no use, as London's demands were overwhelming. On the motion of the Bishop of Kensington it was decided to establish a sanatorium for Middlesex, and a committee appointed to procure the necessary funds. Lord Rothschild and Mr. Leopold de Rothschild have given 200 guineas to the fund.

THE Royal Waterloo Hospital for Children and Women, Waterloo Bridge Road, S.E., is now being rebuilt in three sections, the first of which is rapidly approaching completion. If the necessary funds are forthcoming this portion will probably be in full working order by next May. Owing to the very rough weather the Board have not been able for some weeks to utilise their illuminated captive balloon. They trust, however, that during bad weather the new building itself, which now towers over the surrounding houses and is visible from the Strand and Thames Embankment, will probably draw attention to the noble and urgently necessary duty of helping the poor sick children of this densely-populated and poverty-stricken district. When the roof, which is now being put on, is completed, the balloon will reappear, weather permitting.

A MEETING of the Metropolitan Asylums Board was held on the 28th ult, Sir Robert Hensley presiding. With respect to the proposed establishment of sanatoria for persons suffering from consumption, a proposal arising out of a conference of metropolitan Poor-law authorities in October 1900, the various borough councils and certain boards of guardians of the Metropolis having expressed opinions on the proposal, the general purposes committee had given the question consideration. They were of opinion that the matter was of such vital importance to the community at large, and a proposal which,

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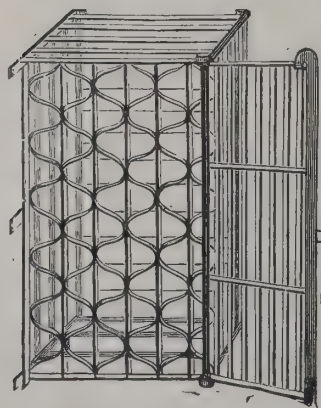
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acted by the Managers, would entail so considerable an extension of their duties and responsibilities and so large an increase in their expenditure, as to call for some authoritative opinion of opinion from the Local Government Board before the Managers were asked to take any definite action in the matter, or to make any further inquiries in regard thereto. Mr. C. Scovell said it was a large and difficult question, and he would lay all information on the subject before the public. However, this matter was to be undertaken at the expense of the ratepayers, the Asylums Board was the only authority to whom to do it. Among other difficulties, one would arise from the preference to pauper and non-pauper tuberculosis persons. An amendment was moved that the question be referred to a sub-committee of the Board. The amendment was lost, on voting for and thirty-seven against it, and the motion was adopted.

A special meeting of the Perth Town Council held in committee the question of the fever accommodation for the town was considered. The report of the sub-committee, who were appointed to make inquiries regarding the erection of a hospital, was read. Ex-Bailie Grieve moved the approval of the report, and that the local authority erect a hospital of brick or rough-cast or stone for infectious diseases at the Friarton Farm, on the site approved of by the Local Government Board, having accommodation for 50 beds and the usual arrangements for the proper administration of the hospital, and it be referred to the cleansing and sanitary committee to prepare a set of general instructions and conditions to be observed by architects in preparing competitive plans, and report to the authority. The Convener, in a lengthy speech, pointed out the necessity for the erection of such a hospital. Bailie Grieve suggested that they should consider whether they should erect a hospital or not, and leave the latter part of the question alone, and this the mover agreed to. After some discussion, it was agreed by a large majority to erect a permanent hospital. The question of the site was next considered, and the Convener of the cleansing and sanitary committee moved that the Friarton site be adopted, and this was seconded. An amendment was moved to the effect that certain sites in the town district should be considered, but after an animated discussion the Friarton site was adopted by a large majority. A question arose as to whether the hospital should be built of brick and iron or brick, rough-cast or stone, and on a vote it was agreed by a large majority that it be the latter.

It is understood that the cost of erecting a hospital for 50 beds will be at the utmost 15,000/.

THE foundation-stone has been laid of the new mixed school for St Saviour's parish, which is being erected by the Norwich Church Schools' Aid Association. The site of the buildings is at the junction of St Paul's Opening and St. Paul's Avenue, Norwich, the latter being a continuation of St. Saviour's Lane. The plans for the buildings have been prepared by Mr. A. J. Lacey, diocesan surveyor, and a light, well-ventilated and up-to-date school will be erected. The work is being carried out by Mr John Hurn, Surrey Street, and it is expected that with the internal fittings the total cost will be about 2,000/.

The main elevation of the building faces the existing infants' schools towards the south and has a frontage of 75 feet. The school will consist of one main room with accommodation for 104 children and two classrooms, each to accommodate 48; while at the north-west corner there is a vacant site for another classroom when necessary. One of the classrooms will be divided from the main room by Wilks's patent sliding partition. The boys and girls will each have a well drained and gravelled playground. Round that portion of the building that faces the playground a plinth of blue Staffordshire bricks will be erected, with glazed bricks round the other portion. The school itself will be built of red kiln bricks and blue lias stone. The pitched roof will be secured with iron tie rods, and the roof will be covered with permanent green slates. The fireplaces will have glazed and tiled chimney-pieces and hearths, and the walls will have a pitch-pine dado 4 feet high. The floors will consist of solid coke-breeze concrete covered with boards, and inlet and outlet ventilators will be provided. A dwarf wall will be built in front of the school surmounted by an iron palisading, and the playgrounds will be enclosed by a brick wall about 7 feet high.

ELECTRIC NOTES.

THE ancient flour mills at Greenham, Newbury, well known to fishermen on the river Kennet, and those at Whitchurch and Pangbourne, equally familiar to Thames anglers, have ceased to be used for the purposes for which they were erected, and both have been purchased by electric-lighting companies, who need water-power to carry out their undertakings.

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LINCOLN and district were suddenly plunged into darkness shortly after five o'clock P.M. on the 26th ult. The scene in the streets was extraordinary, large shopping establishments being temporarily illuminated by candles only. Of course all the street arc lamps failed. It has been discovered that the failure of the electric current is due to a short circuit in the main, an accident which has resulted in serious damage to one of the large dynamos.

A PAPER on "Electric Power Stations" was read on the 26th ult before the Glasgow University Engineering Society by Mr. P. D. Ionides, the more recent developments of this important subject being ably dealt with. Interesting contrasts were made between the Glasgow stations, which are the highest of their class, and turbine stations such as are now being erected in London, and it was shown that the latter could be completed at a capital outlay of about half that required for the slow-speed engine system. An interesting discussion followed, in which Messrs. Chamen, Pocock & Blackley took part, and it was agreed that turbines represented the best modern practice.

It has been decided to take advantage of the opportunity afforded by the St. Louis Exhibition to show to America what the electrical instrument makers of Great Britain can accomplish in the latest and most delicate applications of modern science. A collective exhibit of great variety will be formed, under the guidance of the Royal Commission, and sent in its complete form, in one consignment, to St. Louis. The best possible position in the electrical section of the Exhibition has been secured. Among the exhibits is a platinum resistance thermometer, from the Cambridge Scientific Instrument Company, capable of measuring temperatures, from that of liquid air to 1,400 degrees Centigrade.

THE recent important improvements in the construction of electrically driven pumps has brought them to the front in connection with fire-extinguishing installations, the ease with which they may be started and the small amount of attention required being great points in their favour. The Midland Railway Company has recently ordered from Messrs. Merryweather & Sons two sets of their electric "Hatfield" pumps, each of a capacity of 700 gallons per minute. These are to be fixed at their new depôt at Heysham harbour in connection with a complete system of fire-mains and hydrants, and the whole will form a very efficient and up-to-date installation.

A GREAT BUILDING AMALGAMATION.

THE announcement of the formation of a limited liability company, with the title of "George Trollope & Sons and Colls & Sons, Ltd.," has excited unusual interest. The standing of each firm is known not only throughout the Metropolis but elsewhere. It would be superfluous to recall their claims to confidence. The reasons given for the amalgamation are the recent deaths of partners and the wish of the survivors, who are all thoroughly practical men, to secure the benefit of each other's assistance in the management of the businesses. As the whole of the ordinary share capital of 250,000l., with the exception of 3,000l. taken by directors for qualification, has been taken by the vendors in part payment of the purchase money, all that can be offered to the public (and more especially to customers) are 20,000 cumulative preference shares of 10l. each, to bear 5½ per cent. dividend. There can be no doubt the whole capital will be at once subscribed for. The success of the two firms in the past is the best guarantee of the future, for both firms have a reputation for excellence to which the majority of architects in the Metropolis would willingly testify.

VARIETIES.

THE Academy of Music, the largest theatre in Brooklyn, has been destroyed by fire.

A NEW school has been opened by the New Monkland School Board at Gain, near Glengoig, N.B. It affords accommodation for 120 pupils, and has been built to a design by Mr. John M. Arthur, architect, Airdrie, on a site immediately adjoining the old school, which it is proposed to take down.

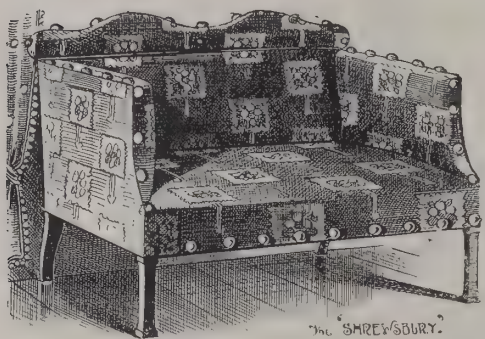
IT is intended to remove the Catholic church now adjoining Prudhoe Hall, Northumberland, and to rebuild it at Prudhoe-on-Tyne. The church is a handsome building of stone throughout, interior and exterior, complete with sacristies, tower, gallery, baptistery, chapels and donor's vault, &c. The direction of this work is in the hands of Mr. Charles Walker, architect, Newcastle-on-Tyne.

THE Society of Architects has removed from St. James's Hall, Piccadilly, W., to its new premises in Staple Inn Buildings (South), Holborn, London, W.C. The second ordinary general meeting for the Session 1903-4 will be held in the new premises on Thursday, December 17, at 8 P.M.

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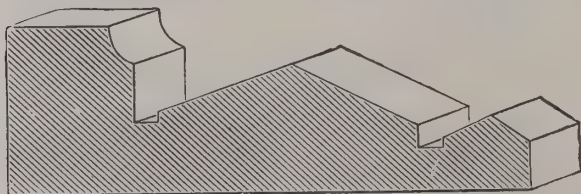
THE "SHREWSBURY" SETTEE, well upholstered, spring stuffed, and covered with artistic tapestry, finished with large oxidised copper nails, £2 19s. 6d.



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THE Manchester Society of Architects will hold its sessional papers meeting in the board-room of the Chamber of Commerce, No 44 Mosley Street, Manchester, on Thursday next, December 10, at 6.45 P.M., when Mr Ellis Esland will read his paper, entitled "The Statutory Registration of Architects."

THE Vienna *Vaterland* publishes an interview with the Emperor, who said:—"They say I am turned into a Grand Seigneur because by my order two apartments were prepared for me. Now it is true that Leo XIII was content to live for forty-five years in one small room, in which he slept, dined and worked, but I cannot understand how he was able to do it in such an airy, roomy apartment. But, above all, I must breathe fresh air."

AT a meeting of the Lambeth Borough Council the finance committee submitted an interesting report from the town clerk respecting the new town hall site, in course of which Mr. Smith remarked that the vendors may be in a position to offer vacant possession shortly after Christmas next, and it is therefore necessary for the Council to consider at once the question of purchasing the purchase money payable to the vendors. The site is at the corner of Brixton Hill and Acre Lane.

MESSRS. NEWNES ask us to explain to our readers the delay in the issue of the first part of their technological directory. Owing to the numerous references and verifications which had to be made the publishers are compelled to delay the publication of the first number until January. Readers of our advertising columns will have seen their advertisement, but for the benefit of those who have not done so, Messrs. Newnes will send a complete prospectus on application.

AN open competitive examination for not fewer than twenty-five situations as assistant examiner in the Patent Office will be held by the Civil Service Commissioners in January next. The examination will commence on the 5th of the month, and the date of application for admission to it will probably be ready in the course of a few days; they will be obtainable on request addressed by letter to the Secretary, Civil Service Commission, Burlington Gardens, London, W.

AT Ettington, near Stratford-on-Avon, on Tuesday, Bishop of Worcester consecrated the new parish church erected chiefly through the munificence of the Shirley family. The material is the buff-coloured oolite stone so familiar at Broadway, and the windows are modelled upon those in the old church at Ettington. The passages in the nave are of marble

mosaic, laid by Italian workmen, and in the chancel the floor is laid with black and white marble, the special gift of Miss Shirley. Stalls for the clergy and choir have been given by Mr. Shirley, and the font and pulpit are those which stood in the old church.

WE note that Messrs Robt. W. Mann & Son are holding an important auction sale at the London Mart on the 10th inst., when the following properties will be submitted:—No. 42 Eaton Place, S.W., a town residence with excellent accommodation which has been occupied for many years past by the late Lord Colville of Culross, who was Chief Equerry to Her late Majesty and Master of the Buckhounds, as well as Lord Chamberlain to Queen Alexandra's household for 1901; also No. 17 Draycott Place, Cadogan Gardens, S.W., a modern long leasehold red-brick residence of medium size, having six bedrooms and four reception-rooms, held direct from the freeholder at a moderate ground rent. The same firm will also offer four charming double-fronted detached villa residences at Ealing within a few minutes walk of the Great Western Railway and the London United Tramway Company's service of electric trams, held on long leases with option to purchase the freeholds; and an investment at St. John's Wood, in a capital position near Marlborough Road station, of 57½. 10s. a year net, let to and occupied by a good tenant.

PROPOSED WELSH SCHOOL OF FORESTRY.

A CONFERENCE of Welsh county councils representatives on the question of establishing a school of forestry for Wales and Monmouthshire was held at Haverfordwest last week. The movement, which was inaugurated by Mr. Edward Robinson, of Boncath, had secured the support of the county councils of Pembrokeshire, Glamorgan, Monmouthshire, Camarthenshire, Cardiganshire, Breconshire and Merionethshire. Sir Charles Philipps presided over the meeting. Mr. Robinson explained that the object was the planting of waste and at present unproductive woodlands in Wales. A school could be established with 100 to 200 acres of land to start with, and the option of acquiring a further 500 or 800 acres, and the total capital outlay at the outset ought not to exceed 5,000£ to 8,000£, which could be contributed by the councils according to their rateable values. It devolved upon the councils to take the matter up,

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FIREPLACE TO BILLIARD-ROOM TO HOUSE AT WOLVES NEWTON.

DESIGN FOR A HOUSE AT CUDHAM, KENT.

for the Government had not yet acted on the recommendations of three committees on the subject. He believed the Government would contribute about half the amount required, and he assumed that an annual grant of 100*l* or less from each of the councils would be sufficient to cover all out-of-pocket expenses and give a good return on capital. There were about a million acres of waste land in the Principality which could grow timber. Of the owners half might require assistance and the planting would cost not more than 6*l* an acre. Spread over thirty years that would require a yearly grant of 100,000*l* from the Government, the money to be repaid in that period by half-yearly instalments, and by the end of that time they should have plantations worth from 30,000,000*l*. to 40,000,000*l*. In the whole country there were 21,000,000 acres of waste land and quite 8,000,000 suitable for planting, which in fifty years would be worth fully 650,000,000*l*. sterling. At present we depended on foreign countries for our timber, whilst at least 8,000,000*l*. per annum might be saved if our waste lands were properly afforested. It was proposed to teach forestry on a very limited scale at Aberystwith College, but what was wanted was a bold and comprehensive scheme. He moved that it was desirable to establish a school of forestry for the whole of South Wales and Monmouthshire. Mr. David Jones (Monmouth County Council) seconded. The Chairman pointed out that under the Settled Lands Act money might be borrowed at 4*l*. 16*s*. 11*d*. per annum (principal and interest), spread over forty years, for the improvement of land, subject to the control of the Board of Agriculture, and the planting of trees was included in the definition. The resolution was unanimously carried, and it was decided to hold a further conference at Swansea.

HOBBS, HART & CO., LTD.

ALTHOUGH over half a century has elapsed since the first great triumph of Messrs. Hobbs, Hart & Co., Ltd., caused excitement, no efforts have been spared by the company to add improvement to improvement in their numerous specialties. Their latest catalogue of locks, casement bolts, cash, deed and jewel boxes, lock furniture and other aids to security is enough to suggest the causes of the vast and merited success of the firm. There must have been careful deliberation of experts before selecting the manufactures of Messrs. Hobbs, Hart & Co. for the rooms containing the gold and silver plate, as well as the whole of the locks under mastership at Windsor Castle, at St George's Chapel, and the treasure and plate depositories at Marlborough House. In the Bank of England, the Treasury doors and the reserved bullion safes and special suites for different departments and main building are also the work of the company. The variety that is shown in the catalogue is amazing, for in it are represented locks for all requirements. The schedule of patents, which it should be noted is only a selection, contains no less than twenty-six separate "improvements," and each is important. There are locks made *en suite* for hotels, mansions and public buildings, locks for hospitals, infirmaries and asylums, and numerous classes of locks for doors and gates. The "Victoria" casement bolts illustrated are all of excellent design. The combination bolts and lock which are adapted for external doors are produced to "insure certainty of bolting by a turn of the bolt handle on the axis. The bolts are then thrown up, down and horizontally into the door frame, when they may be securely locked in position with the key." Even if burglars contrive to conceal themselves on premises where the bolts are used, they cannot open the doors. There are also automatic panic bolts, which are found to be efficacious. The New Century rim night latches are both strong and simple. There are many infallible locks for the use of bankers. A special class of locks is also manufactured for police-stations, Government prisons, &c. Smaller in size, but no less serviceable, are the locks for tills and drawers, cupboards, boxes, desks, portmanteaus, books, letter-bags. In connection with the locks we would draw particular attention to the character of the "furniture." Knobs and plates are adapted to different styles of rooms, and are all pleasing in form. It is satisfactory to have so comprehensive a collection of aids to security and safety on which reliance can be placed available for general use. The examples

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also genuine English manufacture, for the photographs produced of the several departments in the works atington Street reveal not only how numerous are the trained assistants employed, but how intricate is the machinery which is needed in order to obtain results that will be ingenious and efficient examples of mechanism, no matter how small may be the scale of the lock, while also enduring in quality and without the least cumbrousness.

INSTITUTE OF BUILDERS.

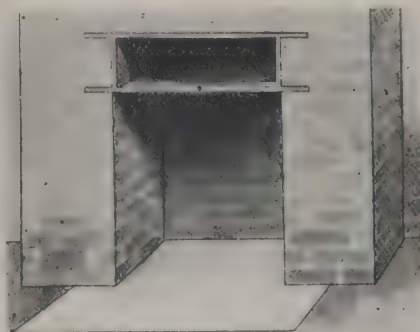
CHARLES HEATHCOTE delivered a lecture to the members of the Institute of Builders, at the rooms of the Society of Arts, on Tuesday evening, in which he stated that Americans are not better, but not necessarily more skilled than we are, in the construction of buildings. They had the pull over us because their employés were more keen upon their work. The whole attitude of the working-man was in the master's favour, because he knew that the better he worked the better it would be for him, whereas here we had trades unions with aims which seemed to compel the members to do just as little as would pass muster. The system for the education of the young of America was designed to be of advantage in a business life. Thus, in early manhood a youth was trained for his career, which he entered without the suspicion that he was deceiving himself. Hopeful enterprise was the spirit with which he began, he believed in his work, and he was proud to do it. Yet in spite of these advantages England was maintaining her reputation for quality. Being struck with the excellence of the plumbing work of an hotel in New York, the speaker made inquiries, and found that the whole of the work had been done by a London firm. Speaking generally, the Americans had methods ahead of us, but in many ways they had as much to learn from us as we had to learn from them. Our cousins, who were employers of labour, were more considerate in regard to the health and comfort of the workmen, many works each man being provided with a locker for his clothes.

In the discussion which followed, Mr. Holloway described the American system of building as showy, temporary and without genuineness. Skyscrapers were mere architectural monstrosities.

Other speakers followed and the meeting concluded.

A NEW FIREPLACE LINTEL.

A NEW lintel which is being introduced by Mr. Louis J. Newton, of 21 Ellers Road, Leeds, is worthy of the attention of architects. It has several points to recommend it, among which may be enumerated:—Its cheapness (its cost varies with



its size, from 3s. 6d. to 8s.); that it meets the requirements of the London Building Act and the Local Government Model by-laws; that it reduces the risk of smoky chimneys and draught; and that it obviates all risk of settlement, and can be fixed by any ordinary labourer, as no cutting of brickwork is required.

BIRMINGHAM HOUSING SCHEME.

ON Saturday the Lord Mayor of Birmingham inaugurated an important block of buildings erected for the accommodation of the working classes. Something more than a year ago a number of prominent citizens, who believe that the housing problem can be solved by private enterprise, promoted a company under the title of "Homes, Limited," for the purpose of providing clean, sanitary and cheap dwellings for the poor. In their prospectus they pledged themselves to build flats suitable for those earning small wages, and to take steps to insure their

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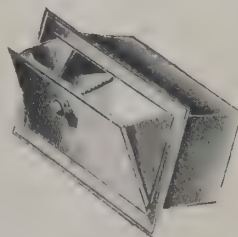
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being occupied by tenants of that class. If they succeed in this respect they will have overcome the great objection to housing schemes—that they displace the poorest of the poor and provide for a class of comparatively well-to-do artisans who are not in need of help. The bonâ-fides of the attempt to benefit the submerged tenth was guaranteed by securing as directors Councillors G. H. Kenrick and F. G. Whittall, Messrs. W. B. Kenrick and A. Wilson, and by limiting the dividend, if any, to 5 per cent. The capital was fixed at 25,000*l.*, of which 15,000*l.* was issued for public subscription. After some searching a suitable site was secured in the heart of the poverty-stricken district of Deritend. A piece of land abutting on Palmer Street, Little Edward Street and Little Barr Street was cleared by the demolition of a dilapidated chapel. Plans were prepared by Messrs. Hipkiss & Stephens, and two blocks of flats, four storeys high, have been erected by Messrs. T. Elvins & Sons, of Handsworth. The buildings are divided into sixty tenements, twenty-eight of which consist of one room each, to be let at 3*s.* per week; sixteen of two rooms each, at 4*s.* 3*d.*; and sixteen of three rooms each, at 5*s.* The flats are built on a plan which combines convenience and economy in an unprecedented degree. The materials have been carefully chosen with a view to making the walls and floors proof against fire and vermin, and to prevent the accumulation of dirt and the penetration of sound. The system of refuse disposal is a great improvement on the ordinary type of ash-shoots, and there is a private lavatory attached to each tenement. On every floor is a washhouse containing two boilers. There is a ventilated cupboard for food, and water is laid on to a sink in each tenement. The ends of the corridors are open to the air, and through these big openings coal and bulky furniture can be hauled by means of pulleys fixed in a convenient position. Fire-escapes can be attached to each tenant's balcony in case of panic. Gaslight is provided in the corridors and staircases; whether gas or oil is used in the rooms is left to the discretion of the tenants.

BRITISH URALITE COMPANY, LTD.

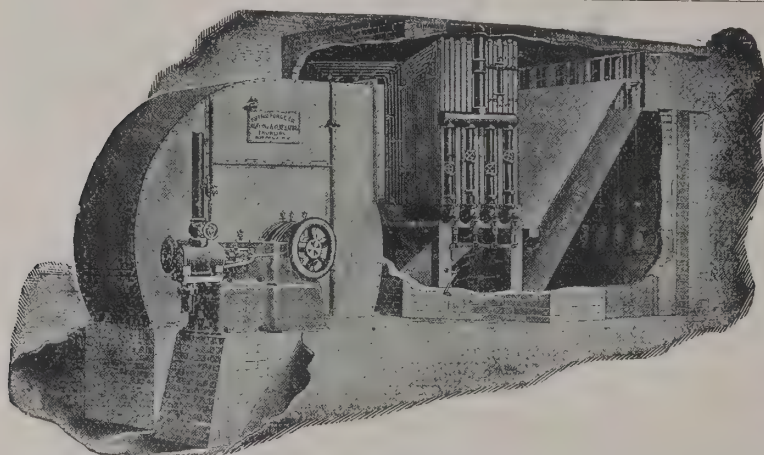
ON Tuesday, November 24, a fire test of Uralite was carried out in Edinburgh by the British Uralite Company, Ltd., on ground granted for the occasion by their Scotch agents, Messrs. Currie & Co., Ltd., of Edinburgh.

The test consisted of an ordinary partition, protected Uralite, against which a fire was made and raised to a temperature of 1,950 degs. Fahrenheit. The other side of the partition on which a thermometer was placed, only reached a temperature of 47 degs. Fahrenheit. In the middle of the fire-wooden box protected by Uralite was placed; inside the box were deposited a quantity of papers and crucibles containing sulphur, wax and fusible metal. A small platform was erected of wood, and half of it was covered by Uralite, the other half being left bare. The unprotected portion was completely consumed in twenty minutes, whilst that portion having Uralite covering remained intact. After the fire was over the box was opened, and the inside was found to be quite cool to the hand, and the wax had not even melted. The demonstration was witnessed by the firemaster of Edinburgh, and representatives were present from the leading architects' office, insurance companies, builders and contractors.

SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening November 30, Mr. J. Patten Barber, president, in the chair, a paper was read on "Mechanical Stokers for Electric Generating Stations," by Mr. Albert Gay, M.I.E.E., and which the following is an abstract:—

After referring to the general desire and the various attempts to bring about the more economical utilisation of energy in general and of electrical energy in particular, the author proceeded to show that in order to obtain the best results from coal perfect combustion was essential. He pointed out, however, that though that result might be possible in the laboratory under ideal conditions, the means of obtaining it in everyday practice had yet to be discovered. He observed that good work, however, had been done, and he proceeded to describe the necessary requirements of an ideal mechanical stoker. He then described various appliances of the kind, the aim of the makers of which was to approach the ideal as near as possible. He divided the different kinds of mechanical stokers into two main types, viz. top-feed and under-feed, the former being divided again under the subdivisions of sprinkler and cokers. As their names imply, the fuel in the former is fed above the bars. In the case of the sprinklers, small



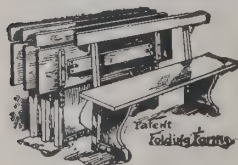
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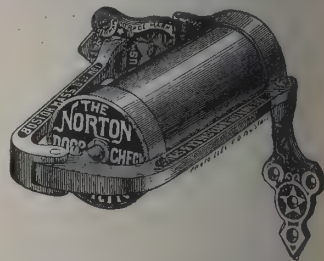
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For Index of Advertisers, see page x.

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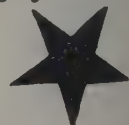
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quantities of fuel at a time are sprinkled into the furnace, and in the case of the cokers the fuel is dropped just inside the face door on the dead plate, and allowed to coke before being pushed forward into the furnace. The under-feed type is loaded with fuel below the bars, the fuel being forced up through the fire.

Tables of tests of hand firing and mechanical firing were given, some having been conducted by the author and others by makers of the appliances, and there was seen to be a general agreement between them. The tables indicate that in coal having a calorific value of 12,000 to 13,000 B.Th.U. lb., fired mechanically, the result is nearly equal to coal fired by hand, having a calorific value of 14,000 to 14,500 B.Th.U., that by using a lower-grade coal than could be economically fired by hand, a saving of from 6s. to 7s per ton might be effected. The author left for discussion the problem of the use of high-grade and low-grade coal where railway carriage (as in London) forms a large part of the actual cost delivered.

The advantages claimed by makers and the disadvantages claimed by some users were also dealt with, and the opinions of central-station engineers of experience were quoted. Diversity of opinion characterised these opinions, and while the author generally indicated his appreciation of the improved economy of mechanical over hand-firing, he apparently is not generally satisfied with the reliability and cost of up-keep.

FIREPROOF CONSTRUCTION.*

It would seem to indicate almost mental aberration to seriously question to-day the efficiency of the better types of fireproof construction. No better proof can be wished for of the fact that fireproof construction really does reduce the fire loss than is afforded by the favourable premium rates granted by fire insurance underwriters on superior types of construction.

More thrifty men than these same fire insurance underwriters may not be found, and when they approve any adjunct to their business to the extent of even a temporary subtraction from the profit column of their ledgers, it may be asserted with

* From a paper by Hon. Perez M. Stewart, late superintendent of the Department of Buildings, borough of Manhattan, New York city, read at the annual convention of the International Association of Fire Engineers.

the greatest confidence that such approval is based on an exceedingly firm foundation.

Without more ado, therefore, I shall assume the efficiency of fireproof construction as demonstrated, and pass to a consideration of some of its phases as they are presented to an official of a building department.

Fire protection is a term broad and elastic. Roughly speaking, like "All Gaul," it may be divided into three parts. First, the protection from without afforded by the municipality; second, the ability of the building itself, in consequence of its structural excellence, to withstand the effects of fire, either from within or from without; and, third, the multitude of fire-detecting and fire-fighting devices installed in, but not integrally a part of, the building itself.

Concerning the first division, it would be presumptuous for me to speak to this audience. Anything like a comprehensive review of the third division would run far beyond the limits of a paper such as this, besides involving a technical familiarity possessed only by the specialists.

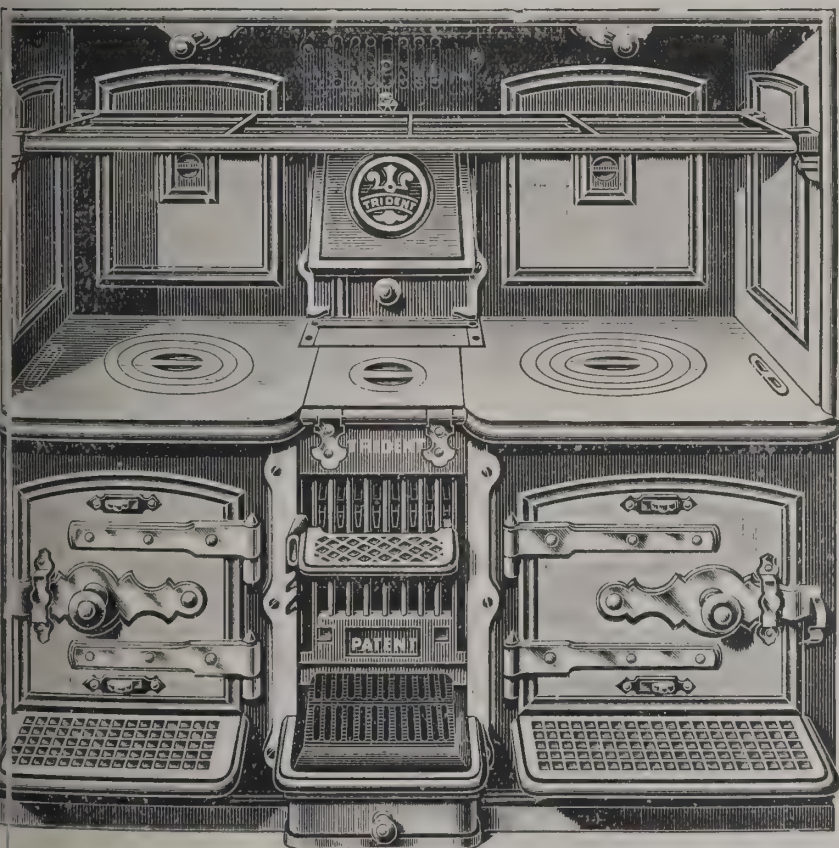
A careful consideration of the matter of fire protection should convince every owner that the introduction of safeguards against fire will bring a fair return in reduced rates on the increased outlay, besides fulfilling a moral obligation which he owes to his lessees, tenants, neighbours and himself.

Several theatres in New York have had their insurance rates materially reduced because of changes in their construction made at the instigation of the Department of Buildings. That the fireproof character of a hotel is a most desirable advertisement is indicated by the fact that some proprietors who cannot honestly claim that characteristic attempt to deceive their patrons by untrue representations. One of the large hotels of New York maintains a room in a burnt condition, as an indication of what can happen in a fireproof hotel without the knowledge of any of the patrons or the proprietor. A fire that originated in this room nearly burned itself out before anyone was aware of it.

In considering the manner in which construction tends to reduce the fire hazard, we find that the subject naturally divides itself into three heads:—(1) The use of incombustible and fireproof material. (2) The manner of combining the materials of construction. (3) The provision of devices and forms of construction that afford protection against fire from the outside.

The advantage in the use of incombustible materials is almost self-evident, as thereby the food for fire is reduced in the same ratio in which incombustible materials are used.

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Among the materials most commonly used in building construction which are generally considered incombustible may be enumerated the following:—Brick, stone, terra-cotta, wire-glass, iron, steel and concrete. By such incombustible materials is meant those which will not burn or produce flame when subjected to a heat of 2,000 to 3,000 degs. Fahr. Incombustible materials are not necessarily fireproof. It is important that this should be kept in mind.

By fireproof materials is meant such as not only do not burn, but which under the action of fire remain intact and preserve their strength or the strength of those parts which they protect.

As a notable example of what has been done in eliminating combustible materials in the furnishing of a building, St. Bartholomew's Clinic, in New York city, may be mentioned. In seeking to make the building as absolutely germproof as possible, the architect also made it as fireproof as it is possible to make it. The furniture throughout the building is made of incombustible material, except in the trustees' offices. Even here the architect was desirous of having only iron or stone furniture used, but the trustees were too solicitous of their comfort, and had their rooms fitted up with hardwood furniture and a soft rug on the floor. As it is, there is probably less combustible material in this building than any other building in the country.

As an illustration of the distinction between incombustible materials and fireproof materials, we need only refer to the unprotected as against the protected or fireproof column. Cast-iron certainly will not burn, yet the effect of the heat of a fire is well shown in the bulging and collapsing of the unprotected columns of the Hackett-Carhart building at the corner of Broadway and Thirteenth Street, in New York city, last winter, causing nearly the entire roof and part of the floor below it to fall in. As against this may be mentioned the case of the McMahon Building in Chicago. This was a building occupied as a cracker bakery. One-half of the building was of the so-called slow-burning construction, consisting of columns, girders and floors of yellow pine material. At one end was erected a bakery, consisting of brick walls and steel beam and column construction, all protected by concrete.

A fire destroyed entirely the portion of the building of slow-burning construction. As exemplifying the splendid protection afforded to steel construction by a properly applied envelope of concrete it may be stated that, notwithstanding the intense fire existing in the slow-burning section, which abutted on the

section occupied by the bakery, the bakery ovens, weighing in the neighbourhood of 1,000 tons, and supported upon the concrete-protected steel columns, remained in position at the end of the fire at their original height, extending from the third to the fourth storeys.

A more spectacular example of the efficiency of properly protected ironwork against the inroads of fire has seldom been afforded.

It will thus be seen that the manner of construction or the disposition and arrangement of parts of construction is even more important than the use of incombustible material. It is contended by many, and with a good show of justice in the claim, that with the proper use of ordinary combustible materials (which practically means wood) for the interior work of buildings, a structure can be made as safe against the spread of fire as if nothing but incombustible materials were used. Where wood is used and is exposed, it should be so placed that as little surface is exposed as possible. A fire will spread with greater difficulty when the flames have only one side to work on and the supply of air for the combustion is limited. The selection of wood is of great importance. Hard woods are much more difficult to burn than softer woods and sustain the flames less readily. Oak and yellow pine make the best structural materials among the different kinds of wood. Ordinary paints, and especially varnishes, should be avoided.

The danger of the spread of fire in a building increases first, with the increase in area covered; and second, in greater degree with the increase in height.

The danger is met in the first instance by providing fire stops in the way of brick walls or fireproof partitions. Any openings that may be necessary in these partitions should be provided with fireproof doors and windows.

The spread of fire in a vertical direction is undoubtedly more effectively guarded against by making the floors continuous and unbroken; that is, eliminating all openings in the floors and placing the necessary means of communication, such as stairways, elevators, pipes, shafts, belts, &c., in shafts entirely separated from the rest of the building by brick walls. A close attention to this detail is very important. In one of our early fireproof office buildings there occurred a fire some years ago in which the greatest damage was done in an office two storeys above the one in which the fire originated. The flames in the lower storey burned away the woodwork casing around the smoke or drain pipes and were drawn up through the opening in the floor for the pipes, and in this way ascended to the upper

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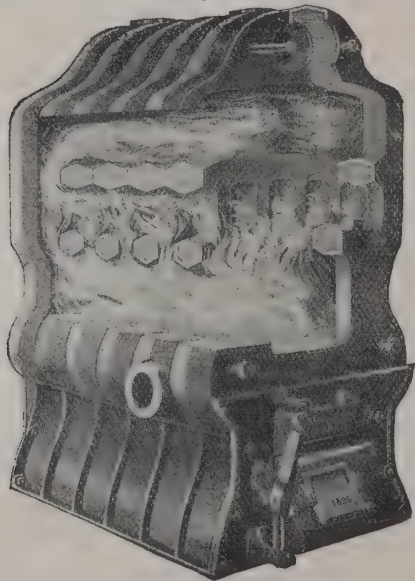
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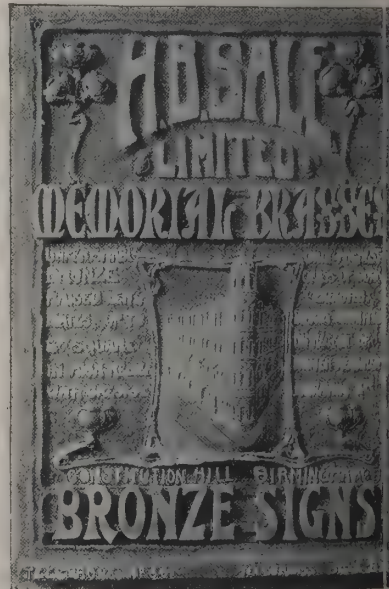
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storey, where they destroyed the pipe casing and set fire to the contents of the room.

In this incident, too, is shown the danger in the use of furring and casing, especially when of wood. Air spaces are thus formed which constitute channels through which fire, by creating draught in them, is spread. All casings, wainscoting, trim, &c., should be solidly backed up with some incombustible material; or in case it is impracticable to so back them up, good and sufficient fire-stops should at least be provided at intervals. In non-fireproof buildings where wood floors or stud partitions are used, a judicious use of fire-stops is very desirable. In the spaces formed by wood floor-beams the floor and ceiling act as a flue through which the fire spreads very rapidly; so do the spaces between the treads in the soffits of stairs. In the case of wooden stairways it is very desirable that fire-stops of some incombustible material should be provided. Steam-coal ashes or similar incombustible materials placed flush with the floor-beams make not only an excellent fire-stop by protecting the floors to a great extent, but serve the additional purpose of deafening or preventing the transmission of sound. In fireproof floors where wood flooring is used secured to wooden sleepers, it is very important that the space between the sleepers up to the underside of the flooring be filled in solidly with some incombustible material.

Reference has already been made to the elevator shaft as a very frequent means of spreading fire. The shaft in its construction constitutes a flue up which a fire is drawn with great force. On account of the necessarily large openings at each storey, particularly in the case of freight-elevators, the danger of communicating fires is great. The construction of the shaft and enclosed apparatus, therefore, becomes a matter of great importance. The shaft walls, in the first place, should be absolutely fireproof and constructed of incombustible materials. The requirements of the Department of Buildings of New York city, to which any construction before being approved or use as enclosing walls for elevators must be submitted, cannot be said to be too severe. These requirements are that the proposed construction shall practically remain intact after being exposed to a fire maintained for one hour at a temperature of 1,700 Fahr, and then subjected to a stream of water at 10 lbs. pressure for five minutes. Any construction that is used should be self-supporting. Such ironwork as is necessary for the construction of the shaft should be thoroughly protected by fireproof covering. No woodwork whatever must enter into the construction. The necessary openings must be provided

with fireproof doors. For this purpose the Fire Underwriters' door is the best, although for offices and residence buildings it is generally regarded as impracticable on account of its unsightliness. In such cases doors and frames of metal or wood covered with metal, the so-called Kalimined process, which are now being produced in a variety of shapes and finish, can be well used. Door openings should be the only ones allowed in shafts. Where it is necessary to provide light, and it cannot be obtained by windows opening directly to the outer air, it can be secured by window lights in the doors; or if that is not sufficient, by stationary metal sashes set in metal frames. In all cases the windows should be glazed with wire-glass.

What has been said of elevator shafts applies equally well to interior light and vent shafts, except, of course, that in such cases the window sashes cannot be made stationary. Pipe shafts should be solid for their full length. Provision should be made for expansion and contraction, so that the openings for service pipes at each storey can be completely filled up by the pipes without danger of damage to either pipe or partition.

But, coming to the third division of our subject, in a closely built-up location, no matter how much care or money has been expended upon a building to make it safe against fire within itself, there still remains the danger of fire damage, if not destruction, from the outside. Insurance underwriters generally regard a brick wall increasing in thickness from the top down as the most satisfactory protection against the attacks of fire from the outside.

If a building can be enclosed in solid brick walls on all sides, carried 3 feet above the roof-level, it would be practically safe against fire from the outside. But the public is not yet ready to sacrifice the space necessary for the interior courtyard that would be required for light and ventilation purposes under such conditions.

One of the most potent natural conditions tending to augment the fire loss is what is known as the exposure hazard. This defines the likelihood of a building to become ignited by a fire from without the walls. Tables of fire loss, covering a number of years, show that nearly one-third of the fire loss of the country is due to the exposure hazard. Fire is communicated from one building to another in almost every case through wall openings, through doors or windows, and to provide against this danger fire protectionists have devoted some of their best endeavours.

Since wall openings must normally be open more or less of

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the time either to traffic or to the passage of light, the first form of protection took the obvious form of a sheet-iron door or shutter, arranged to be closed at night. Practical experience, however, soon showed that any considerable amount of heat warped the sheet-iron shutter to such an extent as to seriously impair its usefulness. A great improvement on the iron shutter came with the design of the tin-clad wooden shutter, a device without a superior for many forms of wall-opening protection. As applied to the windows of mercantile establishments, however, the tin-clad shutter shared with the sheet-iron shutter several defects. It did not admit a night fire in a building to be seen from the outside; it did not lend itself readily to the adaptation of devices to close the shutter automatically in the event of fire, and it was very unsightly.

A substitute which eliminates these weaknesses, besides possessing many added advantages, is to be found in the fire-proof window glazed with wire-glass, set in sash and window-frame covered with metal. This window is made in a number of different styles, some with sash of wood covered with metal, some with hollow sash of metal.

Wire-glass is made either with an opaque or polished surface, and the wire reinforcing, embedded in the glass itself, although keeping the window intact against the attack of a fire of almost any intensity, may be broken readily by the fireman when it becomes necessary to enter the building or introduce a fire stream. Among the recent important fires showing the efficiency of wire-glass windows in reducing the exposure hazard may be cited the Armour Lard Refinery, Union Stock Yards, Chicago; the Case Plough Works in Racine, Wis., and the Mitchell Wool Warehouse in Philadelphia. In each of these instances the spread of fire to very valuable properties standing but a few yards distant was prevented through the resistance offered by wire-glass windows in the walls of the adjoining building.

The walls of buildings, wherever practicable, should extend 2 or 3 feet above the roof-level. This is absolutely essential in the case of parapet walls or walls adjacent to other buildings, to prevent the creeping of fire along the roofs.

Roof coverings must always be of some fireproof materials such as tin, iron, slate or tile, and where openings exist a filling of wire-glass skylights. These materials best resist the passage of heat from falling embers, or flames lapping over the parapet walls. The tile and slate are slower in transmitting heat than the iron or tin, and for this reason, perhaps afford a better protection.

Only the barest outline of what is essential in the construction of fireproof buildings has been given in the preceding paragraphs. To attempt more would be outside of the purpose of this paper. A careful application of the general principles herein mentioned will undoubtedly reduce the fire-hazard. This is not a mere idle statement based on deductions from laboratory experiments, but one confirmed as well by facts obtained from actual fires. Fires do, and probably always will, occur even in fireproof buildings, as it is impracticable if not impossible to eliminate combustible furnishings in our dwellings, offices and even our workshops. In addition to the instances already given, others could be cited where fires originating in fireproof buildings have been positively confined to the lofts or rooms in which they started, and in which the buildings themselves suffered no further injury than a discolouration of the paint, breaking of the window-glass, &c. Such cases, it seems to me, undoubtedly prove that the fire-hazard is reduced by proper fireproof construction and added protection given.

NATIONAL REGISTRATION OF PLUMBERS.

THE opening lecture of the session was delivered in the Plumbers' Library, 30 St. Andrew Square, Edinburgh, on the 26th ult., by Mr. T. P. Henderson, his subject being "Plumbing Work in Australia, as carried out by the Melbourne Sewage Board." Mr. J. K. Paterson, Elm Row, presided. Mr. Henderson narrated his experiences amongst the plumbers in Australia during a visit which he paid to the Colonies, and described the system practised in such places as Melbourne, Dunedin and Wellington in training young men in sanitation and allied crafts. The colonial methods and materials, he said, were very different from those known in this country, and galvanised iron, which was specially adapted to the climatic conditions, entered largely into the composition of work there. They had a very elaborate drainage scheme in Melbourne, the sewage gravitating through a sewer of large dimensions into a well at a station six miles out, from which well it was pumped by two immense pumping-engines to a higher level, and thence discharged on a sewage farm three miles distant. In Mr. Henderson's opinion, however, the Melbourne Sewage Board was a huge octopus, and like many other institutions under the Government, it was made the means of obtaining promotion for one's friends and relatives. Mr. Henderson was cordially thanked for his lecture.

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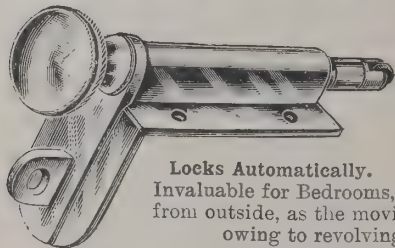
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ST. LUKE'S CHURCH, BIRMINGHAM.

THE church of St. Luke the Evangelist, Bristol Street, Birmingham, has been reopened for public worship after rebuilding. The new church is considerably larger than the old one, and has seating accommodation for about 800 worshippers. It is 135 feet long and 80 feet wide, consisting of chancel, nave and transepts. The Perpendicular style has been adapted to the site, with due regard to proportion and stability. To increase the apparent length of the edifice the usual chancel arch has been dispensed with. The roof of the nave is supported on slender arches, which give a light and graceful appearance to the interior. Beneath the organ-loft are three vestries for clergy, choir and churchwardens. Another novel feature is a room for parochial meetings under the chancel. The schools are also connected with the church. Hollington stone has been used for the building and the woodwork is of oak. A lofty square tower with pinnacles is to be added, with a clock and eight bells. At present the bell for the old church is used. The old font and communion table have been replaced, and a pulpit from Haghenden Church has been lent by the authorities of St. Andrew's, Bordesley. The brass of the old foundation-stone, laid by Bishop Pepys, has been affixed to the wall of the south-west porch. It records the names of the architect (Mr. Harvey Edginton) and the builder (Mr. George Horton) of the old church. Five memorial slabs from the demolished building are to be seen at the west end of the new church.

THE "DUMPING" OF GERMAN STEEL.

THE following letter has been addressed to Mr. Chamberlain:—
Dear Mr. Chamberlain,—A communication in a London newspaper of October 29, headed "From our own Newport correspondent," claims great advantage to both manufacturers (sheetmakers and tinplate works) and their workmen from the free import into this country of cheap German steel, and may be taken as expressing the views of the free importers and doubtless of many manufacturers who use steel billets and bars as their raw material. Similar articles have appeared in various London Radical and South Wales papers, and as the manufacture of steel forms so large and important an industry in this country, or at any rate has done up to recent times, it is desirable the subject should be investigated and the real facts of the case ascertained.

The correspondent correctly states that Newport is at present the port at which the greatest quantity of this German steel is imported, nearly 200,000 tons having been discharged since the commencement of the present year, and that it is used by manufacturers in South Wales and Monmouthshire, as also in South Staffordshire and the Birmingham district, for rolling into sheets and converting into corrugated iron sheeting, tinplates, rivet rods, wire and other things, the difference in price between German and British steel being from 5s. to 7s. 6d. a ton. He, however, then proceeds to state that the importation of the cheaper article makes all the difference to the English and Welsh manufacturers, who are thus enabled to retain their trade and compete at a profit in the markets of the world, as but for the fact that they are able to buy German steel they would long since have been compelled to close their works. He concludes by stating the reason why Germany is able to produce steel so much cheaper than the makers of South Wales (which he describes as the "home of the British steel industry") is that the plant of the Blaenavon Company, the Tredegar Company and the Ebbw Vale Company has been allowed to become antiquated, and if British steel makers generally would aim at efficiency and equip themselves with up-to-date machinery their cost of production could be so reduced as to enable them to compete with the Germans without the aid of any protection.

Now, sir, if the alleged reasons for the cheaper price of German steel were fairly stated and were correct, I should at once admit that the English steel makers had no just claim to any protection; that "dumping" was an advantage; that the ignorant and effete English steel makers must go to the wall, and the many thousands of workmen in their employ must look to emigration or the workhouse, as I fear furnacemen and steel rollers would prove but indifferent makers of jam and pickles. Such reasons, however, are unfairly stated and are incorrect, as I will now endeavour to show.

They conveniently assume that the German selling price in this country is a fair commercial price based on the cost of manufacture.

They scrupulously ignore the fact that on the contrary the German price is fixed by an enormous number of trusts (independently altogether of cost) composed of Belgian and German makers, who in turn constitute a huge "ring" or "cartel" to maintain their own home prices; that their home price is enormously higher than their English selling price; that a tariff wall of 30s. per ton secures them in this home price, and



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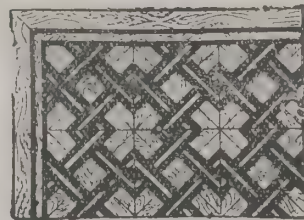
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For Index of Advertisers, see page x.

their surplus products can be remuneratively sold in England at less than cost; that an elaborate "pooling" arrangement exists by which all the German makers contribute from their excessive home profits to a common fund from which a tonnage allowance is made for all steel sold abroad at less than cost; that the fact of England's trade being protected is at once the cause and object of the "ring's" creation and the sole reason for its success; and, finally, that it is only a matter of a few more months (it has already continued for over three years) before the English steel makers will be crushed out of existence and the English market will be at the Germans' mercy.

The free importers and such of the English consumers of German steel as share their views (many of the latter do not do so, as they have either already themselves experienced German competition in their finished products, or frankly acknowledge the real facts and the looming danger) look no further than the present moment. They take no account of the near future, either as regards English maker or English consumer, as it is manifest that so soon as the former has been crushed the German price to the latter will be at once heavily increased. On the other hand, the English consumer's continued immunity from German competition cannot be relied upon.

Again, what evidence is there that the British manufacturer is enabled to carry on his trade only in consequence of being able to buy this cheap German steel? Are we to understand that the alleged ignorance, supineness and antiquated machinery are the sole proclivities of the English steel makers, and not of the English manufacturers? If such be indeed the case, and if for the English manufacturer to keep his works going it is absolutely needful for him to buy his steel billets and bars at less than cost to compete with the foreigner at home and abroad, his industry is surely in a parlous state, and he should look rather to obtaining proper protection for the finished article by a policy of retaliation and by preferential trade with our own colonies. He cannot surely imagine he will be able to buy his billets at less than cost in perpetuity.

The actual reason for the low price of German steel sold in England is not far to seek. There is no mystery about it. Our machinery has been modernised, or we should have been long ago out of the running. Our managers have made themselves conversant by personal visits and inspection with the equipment of continental mills and methods of manufacture. Our workmen are not drunkards (as an eminent politician has alleged), and I believe both managers and workmen are as

capable of designing plant and of making steel as any foreigner I have ever seen. It has been contended that high rents, royalties and railway rates are responsible; but how can high rents hurt Dowlais, Cyfarthfa, Ebbw Vale and other large makers who have owned the land on which they stand for a century? Railway rates would scarcely be much less if the railways were State owned and worked. Nor are our mineral royalties responsible, as they are not in any way excessive, and we do not want to steal our coal. Indeed, most of us own our own freehold coal, so that rent and royalties are both out of the question. In any case, if we add the possible rent, royalties and railway charges together, the total is less than the difference between the Welsh price and the carefully regulated undercut of the foreigner. We are fairly conversant with German costs, and find little or no difference between us—certainly not sufficient to overcome the freight, carriage and insurance from abroad—and I say definitely that steel is not made cheaper abroad than in the South Wales district.

The reason, sir, is simply and solely owing to the preposterous system of one-sided free trade which has obtained in this country for the last fifty years, the direful consequences of which are only now maturing and coming into full operation, as opposed to the high protective tariffs of other producing nations and the combination or conspiracy of their manufacturers by means of "rings" and "trusts" to take advantage of the protection of these tariffs and of the undefended English industries.

The prices speak for themselves:—Price of U.S.A. sheet bars at Pittsburg, 5*l.* 12*s.* 6*d.*; price of German sheet bars at Düsseldorf, 6*l.*; price of U.S.A. sheet bars at Wolverhampton (England), 4*l.* 5*s.*; price of German sheet bars at Wolverhampton, 4*l.* 5*s.*; price of Welsh sheet bars at Wolverhampton, 4*l.* 10*s.*

In normal times, if the Germans have surplus products to dispose of (even a small quantity), by selling them here, under cost, they upset the market price and seriously disturb trade, and whenever there is a slackness of trade in either America (as in 1900) or Germany (as in 1900-3), or in both (as to-day), there is no certainty when the best is done that our price will not be undercut by the necessary 5*s.* a ton. Indeed the handsome profits which the foreign "rings" must be realising should enable them to repeat the operation if it were necessary again and again.

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having their own small coal ready for coking on the spot. They make their own coke; they smelt their own pig-iron; they convert it directly into steel, and roll their own billets and bars. They have an output of upwards of 3,000 tons of finished steel per week, and employ some 3,000 men in their iron and steel departments alone, exclusively of the collieries. They produce finished steel in the shape of ingots, billets and bars, rails, sleepers, channels, angles, &c. It will be seen that virtually their finished material represents four distinct trades or manufactures. During the last few years the company have held their own by keeping their mills employed to their utmost capacity, by the variety of their manufacture, and by the crumbs of business which the foreigner has left them, but have done so at a profit which would be regarded as an inadequate one upon any one of the four industries carried on to produce the finished steel.

In October last 28,753 tons of sheet bars and billets were received at Newport from abroad for consumption in the South Wales and Midlands districts, and during the same month only 16,109 tons of iron ore were received at Newport in place of four or five times that quantity a few years ago. Large quantities of German steel have been received at other ports in this country. The total quantity for the ten months of the present year imported into Newport was 200,000 tons, and according to the carefully worked out figures of Mr. T. E. Watson, of Pyman, Watson & Co. (set forth in detail in the *Western Mail* newspaper of June 17 last), the importation of this quantity of steel as compared with its manufacture on the banks of the Usk involves a loss to our shipowners of 39,000*l.*, to the dock company of 5,000*l.*, to the railway company of 32,400*l.*, to labour of 326,000*l.*, and a loss to the public revenue of nearly 60,000*l.*, which has to be made up by an equivalent taxation of other matters in this country.

There is nothing that I am aware of to prevent foreign manufacturers who are at present exporting their surplus sheet and tinplate bars from carrying their operations the necessary stage further and exporting their surplus in the shape of finished corrugated sheets or tinplates to this country and to our colonies. Those who are acquainted with the facts know perfectly well that this process has already commenced, and if allowed to continue, will speedily shut up most of our finishing works, as they have shut and are shutting our local steelworks. In various other branches of finished steel products the process has been going on for some time. Girders and structural steel of all kinds are exported from Belgium and Germany to

nearly every English town, including such steel centres as Sheffield and Middlesbrough. Finished steel buildings are now being erected by German manufacturers in Manchester and elsewhere. The Staffordshire market has been invaded by German light steel plates for galvanising at about 1*l.* per ton below Staffordshire and North of England prices; large plates 6 feet in length from 14 to 10 gauge selling at 6*l.* 5*s.* per ton delivered at Birmingham, as against 7*l.* and upwards for Staffordshire qualities, large contracts being under negotiation. (See *Western Mail* newspaper of July 24, 1903.) Agents of foreign works are establishing themselves in large numbers in London and our great centres for the purpose of more readily dealing with inquiries. Let any workman glance through the pages of *Engineering* and the *Engineer* and he will see for himself how severely foreign works menace the productions of this country. The 28,000 tons of steel above alluded to is practically equal to the output of Dowlais, Cyfarthfa and Ebbw Vale if working full time, and would have found employment if made in this district for some 85,000 tons of coal and for some 10,000 workmen, equal to a total population of 50,000 persons, and this without counting tradespeople, housebuilders, and the hundred and one classes of individuals necessary for and dependent upon the working-class population.

The steel trade is not only going—and going rapidly—but a great deal of it has already gone. A newspaper column would hardly be sufficient to record the names and descriptions of those iron and steel works which have been closed during the last thirty years of one-sided free trade in our own district. It is, however, only during the last 3½ years that the German and American competition has developed and become systematised. My own opinion is that even now we have only had a preliminary taste of the “dumping” policy, and that it is only now the German trusts have had practical and profitable experience of their methods of operation, and have, so to speak, “felt their feet,” that we shall know what organised and systematic dumping really means.

It is during the last three years that several of the largest of our works, including Tredegar and Blaenavon, have had to close down—some for very long periods, some permanently—and of the workmen once employed several have emigrated to America and elsewhere, where they are in active competition with their brothers at home. It is worthy of note that more money is now being spent on the new workhouse than in works development in the Tredegar valley.

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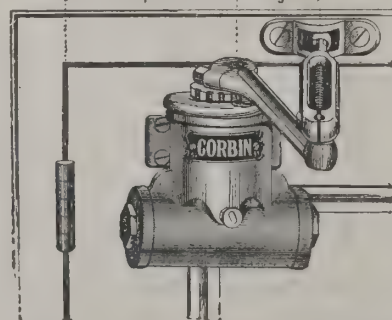
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of their own decided to dump surplus products at a loss in order to maintain their own home prices, we should be only too pleased to exchange courtesies and sell a few sheet bars delivered Pittsburg at 5*l*. 12*s*. 6*d*., but that we are met with an import duty into America of 2*l* 6*s*. per ton (which I am not so foolish as to suppose the Americans would pay for us) in addition to the freight, carriage and insurance from South Wales to Pittsburg. In fact, during the height of the American "boom" last year, at a time when our own market was being invaded by Germany, we could have sold hundreds of thousands of tons of steel for America but for their protection tariff. They knew how to take care of their "booms," and not allow it to be suddenly swamped, as was ours by the Germans in August, 1900.—Yours faithfully,

JOSEPH BRAILSFORD, Chairman of the Ebbw Vale Steel, Iron & Coal Company, Limited.

November 27, 1903.

GERMAN CEMENT.

A REPORT recently prepared by the American Consul-General at Berlin describes cement manufacture as one of the great and long-established industries of Germany, in which the capacity for production is excessive and disproportionate to the normal consuming power of the people. In 1901 Germany consumed 14,600,000 barrels of cement, while the producing power of the factories was 29,000,000 barrels per annum, so that production is double home consumption. What the production really was is not known, but it is believed the excess in 1901 was ten to twelve million barrels, of which the export only reached 506,652 tons, "leaving a large excess, which broke down the market, reduced profits to a pittance, and brought on a crisis in the industry from which it has not yet recovered." During the decade ending with 1900 all kinds of construction operations, especially canals and river improvements, requiring cement were carried on, and the consumption of cement was enormous and increasing. The postponement of the work on the Rhine-Elbe Canal, for which the cement factories had prepared, contributed to over-production. Efforts were made to form an all-embracing cement trust to restrict production, but in vain, and war between the competing syndicates and factories was bitter and unrelenting; 1902 brought no substantial relief, the supply everywhere exceeded the demand; the general industrial and financial depression caused

building to slacken, while labour and fuel—two main elements in cement production—remained as high as before. Exports formed the only resource, and these increased from 497,780 metric tons (2,205 lbs. each) in 1898 to 641,520 tons in 1902. Of this the United States took 246,726 tons last year, the Netherlands 66,837, British South Africa 36,720, Great Britain 33,534, and Brazil 18,209 tons. To shut out an import of about 50,000 tons from points immediately over the frontier in adjacent countries a duty has been imposed on imported cement, which was formerly free of duty. The Consul-General concludes by saying that only the oldest and largest German factories, with every advantage of position, are able to earn substantial profit at present, and many of the newer and smaller establishments are working at a loss. At a meeting of the cement manufacturers of Germany, held in Berlin early this year, a commission was appointed to report on a scheme for organising the whole industry so as to control the production and manage the market. The long silence of this commission has been construed to mean that the differences between local syndicates and individual factories have been found irreconcilable, and that no basis of general combination can be found.

ST. BARTHOLOMEW'S HOSPITAL.

THE suppressed report of the Medical Council and the opinions which they placed before the Mansion House Committee on St. Bartholomew's Hospital has appeared in the *Hospital*. It is as follows:—

The Medical Council desire to point out to the Lord Mayor's Committee that, whilst they have cordially approved of most of the proposed new buildings themselves, they have always expressed the opinion that the site dealt with is as a whole insufficient. They have constantly kept in view the future rebuilding and expansion of the hospital, and it was with this object that in their report upon plan No. 2 they suggested that "there should be in existence some plan dealing with the whole site at present available, quite irrespective of any existing buildings."

In the reports hitherto quoted the Council have dealt almost entirely with the new buildings proposed to be erected, and with the insufficiency of the proposed area.

The present ward blocks also require consideration. Any scheme of building must have regard to the future, because the

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time is probably not far distant when all the existing ward blocks will have to be replaced by others more in accord with modern medical requirements. They do not forget the efforts which the Governors have made to improve the existing wards in many ways; but the final limit to further improvement of the present buildings must come, even if it has not come already. The modern treatment of disease requires a much more liberal allowance of light, air and space, in proportion to the number of patients, than was considered to be necessary when the present hospital was so ably planned 160 years ago. It has also been found to be of great advantage to the patients that isolation-rooms, day-rooms, and other adjuncts should be provided. The modern "ward unit" cannot be evolved from the existing ward buildings.

As a result of the foregoing considerations it becomes evident that the present area of six and a half acres is insufficient for the erection of the whole of the buildings required by St. Bartholomew's Hospital. To cope with this difficulty several alternative plans may be suggested.

1. The acquisition of more adjoining land.
2. The erection of the nurses' home (which occupies much of the site) as well as of the college elsewhere.
3. The diminution of the number of beds.
4. The removal of the hospital to another site.

Of these alternatives the Medical Council are strongly in favour of the first, which would enable the hospital to be retained in its present position.

As regards the second alternative—namely, the erection of the nurses' home outside the hospital area, as has been done by other London hospitals—the Medical Council believe that although this would not be so satisfactory as obtaining more land, it would, nevertheless, permit of the retention of the hospital on its present site. It is manifest that it would be desirable to build a nurses' home at the hospital itself if enough land is obtainable, but if it be impossible to build it without seriously diminishing the number of beds, then there is no other proposed new building which could be placed elsewhere with so great advantage, and would at the same time supply more room by its removal than would this. For it must be noted that, as at present designed, the nurses' home presents a longer frontage in its three blocks than do the three ward blocks for about 600 patients, which will constitute nearly the whole in-patient department, and may fairly be considered the chief portion of the hospital, to which all other departments should be subservient.

The third alternative of diminishing the number of beds would be the ultimate and necessary consequence of proceeding with the plan now before the Governors (plan 3). For there would be a loss of from 100 to 200 beds, if, after the proposed new buildings were erected, the rebuilding of the wards were undertaken on the same site as that they now occupy. As already mentioned, the modern treatment of disease requires a much more liberal allowance of light, air and space per patient than was considered necessary when the hospital was built. Such a diminution of the number of beds would probably seem as objectionable to the Governors as it does to the medical staff.

The fourth alternative of a new site is one the Medical Council can only regard as a last resort; and it may be pointed out that whatever advantages may be claimed for other sites, the gravel soil, the excellent drainage and the open space of West Smithfield combine to make the present site one which is in many respects quite ideal. The situation also is admirable and most convenient for patients; indeed, far more so than any other place could be. For St. Bartholomew's is not only the hospital for the City, with its immense day population, but is also the only large hospital for the adjacent districts of Holborn, Clerkenwell and Finsbury, and serves in addition the whole of the north and the north-east of London, including parts of Hoxton and Hackney, as well as the more remote districts—Islington, Dalston, Pentonville, Walthamstow and Leytonstone. It is further most accessible, being placed very near the stations of the Central London, Metropolitan and District Railways, whilst it is also close to many large railway termini and to the numerous omnibus and tram lines which converge towards the City.

This accessibility is of importance, for it is altogether too narrow a view to take that a hospital should be limited in its work to the district in which it is placed, for St. Bartholomew's Hospital is free without payment or letter of recommendation to all poor people, and its reputation is so widely spread that it necessarily draws patients, not only from all parts of London, but from much further afield. It may with truth be said that there is probably no part of the United Kingdom or Colonies which has not sent patients to this charity. The benefits of St. Bartholomew's Hospital are, indeed, in another sense even yet more widely diffused, for the medical men who have for so many years issued from its school in a constant stream have extended the fame of their hospital to every quarter of the globe in which they have practised the profession they had learnt within its walls.

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THEATRE ROYAL, BIRMINGHAM.

It is proposed that the new Theatre Royal shall be an imposing building, suitable in style and construction to its prominent position in the principal thoroughfare of the city. A representative of the *Birmingham Daily Post* was shown the plans of the new building, the erection and equipment of which is to cost upwards of 50,000*l*. The architect, Mr. Ernest Rüntz (of the firm of Rüntz & Co., Walbrook, London), is a gentleman of great experience in the preparation of designs for theatres. Some of the best theatrical houses in the kingdom, and notably the Gaiety, Adelphi and Crown in London, have been erected in accordance with his plans, and his experience is a guarantee that the arrangements of the new building will be made with a view alike to the comfort and the safety of the audiences to be accommodated. From the point of view of safety and ease of exit the circumstance that the front of the site is so much higher than the thoroughfare at the rear makes it a simple matter to so arrange the various parts of the house that the entire audience may have easy access to the open air. The building will be five storeys in height and of red brick or terracotta with stone facings, the elevation to New Street being in a free treatment of the Renaissance period surmounted by a group of statuary. The principal entrance—that for the dress circle and stalls—will be at the corner of New Street and Colonnade Passage, while the four front shops with offices above will extend from this point towards Temple Street. The entrance leads into a crush-room, 22 feet by 19 feet, from which a staircase on the right will afford access to the dress circle, and another on the left will descend to the stalls. The box office is placed on the right of the crush-room. The stalls and dress circle have a wide corridor at the back, in which are conveniently arranged commodious retiring-rooms, and from which are the stairs to the lower exits. The area of the house is divided into stalls, pit stalls and pit, with two exits from the former and three from the latter, as demanded by the watch committee and the magistrates. There are also large refreshment-rooms—one immediately at the rear of the pit and the other approached from the stalls corridor. Behind the dress circle is a large foyer, in which a special feature will be a raised alcove or recess. The upper circle is approached by a separate entrance from Colonnade Passage, with a corresponding exit on the other side of the building, and the staircases have been so arranged that there is not only easy exit at the highest level but also at the low level of the various tiers. The gallery is

reached from the private 20-feet way leading from Stephenson Street, and has two exits on the other side into Colonnade Passage, three staircases being demanded by the official regulations. This portion of the house is also provided with a large saloon and the usual retiring accommodation for the audience.

From these particulars it will be noticed that the position of the auditorium has been changed. In the old theatre the audience sat with their backs to Temple Street and faced the stage, which was on the Colonnade Passage side, but in the new building the stage will be on the Stephenson Street side, and the audience will sit with their backs to New Street. The seating accommodation is for 2,265 persons, and is approximately as follows:—Stalls 230, pit stalls and pit 520, dress circle 350, upper circle 440, boxes 48 and gallery 672. Provision is made for 12 private boxes, three on each side of the stalls level, and three on either side on the dress circle level. The proscenium opening is 34 feet, and the stage itself is 73 feet wide, with a total depth of 48 feet. In the old theatre the stage was the largest in the country, with the exception of the one at Drury Lane, but the new stage will not be so big, although it will be much larger than is regarded as necessary in the majority of theatres. Ample dressing-room accommodation is provided for the largest companies, and they are protected by means of fire-resisting staircases to the street, so that there will be no necessity in any emergency for the actors and actresses to pass across the stage. The house is to be lighted by electricity, and heated and ventilated on the latest Plenum system. The proscenium will be fitted with a fire-resisting curtain, and there will be an extensive installation of hydrants on the various floors, both behind the curtain and in the auditorium. The house is to be handsomely upholstered and decorated, but the details have not yet been decided upon. It is satisfactory to know that the whole of the staircases will be of fireproof construction, with suitable handrails and enclosed on all sides by brickwork walls. The large number of exits will give confidence to the public, and their comfort is further considered by the resolution to provide an awning in Colonnade Passage to protect the queues from the weather. In fact, Mr. Davis is anxious if the authorities will give him permission to cover in the whole of the Passage by means of an awning, thus transforming that thoroughfare into an arcade. So completely have the general details been worked out that it is estimated that the largest audience the theatre will hold can pass into the street within two minutes.

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The Architect.

THE WEEK.

FRENCHMEN believe that enormous sums are forthcoming in England to pay the expenses of archaeological explorations. Their own countrymen, it appears, do not show much liberality towards similar enterprises. The State is supposed to vote whatever money may be required, but the finances will not at present allow of expenditure for that purpose, and in consequence the excavations by M. GAYET at Antinoë and those by M. AMÉLINEAU at Abydos were doomed to be suspended. In order to prevent so undesirable a termination to labours which have proved to be successful a society has been formed to continue the excavations in the two ancient cities, and if sufficient support is forthcoming to take up the examination of other places. The excellent work performed by M. GAYET, and by which the Guimet Musée has been enriched, was accomplished by means of a modest subvention of 4,000 francs. Without enthusiasm it may be said that the exploration of ancient sites cannot be carried out. The small sums allotted are barely enough to pay native labourers, and the exercise of the superintendent's office has in most cases to be its own reward.

On the invitation of Mr. W. CLARKE, the registrar of Cambridge University, M. JULES TRUFFIER, of the Comédie Française, has witnessed the performances of "The Birds" (ARISTOPHANES) by the students. He was surprised on a rainy and cold afternoon to see the performers clad in the light vestments of ancient Greece. He considered the scenery, decorations, properties and costume in the Cambridge theatre as archaeologically exact as a member of the first troop of players in the world could desire. The orchestra consisted of flutes, oboes, harps, and the overture was suggestive of the singing of birds. The old play is extremely difficult to produce, and M. TRUFFIER doubts whether the whole of the audience who applauded the actors were able to comprehend the Greek text, and were not simply carried away by the action. Sometimes he found that too much emphasis was given to certain characters, which was detrimental to the *ensemble*, a fault which in the Théâtre Français would not be tolerated a second time. But he makes many allowances, for youth, he says, is omnipotent, and he never before realised so well the power of the Greek dramatist's words.

THE death of Mr. WILLIAM FREDERICK HEMSOLL, architect, took place at his residence, 40 Southbourne Road, Sheffield, on Saturday. He had been an invalid for several years and unable to attend business since March last. Mr. HEMSOLL was a Sheffield man, son of the late Mr. GEORGE HEMSOLL. He was apprenticed to the profession of architect, surveyor and valuer, and started on his own account in Figtree Lane when quite a young man. He was for ten years in partnership with Mr. JOSEPH SMITH, and with him designed and superintended the erection of the Reform Club, various chapels and other buildings, and afterwards was associated with Mr. H. L. PATERSON in the erection of the Woodfin Convalescent Home and several council schools. His partnership was dissolved with Mr. PATERSON twelve months ago, when Mr. F. W. CHAPMAN joined him.

SOUTH KENSINGTON appears to be resolved to call a new world into existence to balance the loss of the old. The evidence given before the departmental committee on the Board of Manufactures shows what Scotland, in spite of its fertility, thinks of the system. In the principal towns of England it has ceased to be a power for good or evil. But a new region has been seized, and where, for a time at least, a semblance of authority may be exercised. That favoured land is the Transvaal. A provisional code of regulations for schools has been issued, which could only be inspired from one place. According to the *Transvaal* *Critic*, Standard I. of the Government schools will include, among other subjects, brushwork, using blobs and lines

and simple floral forms such as can be built up from them, and finally modelling in clay or plasticine of simple forms such as can be used in free armwork. The writer pertinently asks, "What is the price of plasticine in this country that we can afford to give it to babes to make mud-pies or mud-animals with?" In other standards it is expected the children will practise modelling in clay or plasticine, of floral and animal forms, applied design, human heads, masks, hands and feet. Plasticine, it will be observed, is provided by the ton. The *Critic* further says:—"Schedule V. gives a list of art material to be supplied these elementary schools, sufficient to raise the hair. It embraces such things as water-colours in 4-inch tubes, some of which cannot possibly cost less than 14s., or even 28s., here in Johannesburg. When I state that cobalt blue and French ultramarine are included, anyone acquainted with the subject will grasp the situation." And all this is in a country paralysed for the want of labourers. We have heard of ORPHEUS with his lute overcoming savage beasts, but South Kensington, with its drawing and shading, brushwork, water-colour, tempera and plasticine, endeavouring to Anglicise the young Boers, is a still more amazing spectacle.

It seems incredible that the cross surmounting the Panthéon in Paris could weigh six English tons. The Minister of Fine Arts stated in the Chamber that it weighed 6,000 kilos, which, reduced to English quantities, would be nearly six tons. Probably the minister includes in the weight a part of the lantern. What was said about the cost of a scaffolding to allow workmen to remove the cross being 20,000 francs is less questionable. It is strange that opposition to the cross should be so persistent when it is known to all that without the symbol the history of the temple would not be suggested. When Louis XV. laid the foundation-stone in 1764 the building was intended to be a church in place of another dedicated to Saint Geneviève. In the early days of the Revolution it was declared to be a Panthéon which was to perpetuate the memory of illustrious men. Hence the inscription, "Aux Grands Hommes la Patrie Reconnaissante." In 1822 the building reverted to its original use and another inscription was engraved. From 1830 to 1851 it was treated as a secular building, and afterwards as a church. When the decoration of the walls was undertaken the ecclesiastical history of France was to be illustrated, and the majority of the works have that object. Those desirous of the removal of the symbol should be consistent. A great many buildings in Paris are permitted to recall the LOUIS, HENRI and NAPOLEONS, and *fleurs-de-lis*, bees, &c., are tolerated. No work of the demolisher can prevent citizens from knowing that Paris has had a tumultuous history, and it seems no more than childishness to desire the substitution of a Gallic cock on the summit of an edifice which was so long recognised popularly and officially as a church.

WESTMINSTER HALL, of which the historic importance is universally recognised, has been utilised in a novel way. The standard yard measure has been long deposited under a window on one of the staircases of the adjoining House of Commons. There are also standard measures of length available for testing in Trafalgar Square. But it was considered advisable by the Standards Department of the Board of Trade to have a length of 100 feet exactly set out in some place which would be free from atmospheric influences. Westminster Hall was accordingly selected. The 100 feet are marked on the floor. Some surveyors, especially for large engineering works, prefer that measure to the ordinary 66-foot chain, and unquestionably the longer length lends itself more easily to calculations, for it enables the decimal system to be employed without any special organisation or running any risks. The position of Westminster Hall is convenient, for it will enable chains of 100 feet to be periodically tested by the numerous engineers of the district without much loss of time. TROUGHTON, the optician, on one occasion was asked to test two chains in a case where there was a great difference in a survey by the owners of them. One was found to be 3 inches too long and the other 2 inches too short.

HERBERT SPENCER.

THE death of HERBERT SPENCER on Tuesday morning is not merely a national loss. Philosophers like him belong to the world rather than to one country, and as his works or translations of them are known in all civilised lands, the regret for his removal will be wider than was excited by the close of lives which appeared more important to the general public. Although he had suffered for a long time from weak health—and, indeed, absolute repose was often insisted on by his physicians—yet he continued to labour assiduously in the hope of completing the work which he believed it was his mission to execute. In fact, it might be said that it was only through the strong sense of duty he had imposed on himself he was able to go on with his onerous labours. Although Englishmen were able to share in his reputation, he received at first little encouragement. He was philosophically moderate in his desires and adopted a most inexpensive course of life. Yet his works, which were produced with so much toil, did not bring him in sufficient revenue to meet his expenses. A few friends, however, fortunately came to his rescue, and it is through their admiration and generosity his system of philosophy reached its present state. It is not complete, but as the materials are prepared the final courses can be laid by his disciples.

He was born in Derby on April 27, 1820. His father was a schoolmaster, whose whole life was engaged in education. The son testified to WILLIAM SPENCER'S extensive and accurate knowledge and able teaching. Few men of genius are disposed to follow established systems, although supported by parental influence, and HERBERT SPENCER was to a great extent his own instructor. Metaphysicians commonly appear to be drawn early to mathematics; for with their instinctive desire for establishing laws relating to intangible subjects they discover ideal examples in that science. The eagerness to cover the country with a network of railways was supposed to give opportunities to young mathematicians. HERBERT SPENCER did not realise that in the early days of engineering mathematics formed a very small factor in construction. He wrote a large number of abstruse papers about earthworks, arches, surveying, &c., which, like other exercises of the kind, were not adopted as guides. He never cared to publish them, and we may assume he attached no importance to them.

About 1848 he apparently had had experience enough of engineering, and we suppose he found he was not sufficiently combative to force his way in such a calling. At a later time, when structures on a grand scale became necessary, he might have made his mark in calculations of strength. But like many men of all professions who failed in gaining the success they anticipated, he turned his attention to literature. He was fortunate in obtaining an appointment on the *Economist*. The journal was then controlled by Mr. WILSON, a very able man, who worked his way up until he became a member of the Government. His influence was extensive, and HERBERT SPENCER soon discovered there was no difficulty in getting his articles accepted by the larger reviews. An essay by him on "Railway Morals and Railway Policy," which appeared in the *Edinburgh Review*, was a characteristic example of his competence, and, indeed, it deserved to be accepted as a monitor by investors. There were passages in it which suggested that he could think of something else besides finance, and the meekness of shareholders in submitting to any man who posed as an autocrat was described in a manner becoming a reformer of the social state.

For a man like him, who was not contented with the spectacle which the life around him presented, the *Westminster Review* of those days offered the best means of finding a sympathetic circle of readers. In its pages some of his most interesting essays were published. The germ of the system associated with his name is to be found in one entitled, "Progress: its Law and Cause," and the article on English style has been used as a manual in schools and colleges where the author was considered to be an arch-heretic. The *Review* was then reported to be the property of JOHN CHAPMAN, who posed also as editor. But the duties of the office, as well as others of a more servile kind, were performed by MARY ANN EVANS, who afterwards won renown as GEORGE ELIOT. SPENCER was kindly disposed

towards the over-burthened woman, who was a few months older than himself, and who also came from Derbyshire. In one of her letters she mentions how, soon after making his acquaintance, she was going with him to the Opera, and adds:—"We have agreed that there is no reason why we should not have as much of each other's society as we like. He is a good, delightful creature, and I always feel better for being with him." In the course of the year she gave another friend an anticipation of what the biographical dictionaries of 1954, or a century afterwards, would say about him, viz.:—"SPENCER, HERBERT, an original and profound philosophical writer, especially known by his great work . . . which gave a new impulse to psychology, and has mainly contributed to the present advanced position of that science, compared with that which it had attained in the middle of the last century. The life of this philosopher, like that of the great KANT, offers little material for the narrator. Born in the year 1820," &c. SPENCER'S remark that he felt better for reading "Adam Bede" was felt by her to be praise worth treasuring. The friendship was upheld to the last. G. H. LEWES was less willing to acknowledge SPENCER'S influence. In his diary he wrote:—"My acquaintance with him was the brightest ray in a very dreary, wasted period of my life. I had given up all ambition whatever, lived from hand to mouth, and thought the evil of each day sufficient. The stimulus of his intellect, especially during our long walks, roused my energy once more and revived my dormant love of science. His intense theorising tendency was contagious, and it was only the stimulus of a theory which could then have induced me to work."

The theorising tendency which impressed LEWES was exhibited in SPENCER'S "Social Statics." The title of the book was reminiscent of engineering. All efforts in philosophy are attempts to discover the meaning of life, and in the work the influence of the founders of the *Westminster Review* could be traced, for, as they believed, the happiness of the greatest number should be the aim of all government. SPENCER also suggested that the end of all creation was similar. In it, as in other writings, it was necessary to be analytical, and as the old philosophers considered everything of which we know and see and speak to arise from the motion and union of atoms, with SPENCER there were similar evolutions of social atoms which were not always of a material kind.

It was said by SCHILLER that artists, including, of course, poets like himself, were children of their times. With more truth the expression can be applied to philosophers. SPENCER was only one of a series. When he began to speculate he may often have heard in the streets the popular song, "There's a good time coming, boys," and in a humble way it expressed the aspirations of thinkers for at least a century. The first French Revolution was only a premature effort to attain that result. Even the victims of it were sometimes able to be indifferent to what it entailed. Thus we find CONDORCET, although sentenced to the guillotine, still confident in the approaching perfectibility of his countrymen, and expressing his hopes about the future Utopia. Soon after COLERIDGE published a letter, in which it was said, "The faith in the perpetual progression of human nature toward perfection will, in some shape, always be the creed of virtue." Several German philosophers had come to the same conclusion in different ways. What were COMTE'S stages for the explanation of phenomena—first by supernatural agencies, then by metaphysical abstractions, and finally by displaying the succession and similitude of phenomena without attempting to explain the why or wherefore—but a summary endeavour to present development, evolution, progress, as a series of facts which could not be questioned? How SPENCER was distinguished from his predecessors was that he went to work like a parliamentary engineer. He accumulated an enormous amount of information from all quarters, and then he arranged facts in such a way as to become mutually serviceable in upholding his conclusions. Foreigners who believed in ideas announced theories as if they came by inspiration, and were on that account to be accepted. SPENCER'S data were as immeasurable as if he were the head of a Government department, and had unlimited control not only over collectors, but over all sources of information which were to be found in the world. His

manner of obtaining and contrasting facts is almost unique, not only in philosophy but in literature.

Attempts have been made to explain HERBERT SPENCER's system in a volume, but they can hardly be considered as more successful than similar abstracts. It would be absurd to imagine that a single article could serve as a clue. Metaphysicians, theologians, politicians, physiologists, historians and others have applied special tests to his theories, but it is impossible for anyone to formulate a system which will be universally applicable and yet infallible. We can only glance at his theories as they appear from the point of view most familiar to our readers.

According to MACAULAY, the key to the Baconian philosophy is to be found in the two words "utility" and "progress." The magic words for the Spencerian system are "homogeneous" and "heterogeneous." He has shown how throughout creation simple things are changed by the operation of certain causes into others which are more elaborate. Architecture affords numerous illustrations of the law, although in a restricted sense, and to exemplify it adequately would be to write the history of architecture. Whether the changes are always improvements need not be considered. The majority of people would prefer a Corinthian column to a Composite. But the latter is such a development as would be approved by a people who were wealthy and powerful and ostentatious. As happens in our time, an excess of ornament which can be readily purchased is imagined to be evidence of superiority, perhaps of good taste. The fluting and cabling of columns were illustrations of the law. We also find that the mouldings were sometimes elaborately carved instead of trusting to the beauty of the contours. That still greater richness was imparted to columns is proved by the drums surrounded by figures in relief from Ephesus we can see in the British Museum. Without knowing what had been done at Ephesus some Renaissance architects worked in the same direction, and adorned their shafts with bands of figures, wreaths of leaves and other decoration.

For a long time Classic art was believed to be exceedingly severe, while Mediæval art was vulgarised by the exuberance of its ornament. The difference between the styles was simply in degree. There was more restraining power among the Greeks and the Romans. The Mediæval masons were able to yield to the evolutionary instinct. The Gothic periods are mainly examples of progress from the homogeneous to the heterogeneous. The severe Norman arches in course of time were cut into mouldings or covered with ornamentation, the pattern being repeated as long as a space was found. The capitals of the piers were also changed, and the piers in some cases covered with zigzags. Then in course of time the piers were completely transformed, and instead of a cylindrical mass presented the appearance of a cluster of columns. The pointed arches formed lines which should be sufficient to satisfy the most fastidious. But they are sometimes to be found changed into foils or cusps, and the cusps may be recusped, by which the principal lines are confused. What can be more elaborate than a rose window in which very little is left that can be considered as plain? Panels and spandrels were formed. Stone was wrought with diapers, which were painted and gilded, and as it were there was a continuous effort to make the simple appear as complex. In foreign examples the original ideas of construction were set aside, and efforts made to cause the stone to appear as flexible as branches of trees.

If we take up a series of plates or photographs of Moorish architecture we seem to have a parallel experience. Religion imposed limitations on the Moors which were obeyed. But compensation was found in elaboration of other kinds. The lines of arches were emphasised by bands of carving. Panels were introduced as if in order to render the ornament more pleasing by enclosing it in a frame, and efforts were made in order that the elements in a panel might not be too apparent.

When it is found that in all styles we have exemplifications of similar laws, it seems absurd to enter into contests about which is the most deserving of admiration. Indeed it seems to us that one of the consequences of the writings of HERBERT SPENCER has been a greater tolerance among men who assume to be the representatives of different forms. When all

seem to be under the operation of like laws it is absurd to be advocating the adoption of any one style or the style of any period as perfect. They are all in a transition state, and hereafter some sober-minded evolutionist, assuming that system is not superseded by another, as is usually the case in philosophy, would be able to demonstrate that our twentieth-century work, which so often appears unsatisfactory, is evidence of the power of a law which has been enforced during many centuries. SCHILLER was supposed to have been the first to insist on the principle of play or pleasure in art. SPENCER also has recognised not only its influence but its necessity. The Cistercians, who were so rigorous in excluding representations of leaves and flowers, may therefore have enjoyed their beautiful but unadorned capitals and mouldings in exactly the same degree as the men who carved birds and plants as if for a solace.

All evolutionists consider the present, and it may be the future, rather than the past. SPENCER was also influenced by the modern engineering spirit, which rarely can find models in ancient work which are adapted to modern needs. It was therefore inevitable that he should class architects with lawyers, because they respected precedent, which they appealed to as "being a greater authority than any abstract principles of beauty or fitness," and "uniformly persist in copying the designs of the ancients, however unsuitable they may be to the habits of the present day." He asserts that it is sadly derogatory to the dignity of the profession "to have to acknowledge that out of all the arts practised by the moderns, architecture forms the only case (with the exception of sculpture) in which the ancients have not been outshone," and he asked, "Is it, then, to be wondered at that there should be that want of public respect towards the profession frequently complained of by architects?" If he had reconsidered the subject in his later years, HERBERT SPENCER must have recognised that exact copying was less in favour than when he wrote. There are many causes which enable some freedom to be exercised, but as in his own sentences and treatment of subjects there is seen respect for former masters of English style, so in architecture it is inevitable that traces of the past should survive. The immense stations and bridges of the railway engineer, although almost entirely inspired by the present, would not, we suppose, be recommended by him to be models for imitation in the improved cities of the nineteenth and succeeding centuries. SPENCER took such wide views, he was liable to overlook much which deserved attention, and in all branches of his philosophy he fell into errors which, like those we have alluded to, seem to be incredible.

Allowance must, however, be made for the almost limitless extent of his undertakings. Varieties of knowledge of which BACON could have no perception, as well as those which the Elizabethan philosopher scorned were considered by SPENCER, and he endeavoured to submit them to the sway of his principles. He disowned allegiance to COMTE, but he was the truest successor of the Frenchman, and the one who carried out his work more broadly. Of both it could be said, "Thus far shalt thou go and no farther." COMTE was unable to cast a light upon the future, and to suggest what coming races may know or do, and it must with greater regret be owned there is the same deficiency in Mr. HERBERT SPENCER's numerous volumes. The gift of prophecy was denied to both.

HERBERT SPENCER AND "THE ARCHITECT"

AMONG the "Tesseræ" which appeared in *The Architect* in 1888 was an extract from one of the late HERBERT SPENCER's writings, in which he condemned "the notorious gullibility of JOHN BULL" for venerating old pictures which were in technical excellence not equal to modern works, and especially those by JOHN MARTIN and EDWIN LANDSEER. The following letter was received from the philosopher, and was printed in *The Architect* of February 24, 1888:—

Sir,—A friend has drawn my attention to a paragraph which appeared in *The Architect* some three weeks ago,* purporting to be an expression of my opinions concerning the Old Masters.

* *The Architect*, January 27, 1888.

In my published writings I have not anywhere expressed either the opinions ascribed to me or any other. Necessarily, therefore, some utterances of mine, either to friends or to an amanuensis, must have originated the statement.

In its general drift the statement is correct, but, as might be expected, it is incorrect in detail. Certainly among the characteristics to be recognised in the paintings that have come down to us from past times, I should never have named transparency of shadow as a usual one. Chiefly, however, I wish to say that I did not make the comparison alleged between ancient and modern artists, and still less did I single out as examples the modern artists named. HERBERT SPENCER.

Athenæum Club: Feb. 21, 1888.

The compiler of "Tessera" having seen Mr. Herbert Spencer's letter, desired that the following note should appear at the same time:—

It is somewhat gratifying when a humble explorer like myself is rewarded occasionally by the discovery that he knows more about an author's writings than the author himself. I am too much indebted to Mr. Herbert Spencer's books to ascribe anything to him without authority, and have too much reverence for the philosopher to attempt an imitation of his writing. The paragraph in question was reprinted from an essay on "Precedent in Architecture," which appeared in January 1842, when the writer, Mr. Herbert Spencer, was a civil engineer in Derby. I have often fancied that in his articles of that time the germs of part of Mr. Herbert Spencer's later philosophy can be discerned, and, indeed, they deserve to be republished in full. One thing is seen from some of them, that with Mr. Spencer, as with Carlyle, mathematics can become a preparative for philosophy. But, unfortunately, neither mathematics nor the most perfect method of analysis—for I hold Mr. Spencer's to be superior to Aristotle's—will compensate when memory fails. The foregoing letter is therefore sad enough to every admirer of the architect of the evolution theory. Although Mr. Spencer recognised the correctness of the general drift of the extract, and, as I perceive from his manuscript, did at first say it rightly expressed his belief, yet he is positive that his own writing is no more than a vague recollection by somebody of what was said in conversation. Who knows but Descartes was simply describing a similar case of forgetfulness when he talks about his friends misrepresenting his doctrines:—"Toutefois lorsqu'ils les ont redites, j'ai remarqué qu'ils les ont changées presque toujours en telle sorte que je ne les pouvais plus avouer pour miennes?" and he adds that the ancient philosophers were also "mal rapportés." I fancy the old reporters were as faithful as myself in garnering expressions and thoughts which impressed them. We are like the devotees who ran after the leaves of the forest when the Sybil wrote her prophecies upon them. We try to preserve things which otherwise would be lost or forgotten by their originators. There is, however, another question raised by the letter. Philosophers ought to know something of human nature, and therefore need not be surprised at its changes. The prophetic fury of the Sybil was not always, we may be sure, of the same intensity. Was not the original matter out of which all things are made, including philosophers and compilers of "Tessera," once called Proteus, or Protea, and supposed to be endowed with the capacity to change itself into all forms—

Omnia transformat sese in miracula rerum,

or, as we say now, the homogeneous becomes the heterogeneous? Why, then, should Mr. Herbert Spencer be surprised if his thoughts about transparency of shadow and the like in 1888 differ from those which inspired him nearly half a century ago. Most of us drift much further from our early beliefs in art and philosophy.

The challenge thrown out by the compiler on the relation between the Lucretian or Epicurean system and the Spencerian was not taken up. At the time HERBERT SPENCER was afraid the state of his health would not enable him to complete his "Synthetic Philosophy," and he was not on that account disposed to enter on a controversy which might not be satisfactory to himself or his admirers. In other subjects besides Old Masters he was not disposed to attach importance to what was accomplished during early ages in the endeavour to solve cosmic problems which were similar to those he treated.

Dr. Were, Bishop of Derby, visited the village of Calow, Derbyshire, on the 1st inst. for the purpose of dedicating the newly-erected vicarage. The foundation-stones were laid last Easter. Mr. E. Winder (Sheffield) was the architect of the building, which is in the Domestic Gothic style, and has cost £4,000.

THE DECORATION OF BUILDINGS.

THE papers relating to the building and beautifying of the Federal capital of Australia, from which we gave extracts last week, will doubtless be considered as no more than academical exercises. For many reasons they deserve to be accepted as indicating the trend of thought relating to architecture, decoration and other matters. It was not to be expected that the congress of engineers, architects and surveyors at which the subject of an Australian capital was discussed would correspond in its manner of treating the subject with a similar congress in Paris, Berlin, Rome, or, we may add, in London. Melbourne is remote from the great centres of civilisation. It can possess no inspiring examples of ancient art. It is deprived of traditions. There are no important commissions to attract artists of high standing, and efforts to attain the ideal are hampered by the tyrannical necessities of the struggle for mere existence.

Under such conditions, although the words may represent only aspirations, it is gratifying to read the remarks of Mr. L. BERNARD HALL, the director of the Melbourne Gallery, about the beautifying of the future city. Speaking of painters' works in the decoration of public buildings, he maintained that they should be identical with those of the architect, the only modification being in the nature of the material used. As he said:—"Symmetry or balance, variety, unity, economy of means, colour, scale, repose, richness of detail, breadth and manly sentiment are all qualities common to architecture and painting. Incidentally it may be noticed that exactly the same qualities go to the formation of style, whether in literature, dress, manners or anything else. A sculptor should be half an architect in order to realise the decorative value of a sculptural site in relation to its surroundings. This is the virtue of decoration, that it is interdependent—that it must be regarded not as an entity (as a merely illustrative picture might be) but, as RUSKIN puts it, related, either in subordination or in command, to the effect of other pieces of art." The conclusion to be drawn from the principles is that if there be so much identity in aim, it must follow that there should be the closest co-operation on the part of the painter and sculptor with the architect. In a new country like Australia, which happily can be emancipated from ancient and obnoxious prejudices, that conclusion may seem to be as obvious as any of EUCLID'S. But in Europe it is impossible to record many precedents which are favourable to the desirable co-operation; and, indeed, the belief is general that independence is always to be preferred.

A memorable instance is afforded by the history of the British Houses of Parliament. The style adopted, and which was prescribed to the competitors, being what may be designated Tudor Gothic rather than Tudor Classic, comprised the use of sculpture and painted decoration. That necessity was not, however, fully considered. At the time the Germans were introducing wall-paintings to an extent that recalled the period of Italian Renaissance. Influences were exercised in favour of the imitation of the examples set in Munich and Berlin regardless of Tudor practice. There was a Fine Arts Commission appointed in 1841, consisting of an ex-Lord Chancellor, various peers, members of the House of Commons, officials and writers. But diverse as was its constitution no room was found to allow of the presence of the architect of the building at the deliberations. BARRY, it is true, was permitted to give evidence and to prepare a report, but the whole of the arrangements were carried out as independently as if his connection with the building came to an end as soon as the wall surfaces were available for the use of the painters.

CHARLES BARRY would not be a true architect if he failed to feel acutely the slight which was cast not only upon him, but upon his art. By no act or word of his was it suggested that as decoration was unnecessary it would be better to leave the building alone. It would be impossible for him not to realise that without the aid of sculpture and painting as auxiliaries his building regarded merely as an illustration of a style was incomplete. He was also aware of the consequences of allowing painters and sculptors who had never bestowed a thought on the subordination of their respective arts to architectural requirements to exercise unrestrained liberty. BARRY was not ignorant of the short-

ings of the German wall-paintings, which except in size offered little in treatment from ordinary easel pictures. The suggestions are to be found in a report, but as sixty years have elapsed since they appeared an extract from them will help to recall the spirit of the architect's scheme:—

I would suggest that the walls, the several halls, galleries and corridors of approach, as well as the various public apartments throughout the building, should be decorated with paintings having reference to events in the history of the country, and that those paintings should be placed in compartments formed by such a suitable arrangement of the architectural design of the interior as will best promote their effective union with the arts of sculpture and architecture. With this view I should consider it to be of the utmost importance that the paintings should be wholly free from gloss on the surface, so that they may be perfectly seen and fully understood from all points of view; that all other portions of the plain surfaces of the walls should be covered with suitable architectonic decoration or diapered enrichment in colour, occasionally heightened with gold and blended with armorial bearings, badges, cognisances and other heraldic insignia emblazoned in their proper colours. That such of the halls as are destined should have their vaults decorated in a similar manner, with the addition occasionally of subjects or works of art so interwoven with the diapered ground as not to disturb the harmony or the effect of the architectonic decorations generally, and not to interfere with the elementary features of the architectural composition. That such of the ceilings as are flat should be divided into compartments by moulded ribs enriched with carved heraldic and Tudor decorations. That these ceilings should be relieved by positive colour and gilding, and occasionally by gold grounds with diaper enrichments, legends and heraldic devices in colour. That the screens, pillars, corbels, arches, dressings of the windows and other architectural decorations should be painted to harmonise with the paintings and diapered decorations of the walls generally, and be occasionally relieved with positive colour and gilding.

The floors were also to be enriched with colours by means of tiles. The walls to the height of 8 or 10 feet were to be lined with oak and present armorial bearings correctly emblazoned. The windows were to be doubly glazed in order to prevent the direct rays of the sun from interfering with the effect of the internal decorations. The statues were to be placed in niches surmounted by enriched canopies, and the niches to be painted in such colours as would give the best effect to the adjoining paintings. The whole report is evidence that BARRY had clear ideas about securing unity in his colour decoration, and if they were realised the building would assume a nearer relation to mediævalism in character than it does at present.

The Royal Commission had likewise its definite ideas, which unhappily were evidence of the partial acquaintance with art which prevailed among men of taste in the forties. They took it for granted that architecture meant building in its severest or most utilitarian form. Everything beyond that, whether known as decoration, ornament or art, was supplementary. Accordingly, they assumed that carving, whether on a large or small scale, metalwork, painting, stained glass, and so on, became their special province, or, in other words, the architect had no right to interfere with any class of work which could be more properly ordered by amateurs. They seemed aghast at the discovery that decorative works were specified by BARRY as if they were as necessary as brickwork or masonry, and were evidently annoyed that by that kind of forestalling they were deprived of a still larger field to revel in.

The adoption of fresco by the Commissioners partly arose from a desire to please the PRINCE CONSORT by imitating the German practice of the time, but partly also from a wish to cover a wall with a single painting. It was acknowledged that English practice mainly consisted in producing pictures of cabinet size, but it was expected that a school would be formed under the auspices of the Commissioners devoted altogether to mural work. We find Sir CHARLES EASTLAKE, the secretary and technical adviser of the Royal Commission, writing:—"In the present instance the chief decorations in painting will be required to be on an extensive scale. The difficulty of keeping large masses of canvas well stretched during all changes of weather has been considered an objection to the employment of that material under such circumstances. The evil here alluded

to may be seen in its worst form in the ceiling of the chapel at Whitehall, owing to the surface of the paintings being highly varnished. The fittest kinds of painting for the decoration of architecture are those which can be applied, when required, to every surface, curved as well as plane, and for such general decoration, fresco—recommended as it is by the example of the great masters—appears to be better adapted than any other method." Now, in BARRY's project, which we have mentioned, not a word is said about colossal paintings, and the objections to canvas when used on a gross scale do not apply. BARRY's pictures would be placed in architectural compartments in which, of course, proportion to the size of the room would be observed. They evidently would be subordinate to the scale of the building. As a painter and the representative of painters, EASTLAKE could not appreciate planning or direction which failed to allow each of the painters to make his work as prominent as possible, and BARRY's views were therefore frustrated. The fiasco of the "go-as-you-please" system, which the Houses of Parliament now exhibit to astounded visitors from abroad, testifies to the consequences of following two systems which were inimical, viz. the painter's, which was merely personal, and the architect's, which was national. It is strange, too, that a theory about the relations between sculpture and painting with architecture, which can be now announced in a remote city like Melbourne as if it were a truism, was not sixty years ago comprehensible to some of the most refined men in England.

HALLAM, KNIGHT, ROGERS, MACAULAY, who were members of the Commission, would have maintained that in Italy paintings and other works were executed in public buildings without much regard to the architect's anxiety for unity and fitness. In some of the cases the original architect was no longer in this world. It should also be remembered that the Renaissance painters had generally made a study of architecture as part of their education, and were therefore likely to submit to limitations in order to enhance the general effect. No architectural decoration surpasses GIOTTO's in the church of Assisi. It sometimes happened, also, that the rooms to be decorated were without any architectural value, and a painter may have considered he was justified in covering the wall with figures. The Sistine Chapel is an example. But eminent as were the painters, and skilled as they may have been in architecture, there is no doubt they often executed frescoes which are excessive in area, and are not suggestive of the repose or the stability which architecture demands. Their example should be taken as a warning by those who are indifferent about the necessity of a controlling power that will not admit excess of any kind within a building although sanctioned by a great name.

The painters' rebellion against restraint has sometimes been overcome by forming panels, as in some of the French seventeenth-century salons, and in larger buildings, by dividing the wall space by means of pilasters. Even in such cases harmony is not insured unless a single painter is employed. What a different and more logical aspect the Panthéon in Paris would present if the authorities could have persuaded PUVIS DE CHAVANNES to paint the whole of the walls! He initiated a decoration that was not only as simple as if painted in monochrome, but which made the architectural lines stand out with more effect. The charm and suitability of his treatment were recognised by other artists who received commissions for continuing the decoration. They knew it would be an advantage if a close correspondence with his work could be accomplished, but not one of them dared to use similar colours or to introduce figures as simple or composition so apparently artless, for they knew that any approach to resemblance would be fatal to their own reputation. The consequence is that now we can see a great many experiments in wall-painting produced under exactly similar conditions, but there is an absence of unity, and the decoration as a whole fails in its effect. We have as if we were a gallery of paintings uniform in their dimensions, but greatly varied in composition and colouring. It is true there was an architect having charge of the Panthéon, but he was unable to exercise any controlling power. When such a failure can arise in a city like Paris where there are so many able artists and so elaborate an organisation for

insuring success, what is to be expected in places less favoured?

In Australia there exists, as we have remarked, a satisfactory theory about what should be done for the decoration of public buildings. If the means which are necessary for the Federal capital were by some magic power to arise in our time, would it be certain that the mistakes committed at Westminster would be avoided in the new Southern city? Will the Australian members be wiser than were LYNDHURST, ABERDEEN, PALMERSTON, PEEL, HALLAM, STANHOPE, MACAULAY, CARLISLE in 1841, who would not allow the architect of the Westminster Palace to have a place among them? No one who is acquainted with political life would reply in the affirmative. Knowledge is, however, increasing, and from the numerous failures in decoration more importance may be attached to the position of the architect as chief of the artists. Several years may have to elapse before the Federal capital becomes visible, and by that time the wisdom of the ancients may be respected, and some happy architect allowed not only to build the halls of assembly and the committee-rooms for the people of Australia and their representatives, but may enjoy the good fortune which was denied to CHARLES BARRY of inspiring and directing their adornment.

NATIONAL PORTRAIT GALLERY.

THE Trustees of the National Portrait Gallery have received from Mr. G. F. Watts, R.A., as part of his original gift to the nation, an excellent portrait of the late Right Hon. William Edward Hartpole Lecky, O.M., painted in 1878. This portrait will be placed immediately on exhibition in the Galleries.

The Trustees have also accepted the following portraits as donations, viz:—

Henry Crabb Robinson, the well-known journalist and diarist, painted by Henry Darvall, and presented by Mr. T. Smith Osler.

John Pyke Hullah, the musical composer and teacher, a pencil-drawing by Sir William B. Richmond, R.A., K.C.B., presented by his son, Mr. Francis Hullah, and other members of his family.

Mary Ann Paton, the eminent English *prima donna*, married first to Lord William Pitt Lennox, and secondly to Mr. Joseph Wood; an unfinished sketch in oils by Thomas Sully, presented by her representative, Mr. Robert H. Wood, M.A.

The Trustees have also acquired by purchase an interesting portrait of Henry Purcell, the famous English musical composer, painted by John Closterman.

EXCAVATIONS AT DELPHI.

THE Classical Society met on Friday afternoon last, at 5 o'clock, in the Senate House, Cambridge, Sir Richard Jebb in the chair. The Chairman opened the proceedings by referring to M. Homolle, Membre de l'Institut, &c., as the distinguished director of the French School of Athens, an institution which for many years has contributed most effectively to the advancement of Hellenic studies. As the excavator of Delphi and Delos, M. Homolle stood in the very forefront of archaeologists.

Dr. Waldstein said that there was perhaps some appropriateness in that he had been chosen to introduce his friend M. Homolle. For not only had they been colleagues in Athens for many years, but they had been in friendly rivalry. At one time it was very doubtful whether he or M. Homolle was to excavate Delphi. In 1891 and 1892 it looked as if the concession was to be granted to him (Dr. Waldstein). Though he could not deny that the loss of Delphi, after years of labour and after he had collected large sums in America, was a serious disappointment to him, he wished now to say sincerely that he did not regret that this most important task in archaeology had been entrusted to the hands of M. Homolle. He felt this when he saw the splendid way in which the work had been carried out by his French colleague, when he realised the generous help which the French Government gave to the archaeologist, not only in the furnishing of adequate funds, but also in the direct support it gave by sending able assistants in every department, as well as all the costly machinery for such work. Even in the publication of the results the Government liberally supplied the cost of printing an illustration in a form which we could never produce in this country. When he realised how we here had to expend most of our energies in the raising of funds and the material preparation for work and study before even we arrived at the

arduous scientific labour itself, he felt that such a great work of science and learning could only be undertaken in countries where the Government realised the utility and claims of such higher intellectual attainments. He wished to congratulate their *ami loyal* on the brilliant results of his work.

M. Homolle began by thanking the chairman, Sir Richard Jebb and Dr. Waldstein for the cordial introduction. The character and the associations of the great University—its majesty—had so much impressed him that he felt awed by them. But he felt himself supported by the friendship of his former colleague at Athens, Dr. Waldstein, whose friendship was the surer from having arisen out of rivalry. Sir R. Jebb's acquaintance he had made while he was excavating Delos more than twenty-five years ago. He could not undertake to lecture on the whole of his excavations at Delphi; for this much time would be required even for the enumeration of the numerous finds in buildings, works of sculpture, inscriptions and works of minor arts, numbered by thousands. He would make it his task to give a more thorough exposition of one monument, the Treasury of the Cnidians, which would illustrate the nature of their discoveries and the method of excavation and study which they applied. Before turning to this special subject the lecturer, by means of photographic lantern slides thrown on a screen, showed the actual state of the site of Delphi since the excavations of the last ten years, as well as the restoration of the building made by the skilful architect, M. Tournaire. He then, using the itinerary of Pausanias, pointed out the chief buildings and monuments along the sacred road, most of which they were now able to identify. Turning to the Treasury of the Cnidians, he gave his reasons for identifying the remains found by them with that building and with the ruined foundations, together with fragments of architecture found chiefly about there, and other fragments found scattered about the whole site. He began to build up, by means of illustrations, before the eyes of the audience the whole of this interesting small edifice. Step by step he took the podium, the stylobate, the central portion of the portico, the door, the entablature with its sculpture frieze, and every cornice, until he showed the pediment surmounting these and the acroteria, with figures of victory crowning the pediment. Every point in the profuse decoration was carefully considered, and it was shown how these formed part of that building by their relation to one another and their peculiar style. These arguments were supplemented by the study of similar structures found at Delphi, of similar date and origin, while the fortunate discoveries of inscriptions with the Ionic alphabet from Cnidus threw a direct light upon this very building. Even the singular caryatides from the porch were built up before the eyes of the audience out of the fragments found at different spots and pieced together with infinite care. The result is that we now have before us a complete building fully illustrating the style and characteristic features of Ionian art of the sixth century B.C., in architecture as well as sculpture, and thus yields important information concerning that interesting period in the history of Greek civilisation.

The lecturer was often applauded when he ingeniously brought out a striking piece of evidence with convincing clearness, and the vote of thanks, humorously proposed by Professor Ridgeway, was cordially given him.

HOSPITAL SITES IN LONDON.

A PAPER on "London Hospitals and Medical Schools and their Sites" was read at a meeting of the Hospital Association by Sir H. C. Burdett. The sites of the London hospitals, taken collectively, represented, he said, the best and the worst features which could attach to hospitals in densely crowded neighbourhoods. The thing to be aimed at was to have a site of sufficient area to provide at least 300 or, to meet modern hygienic requirements, 450 superficial feet per bed. Each site should be so placed as to prevent the hospital from being deprived of light and air by contiguous buildings. At St. George's the area per bed was 191 feet, at the Westminster Hospital 134 feet, at the Royal Free Hospital 253 feet, at the Middlesex 267 feet, at St. Mary's, when the new wards were finished, the area would not exceed 200 feet, at Charing Cross Hospital it was only 86 feet, and when the rebuilding of University College Hospital was complete the area per bed would be about 160 feet. With regard to the four Greater London general hospitals, the area per bed at the London was 310 feet, at Guy's 364 feet, at St. Thomas's 652 feet, and at St. Bartholomew's, taking the original site, 300 feet dead reckoning. With the additional land recently purchased the area was brought up to 420 feet dead reckoning, if the total of beds was brought up to 700, as was proposed. He used the expression "dead reckoning" in this respect because the site was so crowded with buildings. Thus no London hospital, with the exception of St. Thomas's, and probably Guy's,

filled the requirements of modern science in this respect. In London, again, with the exception of St. Thomas's, the medical school buildings had been added from time to time. In the case of one hospital 56 per cent. of the site was occupied by buildings, although the ward blocks, theatres, &c., occupied less than 16 per cent. of the whole available area, while the medical school and kindred buildings covered 20 per cent. In these circumstances he welcomed the scheme proposed by the Institute of Medical Sciences committee of the University of London which provided for common courses of instruction for internal medical students, not only in chemistry, biology and physics, but in anatomy, physiology and pharmacology, and which would ultimately relieve the hospitals of the necessity of providing accommodation, appliances and teachers for these subjects, and enable them to devote their whole energies to the teaching of clinical subjects of medicine and surgery. It would also greatly improve the hygienic condition of the sites of most of the great London general hospitals, by freeing them from existing blocks of buildings. It was estimated that 375,000*l.* would be required by the University to build and equip the various institutes and provide professors. Any person of large means had here presented to him a splendid opportunity for wisely expending some of his money. Turning to the present position of St. Bartholomew's Hospital, Sir Henry said that the architect who originally planned the buildings deserved their admiration for his foresight and ability. The four ward blocks were unique in arrangement. Each block was self-contained and separate from the others, and they were so arranged as to facilitate the free circulation of air round each and through the hollow-square formed by them. The plan provided that sun and air should have free access to each block; but the continuous growth of the work of the hospital had caused the wards to be rendered gradually less and less desirable as a residence for patients by the addition of other buildings. If the plan of the Mansion House committee was to be carried out, 350,000*l.* would be spent in new buildings which would render the old wards double-packed and terribly faulty, in regard to the hygienic requirements of sunlight and air, which were made so prominent a feature by the original designer in 1730. What was the alternative? The addition of about an acre and a half to the present site. On an 8½-acre site St. Bartholomew's might be made perhaps the finest general hospital in the Metropolis. Sir Henry here explained a plan carrying out this project, and proceeded to say that he was advised that, apart from the cost of the extra land, the hospital could be brought up to date in every respect at an inclusive cost of 350,000*l.* Yet it was proposed to waste that sum under the scheme of the Mansion House committee, which would in practice lead to the ultimate destruction of this great institution with 700 beds and the largest medical school in London, for such a plan could not last for more than a few years relatively, when the institution must fall into discredit hygienically and popularly.

ACADEMIC TRAINING IN SCULPTURE.*

I HAVE been asked to express my ideas concerning the Roman Academy. What I have to say can be said in a few words, and I take pleasure in so doing, not only from a sentiment arising from my early associations with the Ecole des Beaux-Arts and its organisation, but more because I am of the firm conviction that an institution such as that is an admirable one.

My reason for thinking it admirable is my belief that the strenuous competition required to gain access to the Villa Médici, as well as the four years of study in that wonderful spot, tend to a more earnest and thorough training than could be gained under the present conditions of life in our times.

I am not one of those who believe that only the few who possess marked talent should attempt to be artists, although I do not think that there are but a small number in the world who are gifted and who possess that indefinable quality, that elusive something, which makes the great artist. In art, as in everything else, only the fittest survive. But in our civilisation certain of the population will go into the fine arts "willy nilly," and sooner or later fall back to what the law of the survival of the fittest brings them to. However, this great band of the fittest have their work to perform, their love of the beautiful contributes to happiness and tends to a wider enjoyment of life in the revealing of beauty where otherwise it would have been ignored.

I know it is a question whether such a knowledge increases the general happiness and morality of a community. I firmly believe that it does, as I believe that any effort to do a thing as well as it can be done, regardless of mercenary motives, tends to the elevation of the human mind.

The result required by the system of the Ecole des Beaux-Arts and the School of Rome, however, from the serious education, is that they will be better workmen in each of the various vocations they finally fall into. In our period of hurry and of gaining ends, no matter how superficial, in the quickest possible way, no one will dispute that this is a healthy fight to make.

In the repeated attacks that are made on the Roman Academy and on the Ecole des Beaux-Arts and in the incessant cry for greater freedom in the development of the artistic mind, there is a certain truth. But in the reaction the pendulum swings too far and the real question is lost sight of. There is a middle ground on which to stand. It seems to be rarely realised that the very men who are shown as examples were, if not actually brought up in the School of Rome, all men of a thorough academic training. Only after such training does the mind become sufficiently mature and the individual personality so developed as to be able to indulge in unqualified freedom and liberty of expression.

Rodin, one of the leaders of the movement against academic training, had had a most thorough and arduous training during the early years of his career, and I am of the opinion that that training, instead of dwarfing or minimising his extreme power of expression, has been of enormous assistance to it. Leaving out of the question the exhaustive early study of the great masters of the past, Michel Angelo *et al.*, and coming to our own times, to the brilliant men of the French School, we find that all have had the same early experience. Paul Dubois, one of the masters of French art, who although not a member of the Villa Médici, had a training fully equal to that which could be gained there, was one of its strongest supporters. Houdin, Rude, Falguière, men whose work lives and breathes with Divine fire, were trained there: Puvion de Chavannes and Baudry, to enter another domain, I may add to my list. It is needless to say that none of these were injured by it.

Sculpture is no more exempt from the necessity of a thorough preparation than is music, architecture or any of the arts and sciences. Only constant diligence and earnest application in early years, harnessed with a natural talent, give us our master workmen.

The disastrous results to those who ape the mannerisms of such masters as Rodin and follow in their wake are pathetic in their futility and weakness, when they are not comic, and their failure leaves them not only bad artists, but (and here I come to what I consider the main point of my contention) weak and crude workmen in whatever else they do. I am inclined to think that if it were not for this class and this condition of things, I should not be so proud a partisan. But the betterment of this class and at the same time the help that is given to the young master makes it worth while.

In the American Academy founded in Rome the plan is to follow the same lines as the French Academy, but, in profiting by their experience, to better it, in that much greater liberty and freedom are exercised in the selection of the students who are to partake of its benefits and in allowing them to the student in his life, and the execution of his work while there.

It cannot be denied that the four years of undistracted attention, apart from the temptations of a large city, devoid of pecuniary worries and surrounded by a sympathetic environment where the whole thought is directed to the highest artistic achievement possible, in the formative years of a young man's life, can be anything but an enormous assistance and of vital importance to the few who have the Divine gift. If it were but one in a century who was helped in this way the institution would be worth while.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.

THE members of this Association paid a visit on the 3rd inst. to the engineering works of Mr William Spence, at 107 and 108 Cork Street, Dublin. They were received by Mr. Spence, his son, Mr. Arthur Spence, and by Mr. H. J. Lundy, M.R.I.A.I., his son-in-law, through whom the visit had been arranged. Mr Spence accompanied the visitors through the extensive works, explaining the uses of the various machines, while Mr. Arthur Spence illustrated his remarks by practical demonstration. Having inspected a new row of houses erected by Mr. Spence for his workpeople, and also a large fitting shop which is in course of construction, the members were conducted to the foundry, where the various processes of casting were explained. Several large castings were made in connection with work Mr. Spence has in hand for Guinness's brewery. The president, Mr. Charles H. Ashworth, thanked Mr. Spence for his kindness in allowing the Association to view his works, and Mr Spence replied. Having partaken of refreshments the members separated.

* A paper by Mr. Augustus St. Gaudens read at the Thirty-seventh Annual Convention of the American Institute of Architects.

NOTES AND COMMENTS.

THE controversy about the relative advantages of town and country hospitals is too important to be treated as if there must be a one-sided conclusion. As in many other important affairs, compromise is essential, and the basis on which it can be determined has been suggested by Mr. JONATHAN HUTCHINSON, the eminent surgeon. He is of opinion that each of the large London hospitals should possess its country branch. In cases of chronic disease should be treated, while cases of acute disease and those requiring serious operations should remain in town. He adds:—"The plan of divided hospitals, one-half in town and the other in the country, would not probably lead to any reduction in the present number of our London institutions, nor of their size. It would, however, by greatly diminishing the number of patients which now crowd them, enable them to fulfil their purposes in the best possible manner without necessitating any costly additions." In all large cities cases arise through accidents, and other causes which demand immediate attention, and serious consequences might arise if patients had to be conveyed to a distance. It may seem unfavourable to recovery when buildings are in confined situations. But there are advantages in city hospitals which should not be lightly set aside in order to satisfy those who like to see the stern work take place amidst pastoral surroundings.

IN his "Præterita" Mr. RUSKIN gives a delightful description of the Geneva he loved, which was, he says, "SAUSSURE'S school and CALVIN'S—ROUSSEAU'S and BYRON'S—TURNER'S—and of course, I was going to say, mine." The later Geneva, with its polypous knots of houses, was unsatisfactory to his eye, because the impressions received in 1833 and 1835 were not effaced from his mind. So many eminent men have from time to time found a refuge in the Puritanic, but independent city, there must be some difficulty for even a native to recall the houses in which they lived. Mr. ROBERT HARVEY, a brother of Mr. LAWRENCE HARVEY, who, a few years ago practised as an architect in London, has endeavoured to preserve the associations by preparing a record of "Geneva as Intellectual Centre," which can be consulted in one of the halls of the University. In the same spirit he has used his influence to fix memorial tablets on the houses occupied by celebrities. Among those who co-operated to that end is Professor KLING. He was desirous to have a plaque set up on a boarding-house in Mornex, in which he was a fellow guest with RICHARD WAGNER, the composer, in 1856. Mr. HARVEY had also ascertained that JOHN RUSKIN lived in the same house in 1863, and was eager the English writer should also be remembered. By an arrangement they have placed a plaque which will recall the German and the Englishman, and more recently they have hung portraits of the two in the interior of the pavilion. In no city is there more scope for similar aids to memory, and the presence of the tablets would become testimonies to the unique character which Geneva has held for many years.

THE announcement that the roof of the cathedral of Toledo is in danger must excite alarm, not only among lovers of architecture, but also of the legends of romantic Spain. According to tradition, St. JAMES the Apostle was the first bishop, and he appointed as successor ELPIDIUS, who was a hermit of Mount Carmel. The early bishops enlarged the original building, and "Our Lady of the Assumption" is believed to have been an important structure when the persecution under DIOCLETIAN burst out. The church was destroyed, but it was one of those expressly rebuilt by order of the Emperor CONSTANTINE. It used to be popularly believed in Toledo that the cathedral assumed its present form in the thirteenth century, and yet is a copy of the Temple of Diana at Ephesus. It is needless to say the style refutes that tradition, for in plan the church is more suggestive of Notre-Dame in Paris. Parts date from the fourteenth and parts from the fifteenth century, and they recall work of the same

period which is found in France. The exterior is not equal to that of Burgos in richness, but the interior, with its double aisles, makes a remarkable impression on the visitor. There are splendid windows, and the choir is large enough to form a church. The total length of the building is about 400 feet, and the nave is 100 feet in height. The experts who visited Toledo last week have found there is too much reason for the alarm. The church contains so much wealth in the form of metalwork and wood-carving, which always appears sound, it is possible adequate attention has not been given to the structure itself. The wealth of Spain is different from what it was in the fifteenth century, and offerings to churches are only sparingly made. It will, however, be discreditable if so glorious a building should collapse, especially in a country where cathedrals and churches contribute so largely to its greatness.

THE German painter, GUSTAV MILLER, who died in Rome in June 1901, bequeathed to the German Government a sum of 12,000*l.*, with the intention of providing a fund for the purchase of works of art which would be a memorial of his twin-brother EDOUARD MILLER, the sculptor, who died in 1895. The control of the expenditure will rest with the German Government. The works are to consist alternately of oil paintings and pieces of sculpture, and are to be selected from those exhibited in some international exhibition in Rome. The artists are to be in turn Germans and Italians. In every instance the purchase will be arranged directly with the artist, for dealers must have no share in the transactions. Both artists, we presume, suffered through middlemen. The choice of works will rest with a committee, with the German ambassador in Rome as chairman. The next exhibition will be held from January to May 1904, and the money is to be expended on oil-paintings by German artists.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: EAST END OF LADY CHAPEL.

THE Lady Chapel which is the subject of our Illustration is not the original one. There is mention in the records of an earlier structure, of which some parts still exist. It is supposed the present chapel was provided by Bishop QUIVIL (1280-91), who was buried within it. The chapel is 60 feet in length. For a hundred and sixty years it was used as a library for the Dean and Chapter, but in 1822 it was restored according to the fashion of the period. At a later time it was brought to the condition now seen in the course of the restoration under Sir GILBERT SCOTT. The employment of grisaille glass in the windows is testified by an entry in the Fabric Roll of 1317-18, which records that 629 feet of "albo vitro" were bought at Rouen for 15*l.* 4*s.* 9*d.*, or about 6*d.* per foot. The coloured glass—203 feet—cost 10*l.* 3*s.*, or 1*s.* per foot. The prices were higher than for the glass used in the choir. The decoration of the chapel is based on fragments of original work.

SKETCH FOR COMPLETION OF JAMES ALLEN'S GIRLS' SCHOOL DULWICH.

THE original buildings of this school were erected nearly twenty years ago, and have at various times been added to, and the proposal now illustrated, when carried out, would, it is expected, reach the limits of accommodation required or possible in connection with the central block. The wings now shown as additions carry out the original intention of having one-storey wings to the main building; this intention was abandoned for considerations of cost when the original building was erected. The architect is Mr. ARTHUR J. GALE, F.R.I.B.A., of 4 Serjeants Inn, Fleet Street, E.C.

CHELSEA PALACE OF VARIETIES.

THE SIX BELLS P.H., CHELSEA.

HOUSE AT REIGATE.

HOUSE AT HOLMBURY ST. MARY.

THE STATUTORY REGISTRATION OF ARCHITECTS.*

THE protection of the profession of architecture from unqualified practitioners is by no means a modern conception. So far back as the days of Vitruvius, the celebrated architect, complaint is made of irresponsible and uneducated men practising the art. He says in the introduction to his eighth book:—

"When, therefore, I see this noble science in the hands of the unlearned and unskilful, of men not only ignorant of architecture, but of everything relative to buildings, I cannot blame the proprietors who, relying on their own intelligence, are their own architects."

And in his tenth book, referring to the manner in which the Council of Ephesus dealt with incompetency, he says:—

"Would to God that such a law existed among the Roman people not only in respect of their public, but also their private buildings, for then the unskilful could not commit their deceptions with impunity, and those who were the most skilful in the intricacies of the art would follow the profession."

I do not propose to occupy your time at any great length in evening, but desire to point out as briefly as possible the main features and progress of the movement we are now met to discuss. In introducing my subject, I must necessarily go on some ground with which some of you may be familiar, for the benefit of those to whom the question is new I should like to define

What we mean by Registration.

In the present it means that every man practising architecture shall be enrolled in an official register under an Act of Parliament and be responsible for his professional actions, and that no one be allowed to practise until he is duly enrolled. In the future it means that no one be allowed to practise architecture until he is duly qualified and has been found so by undergoing a qualifying examination. It means, in fact, little more than making the Institute examination compulsory by Act of Parliament. It is a matter for surprise that this obvious benefit should not have been secured to the profession long since seeing the advantage a qualifying examination has been to the learned professions of law and medicine.

Why is the Reform Necessary?

There is a vague notion among the general public that architecture is one of the fine arts. This is all very well as an abstract theory, but when it comes to the practical application of architecture, and the actual individual who is to translate the theory into practice, the public know very little how and by whom it is done, and, I think, care less.

The profession, as it is styled by courtesy only, is not looked upon and respected, contrary to the learned professions just mentioned, and I think if we look at the present position and practice of architecture in this country we shall find a reason. A person with or without a fair general education, any ruler, builder's foreman, clerk of works, clerk in a local council office, auctioneer, undertaker, &c., with the sole qualification of being able to provide a brass plate, is at liberty to advertise himself as a person qualified to give advice to the public in the science and art of architecture.

We in London suffer from builders, decorating firms and others who, going out of their proper province, boldly proffer their services as architects to their customers gratis, and the present saving of 5 per cent. is not to be resisted. Some even go to the length of announcing that a competent architect is kept upon the premises—I suppose like the shopkeeper. Can it be a matter for wonder that architects are still recognised while such a condition of things exists? for at present the public have no guarantee that the class who call themselves architects are any better qualified to plan and erect their buildings than the contractors who erect them, and should they employ an architect they have no means of ascertaining that his knowledge is greater than that of the builder, and the only certainty about it from their point of view is they will have to pay the professional charges.

Who is to carry out the Reform?

I have no hesitation in saying that if this thing is to be done the Institute has to do it. It is not my intention to-night to say one unkind word against the Institute, but I would like to venture on a little friendly criticism and point out how far it is one in the direction of registration. The Council of the Institute, in its session of 1859-60, drew up a special report on architectural examination, from which the following is an extract:—

The ultimate result should, in their opinion, be the establishment of a system of compulsory examination, extended to all architects, whether members or not of this Institute."

A paper read before a meeting of the Manchester Society of Architects by Mr. Ellis Marsland, on December 10.

It also states in the "Kalendar":—

"The R.I.B.A. desires to obtain for all those entering the profession a systematic course of education . . . thereby laying a foundation of artistic and scientific knowledge upon which to cultivate any natural gifts and develop any aptitude for invention or design he may possess."

On May 30, 1890, it passed the following resolution:—

"That while not opposed to the principle of compulsory examinations as applied to those about to practise architecture, the Institute is of opinion that the difficulty of restricting by statutory powers the practice of architecture to those who have passed an examination is at present so insuperable, that it is undesirable to make an immediate application for such powers."

To what does this resolution amount but the admission that the principle is a good one, and that the difficulties in the way are the only bar to progress?

Why do we band ourselves into societies and associations unless it be for the express purpose of overcoming difficulties and bringing about reforms for the general good?

More than two years ago the then President of the R.I.B.A., in his inaugural address, urged the Institute to follow the lines of the Incorporated Law Society as regards solicitors. Again, Sir William Emerson, P.P.R.I.B.A., is reported to have publicly stated that:—

"What was wanted was that the status of the architect should be more clearly defined, and to this end it would be a good thing if Parliament were able to pass some measure by which their town and country should be prevented from being disfigured by the work of builders without guidance, or by men who had absolutely no justification for practising as architects."

The latest presidential announcement is, however, of a passive resisting type, and states that "inaction on the part of this Institute has been deliberate and intentional." This inactivity is placing the Institute in a false position, and is causing a vast amount of dissatisfaction, especially among provincial members, as the want of such a measure of reform is felt far more keenly by them than by London men.

The necessity for a higher standard of professional excellence and public confidence is of essential importance to provincial men. There is a feeling—a mistaken one, if you will—that local architects are all very well for the ordinary work of the town, but as soon as any work of primary importance is to be executed architects from outside are invited to compete. Does not this arise partly from a want of confidence, there being no guarantee in employing a man who is styled an architect that he really knows his business? but nine cases out of ten it is the local man who, from his knowledge of the materials of the locality and the special requirements of his fellow-townsmen, is more likely to carry out the work satisfactorily than an architect from a distance.

Of what use is it for the Institute to say that its examination is a panacea for the existing evils, unless this examination is made compulsory? Until men find that by undergoing a course of study and passing an examination they are placed in a better position in the eyes of the public than the man who possesses no qualifications at all, it is very unlikely that an appreciable number of men will voluntarily come forward and avail themselves of this means of entering the profession.

The Attitude of the "Memorialists."

I can quite understand the attitude, although I do not agree with the opinion of the coterie of art men who, in a memorial addressed to the Institute in 1891 and quoted by the President in his address, said:—

"That a diploma of architecture would be a fallacious distinction, equally useless as a guide to the public and misleading as an object for the efforts of the student, and that no legislation can protect the public from bad design."

The attitude of these gentlemen is at least logical because they don't believe in any examination at all. But where an examination is a settled policy it is absolutely illogical to bind heavy burdens on the backs of its student members in the way of a difficult and prolonged course of study and examination, and then to offer them nothing in the way of protection from the man who has passed no examination at all.

The only logical sequence of education and examination is protection and registration, or why have any examination at all? Did it ever strike you what an incalculable amount of harm this voluntary examination is doing? You know as well as I that by far the larger number of candidates fail to satisfy the examiners, and what becomes of these? They are not debarred from practising as they would be under a Registration Act, but they are let loose half educated, and a menace to the public and a discredit to the profession for which they have imperfectly fitted themselves.

The Attitude of the Profession towards the Movement.

We are informed, but upon what authority I do not know, that there was a considerable body of opinion strongly against the movement, and that it is outside the realm of practical politics. This I deny. What are the facts? From a recent poll of the profession—i.e. of all members of any recognised

architectural society—more than two-thirds replied in favour of registration, only 170 replied as opposed to it, and the balance, I think we may fairly assume, were either indifferent or had not sufficiently thought out the subject, and therefore did not reply. Your worthy President has taken the trouble to obtain the general opinion of the allied societies, and I quote from his address:—

"In order to ascertain the general feeling on the subject, I have invited the opinion of the various societies in different parts of the country, and out of twelve from which I have received replies six were in favour of registration, one against, two were divided in opinion and three had not discussed the question."

The president of the Northern Architectural Association, Mr. J. Walton Taylor, F.R.I.B.A., in his opening address, says:—

"With regard to registration the allied presidents were in favour of it, but thought the Institute was the proper body to take the subject up."

Mr. Butler Wilson, president of the Leeds and Yorkshire Architectural Society, said in his opening address:—

"I hope at the next election of the Institute Council that the question whether candidates are in favour of registration or no will be rendered even more acute than at the last election, when, without organised effort, we succeeded in placing thirteen declared registrationists. There are still about a score members who are neutral. But we must insist on their declaring themselves one way or the other, so that we know which way to vote. You cannot get anywhere by neutrality. It is not a quality which makes for advancement. To render the co-operation of the allied societies effective, I shall propose an association between us which would make registration the crux of the next elections."

Again, meetings have been held in the following towns—Cardiff, Bristol, Exeter, Leeds, Liverpool, Manchester, Birmingham, Newcastle, Sheffield, Edinburgh, Glasgow—at all of which resolutions were passed, with some few dissentients, in favour of the proposal. The Royal Institute of Architects of Ireland has decided in its favour, and has intimated that if the English Institute will not do it they will do it themselves.

The Feeling on the Continent.

What are our continental brethren doing in the matter?

1. The fourth International Congress of Architects, held at Brussels in 1897, by a unanimous vote agreed to the following resolution:—

"That the architectural societies should unite and conduct an energetic campaign to obtain from their Governments the institution of the diploma."

2. The fifth International Congress of Architects, held in Paris in 1900, passed a resolution which was unanimously adopted to the effect:—

"That Governments should take steps to protect and secure respect for the title of architect by reserving it for the future, and without retrospective action, for architects provided with a certificate of capability, or by forbidding its use by others; and, further, should place such certificate within the reach of all by the spreading of special architectural education and training."

3. The States of Iowa, Illinois and California have passed such a law, and other of the American States are seriously considering the question. The Province of Quebec has adopted a similar policy.

4. Germany and Hungary oblige all public architectural officials (State or municipal) to have a Government diploma. In France the method of appointing Government officials approaches that of making a diploma necessary. In Italy, Spain and Russia our profession is a closed one.

Surely, then, the matter is ripe for us and the season opportune, and it is within the realm of practical politics. The longer the matter is left the more growing is the evil and the harder it will be to accomplish.

The Advantages of Registration.

To put the matter shortly, the advantages arising from registration are these:—

Closing the doors to incompetent men.

Raising the standard of the profession.

Obtaining the confidence of the public and State recognition.

It is not proposed for one moment to say all who desire to build should employ an architect, but what we do propose is that henceforth, in the interests of the public, no person shall be entitled to call himself an architect whose name is not enrolled as qualified under an Act of Parliament, and any person wishing to employ an architect may, by consulting the official register, ascertain what men are qualified.

Some Alleged Objections.

I will now deal with the objections.

And I think I may first venture to deal with those raised by the worthy President of the R.I.B.A. (which I have no doubt

you have all read), as this is the first time that an opening address has dealt at all exhaustively with the subject Registration.

We are told by him that "Protection is in the air," and without wishing to introduce any political element into a discussion to-night, I agree with him, but for us it is Architectural Protection. He says, "Protection is in the air, I know, and I am not rash enough to express any opinion upon it." I have, however, whether rashly or otherwise, a strong opinion on the subject, and say that we have suffered sufficiently long from free trade in architecture, and it is time we tried a little protection in the way of education and registration.

We are told "that an artist is born, not made; no questions and answers admit him into the fold." Now, gentlemen, I ask what fold? What is a fold? It is a place of safe enclosure within a high wall where protection is offered against the wolves that raven. Where is this fold offered to the architectural sheep who seek to come within it for shelter and protection against the architectural wolves? I say it does not yet exist; and if, as some say, it does exist, it only partly surrounds the fold in the way of the Institute examination, which is not compulsory, and is therefore useless for the purpose. What we aim at by our registration is to make the wall complete, and then it will become an architectural fold.

Again, referring to the expression "an artist is born, not made," I want to know who was the author of this catch sentence. I say it is a fallacy. Horace, I think, says, "*Poet nascitur, non fit*"—a poet is born, not made; but a poet is very different man to an architect. I won't refute the fallacy myself but quote to you the words of the President of the Ontario Association of Architects. He says:—

"Nor is there any real force in the stock objection, that architecture is an art, that an architect must be an artist, and an artist cannot be made by examination. . . . But there is much in the way of putting a thing, and I am not afraid to take the highest type of architect as a subject for the examination theory, and affirm that the saying that an artist is born, not made, is only half a truth. That one cannot be made an artist who is not born an artist, is true; but it is equally true that one who is born a potential artist must also be made an effective artist. An artist must be both born and made, an examination—which is but a short form of expression for the education which the examinations are instituted to test, and even compulsory examination, is the only sure road to make a heaven-gifted artist able to make use of his gifts."

In the President of the Institute's address we are treated to a little parable of the two undergraduates who were trying to induce a tortoise to put his head out of his shell by holding some tempting bait without result, and an Oxford don, after watching them for some time, quietly said, "Don't you think gentlemen, you had better try the other end?" Now I am going to interpret this parable to you, but not in the way the President did.

The allusion to the tortoise very aptly typifies the Royal Institute of British Architects in its attitude towards registration. The don is the President and we are, in order to draw off the scent, asked to leave the educational end that we have been pegging away at so long and invited to "try the other end;" but we must decline the invitation, firstly, because we are sure we have got hold of the right end to start with and by a little more perseverance we shall get the Institute to move and, secondly, the only other end would be to put an end to the examination altogether as a logical sequence to partition with registration. No, gentlemen, this matter is not to be lightly brushed aside by such specious arguments and fallacies as I have endeavoured to expose.

Objection has also been urged against the movement that it will create a monopoly, and thus be opposed to the principle of modern legislation, but there cannot be a monopoly created where it is made possible for anyone who proves himself qualified to share the rights.

Another objection is that it will be necessary at the outset to register some of the very men who have caused all the mischief. This is very true, and unless this is done it will be found that Parliament will not listen to you. That you must respect vested interests is an axiom of Parliamentary practice and where a man can show that he has practised architecture Parliament will say you must not deprive him of his rights, and the obstinate attempt to exclude this principle from the Medical Act was the chief cause of delaying its passage through Parliament for thirty years.

Another conscientious objector is the art architect, and there is of course a good deal to be said from his point of view but I think he looks at the question from his point of view only.

He would be quite in favour of registration if all incompetent and inartistic persons could at once be debarred from practising, but if the inartistic and incompetent are still to be tolerated and even recognised until time has worked the necessary change, he prefers matters to remain as they are and to leave the public to discriminate between the good and the bad.

But the practice of architecture is a composite one, and includes not only the artistic but the constructive, hygienic and scientific, and therein lies its difference from the sister arts, and the need of special training in addition to the artistic spirit.

I cannot agree with the purely art architect that you are lowering the dignity of architecture by making it a profession and that it requires none of your registration.

I maintain that at the present time architecture is trailed in the dust at the heels of many men utterly unworthy of the title of architect, but by a scheme of education and registration we shall raise it above its present unsatisfactory surroundings to such a height as will at least bring it to the level of the learned professions, and after this has been attained, then develop and foster the artistic side as much as you will, and the more the better.

That you cannot examine a man as to his artistic attainments is partly true. But a painter is no less a painter because he has been instructed in the science of perspective, in the proper manipulation of his colours and their chemical composition. Or a sculptor is none the worse for a complete course of study of the anatomy of the human figure.

We do not, of course, claim that architects can be manufactured from study and examination, but what we do claim is that there is a constructional, hygienic and scientific side to this profession, which is of quite as much importance as the artistic, in which, unlike the arts of painting and sculpture, affects the comfort, health and well-being of the community, and this being the case, the men who take upon themselves the responsibility could prove themselves competent.

When we dislike a picture or a piece of sculpture it is easily got out of our sight. But it is a much more serious matter with our buildings if, when erected, even with or without artistic merit, they are found unfit by reason of the wrongful disposition of the rooms or fireplaces, or are unsound by reason of faulty construction, bad ventilation or sanitary defects.

Architectural taste is always a changing quantity, so that it need not be pretended that it is desirable to examine on the strictly artistic side of architecture, even if you could find examiners who would be agreed on any one point, but the scientific, practical and constructional side is one to which examination may be applied, as also in the principles upon which architecture is based, and its rise, progress and development.

I will not to-night go into the details of the Registration Bill; suffice it to say that it follows on the lines of the Medical Bill. Difficulties to be got over there undoubtedly are, but as the medical profession overcame the difficulties that beset them with regard to the chemists and apothecaries, so also shall we overcome difficulties with regard to surveyors, engineers, &c., and it is not for us to raise difficulties, but to overcome them as they arise.

The first effect of a Registration Act would be to put a stop to any further increase in the number of incompetent practitioners, and thenceforth they would become a diminishing quantity.

I appeal to-night to the young men to assist in this matter, for in life the question will soon have no interest, but we have a abiding interest in our art, and are still willing to assist you in carrying through a great reform which will be to your benefit and that of all good architecture in this country.

THE GLASGOW SCHOOL OF ART.

EVIDENCE was given by Mr. F. H. Newbery, headmaster, about the teaching in the Glasgow School of Art before the departmental committee on the Board of Manufactures:—

With regard to the constitution of the Glasgow School of Art, will you tell us that?—Only two years ago the Glasgow School of Art was one of the old South Kensington schools. We passed a lot of examinations and sent up works and so on about two years ago the Scotch Office took us over, and they did more than that—they established the Continuation Class side, but under Clause 87 they exempted certain institutions on the conditions of the clause, and submitted a series of proposals for the working of this school. We had no examinations and have no examinations. Our works no longer go to national competition. All restriction as to methods, means and scales is done away with, and the school is free to carry on the work in its own way, producing work which in the estimation of the teachers is educational and tends to develop the student and not to meet the needs of an official kind. From that moment the governors set to work to reorganise the staff, and the school is divided now into an upper and lower school. The second master is in charge of the lower school, and the upper school is divided into four departments, painting and drawing, architecture, sculpture and decorative art. Those are the four. At the head of each is a

professor. I am using the term professor advisedly because technique is not a strong point over here, and the governors sent to the Continent and brought over a man from Brussels, who at first was so incapable of using the English tongue that an interpreter had to be used between him and his students. This last year the governors have brought over another man. They were so satisfied with the work of the first professor they brought over that they brought over a second man and put him in charge of the antique school. The work has gone on in the last two years with leaps and bounds. All restrictions as to size and method being withdrawn, the individuality of the student is sought for, the personality of the professor enters into the work, and the result has been marvellous to me, and I have had some experience in these matters. Then our modelling man is a Dutchman. I will not say we have gone out of our way to get foreigners, but we wanted to get the best teaching experience, and we found over here that the painter who is engaged in making pictures and so on will not give it up for teaching. On the Continent they are far more ready to do so. A skilled man will leave his academy and turn his attention to teaching, and I think the governors have been very much justified in their experiment. The architectural school is managed by a practising architect, a man who is in business for himself, and who comes in so many times a week to conduct his classes. The technical studios take up twelve subjects—roughly, they take up stone-carving, wood-carving, stained glass, interior decoration, enamels, brasswork, bookbinding, china painting—and the plan the governors adopted is to get the expert. In bookbinding, Messrs. Maclehose & Sons, the bookbinding publishers, send a man from their firm to the school twice a week. He does not trouble about designs; he is a workman. We associate with every instructor a design master or mistress whose forte is this particular subject, and these two work together. We have the same in enamels, and we have the same in brasswork and in china painting. We have everywhere a linking together of the practical men working in the trade every day and all day long, and the design master and mistress bringing in the art properly required. That is the organisation of the school. Then these four departments, although perfectly independent in their work, are yet inter-independent, as we encourage students to cross over—that is, the students for drawing and painting take modelling. The modelling students take drawing, and the students in drawing and painting go up to the technical studios. There is an interchange of work, the idea of the governors being this, that whereas painting and sculpture are two channels by which the artist may express himself, a school of this nature should put before its students every method, means, material or medium whereby art can be expressed. Then it may interest the committee to know that we, where possible, abstain from teaching office-work. Take our architects: the old plan with the architect was to let him learn building-construction, orders and all that sort of thing. But we have come to the conclusion from experience that the office-work gives a man all that; that it is unnecessary on our part to go to an architect and instruct him how to train his students in building and things of that sort. But they do have, as far as instruction is concerned, instruction in composition and design, and above all they have life drawing, antique drawing and ornament drawing, and all other methods of education which the office cannot afford, and we do the same almost everywhere—rule off the things that a school need not trouble its head about and teach the things the students ought to learn in architecture. We go for the artist, and we are quite sure the architect will be made. We have, of course, large day and evening classes, and we have as many as six life models sitting at a time, and the committee might be interested to know who they are. We used rather for a long time the ordinary ice-cream man and organ-grinder that came to Glasgow, but we gave them up, and for the last few years the governors have imported models from the Continent. They are attached to the school at a weekly wage, and they live in Glasgow for the purpose of sitting for the students. We find by that means an enormous gain. For example, we have two men at the present time who are really superb. That encourages not only the art instincts of the students, but it gives them the finest possible form to study. Then, to return to the technical studios again. The influence of the technical studios is spreading, and the governors are hoping really to establish in Glasgow and its neighbourhood two or three distinct industries, especially for women. We find, for example, that in embroidery, where pupils are taken charge of by two lady instructors, the class at the present time is absolutely full of commissions, and we receive invitations to send our work everywhere on the Continent to the various art exhibitions which are held there. To Turin, for example, a very large consignment went, and the students received medals in Turin. We have sent to Munich, to Venice, and we purpose sending to America, and we likewise send our bookbinding. There are two students who have gone out from the school and have started bookbinding in the place—two women

workers—and we are very glad to know they are encouraged by no less a person than a partner in the firm of James Maclehoose & Sons. Then, as regards enamels, the furniture people have recently been adding enamels to decorate their furniture, and there are three women engaged in producing enamels for the purpose of insertion in the furniture. Then there is a small trade growing up in enamels for personal use—for personal adornment and personal belongings, and so on—in which two or three women are engaged. There is, in other words, a big field opening up for women, and I should say that in the school we have nothing whatsoever to do with the decision of the artist or the student as to what he is going to do. We believe that a man who is going to be a glass-stainer should have drawing and painting from the life because he is to be a glass-stainer; and we find that the old weakness practically does not exist any more, namely, a man growing up as a glass-stainer and then turning to picture-painting. A man is receiving his education, and he sticks to glass-painting. We do not, in other words, say to this man, "Now, you are going to be an artificer, and here is your line and you stop there," and to the painter, "You can go on as long as you like." They can go on as far as they like; our rooms are full of architects, designers, draughtsmen and men who intend making art their profession. They can decide for themselves what they are going to do. Then about the staff. The Scotch Office have been extremely good to us there. They simply say to the governors, "Let us have your men that you want to appoint submitted to us; we insist upon that. You have no appointment of your own, no powers of your own; send your man to us, send his qualifications, tell us that you, by experience or by knowledge of him, trust him and would have him, and we will make up our minds on the matter," and the Scotch Office have not declined.

They practically endorse your choice?—Yes; they have never refused it as yet, but they have insisted, and quite rightly too, that the men should be submitted to them. There is nothing of the old South Kensington business, that no man can be appointed who had not a certificate. The certified men are practically a dead quantity so far as we are concerned. Under the old arrangement professors could not have been brought over from the Continent, for example. Our aim has been to give the best education that the world can afford, with the result that by bringing continental technical skill over to Glasgow, the tide of students that used to go over to Paris has absolutely ceased, and in the last five or six years I have only known two students who have gone from Glasgow to London. They can get at their own doors what they want. Perhaps I am looking at this through rather rose-tinted spectacles, but they can obtain the finest education which can be obtained by an art student anywhere. As far as the students can go we are pushing them.

What about the bursaries and scholarships? What is the fee? What fee does the ordinary student have to pay?—A 10% fee covers the fees in the school per annum—that is, for the day classes. In the evening class our highest fee is 2%, but the pupils who pay fees in the evening classes are in the minority. For instance, the Haldane people offer 120 bursaries for the evening classes. When the school was under the old South Kensington system there were thirty to forty granted by the South Kensington people to free students, to artisan students. The sum thus paid was included in the amount received from the Scotch Office. The governors have taken over the payment themselves, so that there are 150 free studentships granted to the evening classes. There is no maintenance attached to the sum. They simply get their fees and that is all. Then, acting in conjunction with the Scotch Office—

Before you pass from the student, are most of those people engaged in their profession as apprentices?—Yes. There is rather an absurd idea that schools of art teach people who have to enter art; schools of art are teaching people who are in their profession—that is, they are glass-stainers or designers or whatever it may be, and our object is that they do not do in the school the exact work they do in the day; it must be something else. There is a special fee for apprentices. There is a half fee charged for apprentices under sixteen. We do not get many of those. We start with an entrance examination. The Scotch Office in one of their resolutions insisted upon that. This test examination consists of a piece of drawing from some solid object—a cast or other solid object—and the test is one which enables a man to start light and shade at once. That is the test we insist upon, and the Scotch Office compel us to make that test, because they say they do not want us to do the elementary work; that is cared for by the Board schools. They want us to be fed by the various schools under the School Board, and that is slowly being done. Then in conjunction with the Scotch Office they give the governors pound for pound; that is, if the governors vote a certain sum, say 50%, for local bursaries and scholarships, the Scotch Office cover our money. But they make the stipulation that they shall pay the money.

We have to send our cheque to the Scotch Office, and they cover the money there and send the money down.

Is that included in the amount you have given us for the income?—No, that is an additional sum. We divide them up in this way. We have two classes. We have what we call bursaries and we have scholarships. The scholarships are 20% and the bursaries are 15% and 10%. The bursaries are given for work done during a session. There is no examination for it. We call in judges from the outside, and the work is judged. Except the competition of students among each other there is no question of a standard set value. When a man gets a bursary we insist upon two things in connection with it—that he shall come back to the school in the succeeding session and that he shall visit some art centre other than Glasgow, Paris or London, or whatever it may be. This last time, out of eleven people, four went to Paris, two went to Holland and Belgium and Paris, and seven came to London and worked in the museums and studied the galleries. And they did that on 10%, and some on 5%. Then the scholarships are to enable us to assist a scholar who says he is too poor to go on longer. The governors then, if his work is worth it, grant him a 20% maintenance scholarship, and the fees are granted him as well.

Are these bursaries for one year?—For one year.

And these maintenance scholarships?—Also for one year. But it may be continued if a man gives promise. That is a matter which has not arisen yet. The Scotch Office may possibly have a say in that, but if a man deserved one at the end of the first year, he would probably get it for the second year. The object of the Scotch Office is to give them for three years. I think, but that has been arrived at very slowly.

What is the actual expenditure upon bursaries and maintenance scholarships?—125%.

On your part?—We may possibly get some money from the Scotch Office, but the matter was not quite in order as far as we were concerned. We are hoping to get back half the sum we spent last year. The Scotch Office have taken the goodwill of the governors into consideration, and have gone back to find money to cover the outlay.

You were saying just now, when the last witness was giving his evidence, that you had a difficulty of getting casts in this country?—A great difficulty.

You get your casts from abroad? Yes, chiefly from Brussels. The Musée d'Echanges is a magnificent institution and we get them from there. They are much lighter, and far better and cheaper. On the Continent the various nations take an interest in casts, and over here they do not.

What arrangement do you make for their preservation? Do you colour them in any way?—No.

You simply use them for their purpose and then throw them away?—We have not got to that stage yet. We have been in possession of them for three years. Of course, they gradually go out to decorate the road in time, but with regard to the casts we have bought, I should say the collection is really unique.

But you go upon the principle of using the cast as long as the surface is all right, and then have another?—Yes. We never paint, because it destroys all form. We keep certain ones for museum purposes. Our idea is to get unconscious education all through the school afforded by seeing beautiful things. We have the casts arranged so that the education of the students is gone on with all the time. The Haldane Trustees grant every year an additional scholarship of 50%, which is open to all schools of art and art classes in Glasgow, and which has been taken for sixteen successive years—in fact ever since its inception—by a student of the Glasgow School of Art. He is compelled to go to Italy. That is one of the conditions of his getting it. He has to do very, very stiff work. The demand upon him is the very highest. The Haldane Trustees say all the education in the shape of instruction—technical instruction—that a man wants shall be got before he takes their scholarship, and that he shall go abroad as a real improver.

How long is that held for?—One year. A man who has just come back, a man named Dowle, who went out last year, was there about thirteen weeks for 50% on the Continent. He went out by P. and O. boat to Gibraltar in order to see Spain. I have mentioned here once the question of judges and examiners. We have really had one set of examiners only; but what we do is to call in the best artists in Glasgow, or Edinburgh, or, in fact, in Scotland, to judge these works. For example, Mr. Guthrie has acted as judge for the last three years, and also Mr. Roche and Mr. Leiper; and anywhere where a strong figure man comes in we get his services. Last year, to judge our sculpture we got Mr. Rhind, of Edinburgh. Then, with regard to our figure composition, the whole of the compositions were sent across to the Continent, and were judged by a jury of Belgian artists; and the returns came back. We think of troubling Paris some day, but we want to get the best expert skill we possibly can, and we do not care whether the judges are teachers or not. But the man must be a sound artist. We think we get a more catholic outlook upon the work in that way.

is the Belgian professor a professor of painting?—Yes. Who is his master?—Portaels; and M. Artot, a man just right over, is a pupil of Portaels as well. They were both there when Van der Stappen was director. Van der Stappen was a sculptor, and they were both under his direction. Is a student entirely under the control of your professor?—Absolutely under his control.

So that if you have got a professor of painting who has got particular strong point, it would be reproduced in the student?—I will not say that.

It would tend to be so?—There may be a fear of that, of course; I quite see that. You mean a mannerism?

Yes, but a Belgian is not likely to be a good colourist. What effect do you find upon your school?—We cannot comment.

One thing I must say. A very interesting thing happened last week, for example. We had a show, and we at the Fine Art Institute of Glasgow, and we took the whole of the rooms, and devoted three rooms to the work of the exhibition done by the club, and completed the cycle by putting the nine months' work of the school, so that we had a complete year's work. We had a few examples of the professor's work in one part of the room, and I had some of my own, so you have the work of the man and of his students practically in the same room. Some of us made practical investigations of this particular point of the mannerisms, but we did not find them; we saw faithful copies of the model. I see the error, of course.

You have not any special provision to guard against that?—Yes, the judges who come in to judge the bursary work under this man give their opinion.

At you do not have visits from Glasgow artists during the year anything corresponding to the visitors to the Royal Academy in London?—No, we do not. The field is limited of men that you can call in. It may interest the committee to know this: there is a list of examiners for prizes and studentships, and we publish the list of men who are selected as judges.

There are two systems, practically, of teaching painting at the Royal Academy in Great Britain. One is the control of one individual by the student from start to finish, and the other is the succession of teachers?—We do not believe in the latter.

Have you by any chance any scheme for combining the two of those two systems?—We have the visitors who come to check the bursary work, whose opinion is transmitted to the governors, and, in turn, submitted by me to the professor. When a thing as mannerism comes into existence, then that is taken of by the judges. Last year, for example, there was a question about the shading in one case, and that was transferred to the professor.

What is the policy of your school to appoint the same professor?—Yes; this is the third year the man has been there.

Is any policy been decided upon—would you naturally appoint a professor?—No.

Do you thought of change occasionally?—We should change occasionally, yes. That, I think, would be the policy of the governors. The art atmosphere in Glasgow is very strong. It can direct an artistic opinion in ten minutes on a thing, and this atmosphere creeps into the school and does a lot of work. You mentioned about the Belgian and colouring. I am with you there, but I believe one strong point of the Glasgow men is that very point of good colour.

Is there a risk of its becoming less so?—No, I do not think so. We do not anticipate any such danger at the present time.

How long do the pupils generally stay in that school of painting?—We have them in that school nine or ten years, or in some cases.

Can you tell us exactly what share you have in the school?—I first take the general superintendence of the whole school. I do not interfere with the architects, as I am not an architect, nor with sculpture because I am a sculptor, but the professor of sculpture, and I take charge about his work, the models and things of that sort and I am in architecture. But in drawing and painting the professor and I are in almost daily communication as to work. This is there for six months. The school has a session of six months, and the work of drawing and painting falls into two hands for the remaining three months of the year. And I give a check, because our two styles are absolutely opposed. For those students entirely in my hands for those three months, and for the six months he is there I usually find that the thing is to leave him alone—we do find a great drawback of two men going to the same student, and I have found that wherever I can, and if I have anything to say to the professor, he comes into my room and we talk it over.

Are you there in charge of the life classes? Do you go in the evening?—Yes, I go there in the evening, but he is there in the evening; he is there day and evening.

What salary are the professors paid?—This professor is paid at a salary of 440*l.* for six months; at the end of that

six months he goes away and comes back. The governors strained themselves to pay the money. They wanted to get the best man they could. The antique man, who has come for the first time this year, has a salary of 200*l.*, and he comes for eight months; but the governors believe in giving the professors a fallow time to go and to do their own work and to gain their knowledge. A man at the end of six months is played out.

Mr. Fleming.—The man said he would come for 250*l.*; I think if we had known it would be over we would have hesitated. But having got him here, we found that 250*l.* was not enough, and we had to give him a rise. We found he was really a valuable man. But it is straining our finance to give it.

Mr. Newbery. The man runs, roughly, a life class of nearly 100.

What is his name?—Delville. He took the silver medal in the Belgian section of the Paris Exhibition last year.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last, Mr H. T. Hare, president, in the chair.

The following were elected as members:—Messrs. C. J. Stewart, B. H. Collcutt and P. G. Crawley.

Mr. F. R. TAYLOR read a paper entitled—

Photography for Architects.

It must be stated at the outset that as the question of photography and sketching is to be considered at a joint-meeting of the Architectural Association Discussion Section and the Architectural Association Camera and Cycling Club, no discussion on that is intended to-night. The work of the Club is in itself sufficient evidence to show that photography has a useful sphere of action in architectural work. There are, however, many in our midst who consider that photography is opposed to the best traditions of the study and practice of architecture. It is therefore the purpose of this paper to put before you facts which will prove that photography for architects possesses a value both in the study and practice of architecture which cannot be overlooked.

The subject will be dealt with under two main heads, viz:—The utility of photography in (1) the study of architecture; (2) the practice of architecture, and the apparatus and appliances for architectural photography will then be briefly considered.

The Study of Architecture.

The usefulness of photography in the study of architecture will be considered with reference to its value in educational work, and also to its value as a record of old work. Photography in its application to the study of architecture is simply a means of delineation, and it is the finished photographic print or lantern slide which is the valuable aid to study.

Photography should not be considered as antagonistic to sketching. It has a utility in the education of the architect by producing an accurate delineation of old buildings unattainable by a sketch. It must not be forgotten that, however valuable a sketch or measured drawing may be to the individual student who prepared it, there is the personal error to bear in mind when this method of delineation is applied for general study.

Photographs in conjunction with measured drawings undoubtedly form the best means for architectural study and research. It may be mentioned that in the Architectural Association Sketch Book there are examples of measured drawings, together with a photograph of the work. This method of illustration might be employed with advantage to a much larger extent not only in the Sketch Book, but in all architectural publications. Whenever any old building of interest is to be pulled down to make way for modern improvements or for other reasons, a set of measured drawings with a series of photographs form the best record of the old work. In record work research should be made as to how the building has fulfilled its purpose and how its environment affected its design. To obtain this knowledge the employment of photography is a valuable assistance.

The method adopted for the training of architects by a system of instruction in classes has its value considerably enhanced by using photography as one of the means of illustration. The use of the lantern slide in lecture work is a great step in advance of the ordinary lecture diagram. It is essential, in order to make the instruction imparted by lecture work of the greatest value, that the illustrations employed should receive concentrated attention whilst the various points are being explained. Diagrams specially prepared for lecture work are in the majority of cases of but little avail, and it is impossible for the lecturer to satisfactorily explain from them, even to an average-sized class or meeting, the various points dealt with, simply because they cannot be properly seen from every part of the room, and besides in most instances are

badly placed for the lecturer's use. Frequently the walls of the room are smothered with measured drawings, plates from the building papers and similar illustrations, and an attempt is made to explain some points when only one or two present can see the illustration referred to. One does not object to illustrations of this kind on the walls if they are simply intended for those present at the meeting to see for themselves before or after the lecture, but to use them as lecture diagrams is really the height of absurdity. But all these difficulties are obviated by employing photographic means. Lantern slides of the actual work, of measured drawings, of illustrations from books and other publications—in fact, of illustrations from every available source can be thrown upon the screen, can easily be seen by everyone, and enables the lecturer's explanation to be understood by all.

Lantern slides for architectural lectures should be made with a view to suitability of purpose. Photographs of buildings, both externally and internally, would be useful to illustrate the grouping and general effect, and then should follow photographs of towers and spires, of piers and arches, of caps and bases, of doors and windows, of vaulting, &c., to illustrate the treatment of the parts; and, lastly, of mouldings and ornament. If a systematic sequence is followed, the slides would be of immense value in promoting the study of architecture.

In illustrating constructive subjects, the same principles should be adhered to—explanatory lantern slides to illustrate the manufacture and uses of the various materials, and then slides showing the different methods of construction. Measured drawings, sketches, book illustrations, and, in fact, every process of delineation can be brought within the scope of the optical lantern. The possibilities of the usefulness of lantern slides in educational work are practically unlimited. The slides themselves should on no account represent more than is required. Simplicity should be our guide in these matters. All diagrams, book illustrations, &c., should be represented on the screen as large as possible. The attempt to crowd many illustrations in one slide should be condemned. A lantern slide for lecture purposes should not consist of a confused jumble of details with meaningless letters or figures. It is bad enough in a text-book, but infinitely worse in a lantern slide. The object of all study is to gain knowledge, and not to cause confusion.

The use of telephotography in the study of architecture is one which should receive our careful consideration. In many instances parts of a building well worth studying are inaccessible for measuring, and in those cases an ordinary photograph gives a general idea of the composition and a telephotograph the details.

The Practice of Architecture.

The utility of photography in the practice of architecture might receive far more attention than it does. In many instances the only use to which photography is put in architectural practice is in the reproduction of drawings by the ferrogallic process. In this process the reproduced drawings are either on a thin paper, or on a paper similar to Whatman's, and a black or brown line is obtained on a white ground. The advantage of the process is that the reproduced copies can be coloured similarly to an original drawing. A great saving of time is effected, because from one complete set of tracings any number of reproductions can be obtained. If the reproductions are to be kept for a considerable time, as in the case of copies for the authorities, care must be taken in the selection of the paper owing to its tendency to fall to pieces after a time. For this reason the authorities will only accept photographic reproductions on linen. The makers of the paper might consider the best means of surmounting this difficulty. It may be mentioned here that some of the papers used shrink slightly in the process of obtaining the reproduction—this emphasises the necessity of fully dimensioning all drawings. The ferroprussiate process with a white line on a blue ground is sometimes used, but as colouring is then out of the question, it is not so suitable for general architectural work. Its use is limited to drawings where colouring is not essential, as, for instance, in details of steel construction.

Besides this special application, the use of photography in architectural practice is generally limited to what may be termed the legal phase of our profession, although a wider application would be a distinct gain. No one will deny that photographs of buildings about to be pulled down are valuable records, and in ancient light, easement, party structure and such-like cases would always be useful on one side or the other. If the building happens to be one of considerable architectural interest, then the value of the record cannot be overrated.

In modern work photography could be used to increase our knowledge and experience in a way little thought of, and the wonder is that it has not been more generally applied for the purpose. Photographs of a building at its various stages of erection, with the dates, and in some instances the time noted thereon, would be a valuable record of the class of work, and, in addition, would be very serviceable in the valuation of certificates. Photographs of special works of construction in

buildings of a distinctive type would be most useful for future reference when dealing with similar works. Photographs of the finished building should in all cases be obtained, and a comparison made by showing the photograph side by side with the perspective drawing. With reference to comparison, a collection of photographs of similar detail and ornament of old and modern work would prove of use both in the study and practice of architecture.

The practical use of photography in delineating the progress of a structure from time to time is employed by engineers for the best results, and there is no reason why we should not do likewise. In a few isolated cases it is done, but it rests with the profession at large to avail itself of the opportunities within its grasp. This legitimate use of photography in our everyday practice would assist in grappling with many difficulties with an ease at present unknown. The utility of photography in the study and practice of architecture having been called in question, it now remains to deal with the technical part of the subject.

It is evident that in order to obtain the best results in the application of photography to the study of architecture that the taking of the photographs should be performed by one who is otherwise the photographs or lantern slides will not express the subject in the best way. It is impossible for a professional photographer to know exactly what is wanted unless he happens to have made a thorough study of architecture, and we know that in the majority of cases he has simply a rough smattering of our requirements. If his specialty is architectural photography, his knowledge of architecture may in a general way be said to be peculiar and not by any means extensive. Consequently, if the work is to be done well, the photographs and lantern slides should not be left in his hands for selection of subject. There may be exceptions, but such exceptions prove the rule. It might, of course, be urged that the professional photographer could do the work under our guidance, but it will be found that this method is expensive and is in reality only applicable in those instances where the selection of subject is not required to any great extent.

It is desired to make a thorough record of an old building. Here the best way to proceed is to make measured drawings of the building, and a complete series of photographs. Which is the most capable of taking the photographs? Unquestionably the architect who undertakes the recording of the old work. Again, detail and ornament, who knows which is best to select for architectural purposes? Certainly not the professional photographer, for he would be in a state of bewilderment, whereas the architect would not have the slightest hesitation about the matter. In the many requirements of architectural practice where the question of architectural selection does not arise, the photographic work can with advantage be delegated to a professional photographer.

The architect who decides to use photography as an aid in his study and practice should understand certain technical details of photography. The questions which present themselves are:—What is the best camera for architectural work? What lenses should be used? What photographic plates and papers should be employed?

Dealing with the questions in order:—Firstly, What is the best camera for architectural work? Before anything can be done, the size of the camera must be decided upon. The ordinary sizes are: $4\frac{1}{4}$ inches by $3\frac{1}{4}$ inches (quarter-plate), $6\frac{1}{2}$ inches by $4\frac{3}{4}$ inches (half-plate), $8\frac{1}{2}$ inches by $6\frac{1}{2}$ inches (whole-plate), 10 inches by 8 inches and 12 inches by 10 inches. It is generally agreed that the larger sizes are the best for architectural work. But the larger the size the more expensive it will be. Besides this, the weight of the camera is a serious matter, especially as in the majority of cases the work will be done at a distance from home. For these reasons it may be conceded that the half-plate is the most serviceable. When lantern-slide work is contemplated, the quarter-plate is generally selected, as that is the most suitable size for the purpose. If a good lens is employed, the quarter-plate size might be used for all work, as the photographs can be enlarged with satisfactory results.

The requirements for a good camera are:—1. Lightness with rigidity. 2. Rising and falling adjustment to the front of the camera. 3. A reversing and swing back. 4. A long extension. 5. Parallel bellows, or only slightly conical. 6. Focussing screen and focussing adjustment. 7. Double dark slides. The lightness of a camera is necessary for convenience in carrying about, and rigidity is required to prevent movement whilst the photograph is being taken.

The rising and falling adjustment allows the position of the photograph on the plate to be varied. In architectural work a considerable rise is frequently required. The reversing back is essential in order that the photograph can be taken in a horizontal or vertical position. In many cases the camera must be tilted to include the whole of the building; hence a swing back must be provided, for the plate must be kept vertical, otherwise the vertical lines of the building would converge in the photograph. A long extension provides

use of a long focus and telephoto lenses. Parallel bellows prevent the cutting off of the edges in the photograph when a short-focus lens is used. The focussing screen is the sheet of glass upon which the photograph is depicted. It is adjusted to obtain a clear, sharp image by means of a rack and pinion movement. The double dark slides hold the plates for exposure, and at least three or, better, six double dark slides should form part of the outfit. The questions to decide in the selection of a tripod stand is one of rigidity, compactness and stability.

Secondly, what lenses should be used? It is best to provide in an outfit for architectural work a set of lenses of different foci and of a good make. The lenses should be of a rectilinear type. For average work the rapid rectilinear of about 7-inch focus is most serviceable on a half plate. Long-focus lenses are useful in detail work, and wide-angle lenses are essential in confined positions. The telephoto lens would be a most valuable acquisition in the equipment. Some of the best examples of detail work are at too great a distance from the position available to give a photograph of a satisfactory size, but a telephoto lens enables you to obtain it to a larger scale with the same extension of camera. As this lens is not of a fixed focal length, the scale of the photograph can be altered at will.

Thirdly, what photographic plates and papers should be employed? Ordinary plates of a good make are the best for architectural work, especially for interiors, although in dark interiors, where very long exposures are requisite, rapid plates may be used with advantage. Isochromatic plates are useful where the lighting of the interior is yellow. In interiors where light from windows, &c., would be likely to cause halation it is necessary to use backed plates.

The development of the negatives requires care on the part of the operator. The developer which the majority of workers prefer for negatives is one of the pyro formulae, either pyro-anthra or pyro-soda, and there is no doubt that a very wide latitude is given by the use of pyro. Hydrokinone is a cleaner developer, and for that reason is the one generally selected for lantern slides; it has not the wide latitude of pyro, but in lantern-slide work this is not so important. The method of procedure cannot be discussed now. It may be mentioned, however, that the architect-photographer should do his own development, and not follow the advice expressed in the well-known advertisement phrase of "You press the button, we do the rest."

The chief printing processes can be classified as follows:—

1. Printing-out processes.
2. Processes requiring development.

Printing-out processes include all the processes in which printing-out is resorted to. The albumen silver paper is an example, and at one time was the one generally employed. The gelatino-chloride of silver printing-out paper commonly called P.O.P. has, to a large extent, superseded it. The P.O.P. of various makes, with suitable toning and fixing, produces very effective results. The processes requiring development are best exemplified by platinotype, carbon and bromide. If permanent photographs are required, then platinotype or carbon processes should be decided upon. For enlargements bromide papers are most satisfactory.

The architect-photographer being fully equipped now sets forth to take photographs. He makes a selection of some old building, and if he be an earnest worker he does not, as is often thought, make a headlong rush at it. Whilst long exposures are being given, he devotes his time to finding out all he can about the building, and maybe he measures details and obtains full sizes of the mouldings.

It seems to be a stock argument for the opposers of photography for architects to refer to the inverted image on the focussing screen as if that were the important part in studying detail work. That is only a means of obtaining a good photograph, and as to the inverted image, one gets used to it in precisely the same way as our minds have been able in infancy to correct the impression of the inverted image which is produced on the retina of the eye.

In conclusion, it is hoped that the various points raised will be fully discussed in an impartial spirit. The great question before you is the utility of photography in our study and practice. The question of photography and sketching is not to be considered, for if you are fired to enthusiasm on this matter there will be ample scope for your eloquence at the meeting on the 6th of next month, previously referred to. The value of combining photography with measured work should receive a large share of your attention, and encouragement is much needed for architectural research and in giving it every method of delineation should be recognised, together with a clear description of the work and its history.

Lantern slides made from photographs taken by members of the Association Camera Club were shown on a screen during the reading of the paper, and comparison was made with other slides prepared from sketches and measured drawings.

Mr. ARNOLD MITCHELL, who proposed a vote of thanks to

Mr. Taylor, said in listening to the paper he was struck with the remark, "The object of all study is to gain knowledge and not to cause confusion," and he supposed the discussion which took place after the reading of the paper had a similar end in view, so that if speakers were critical their criticism must be taken in the vein in which it was meant. There were two points he would like to deal with. In the opening of the paper they were told that as the question of photography and sketching was to be considered later in the session by the Discussion Section, it was not intended to hold discussion that evening. Later in the paper, the author had discussed photography and sketching, and had even gone to the extent of making comparisons between sketches and photographs. Then in the conclusion they were asked to discuss the points raised in an impartial spirit. The paper seemed therefore to contradict itself. He was a hopeless opponent of the author's views, for it seemed to him that sketching was absolutely essential to the student of architecture; photography was an anathema to such a student. To the older man the camera would have use. He advised those who took up photography to become proficient—to be photographers as well as architects.

Mr. G. SCAMELL seconded the vote, supported by Messrs. H. Stannus, J. D. Crace and E. W. M. Wonnacott.

The PRESIDENT, in putting the vote of thanks to the meeting, said Mr. Mitchell had been rather severe on the author of the paper, but they must remember Mr. Mitchell was par excellence a sketcher, and he might have taken an extreme view. Photography could be employed as a medium in their work, and in that way might assist the young architect. Perhaps it would be best for the very young man not to touch photography, at all events not until he was out of his pupilage. The value of photography in restoration work was unquestionable; in no other way could a more reliable record of the state of the building be obtained, and when dealing with brickwork a good photograph could save hours that would otherwise have been spent in measuring.

PRESERVATION OF INDIAN REMAINS.

A BILL has been introduced into the Viceroy's Legislative Council by Sir Denzil Ibbetson for the purpose of giving Government powers for the preservation of privately owned ancient monuments. The first clause gives Government the power to declare any particular object a "protected monument." The owner will then have the option of making it over to the guardianship of a Government official, on condition that it is managed as a public trust and maintained at the cost of the State, and that the public shall have free access to it, or of making a mutually satisfactory arrangement with Government. When neither of these courses is possible, if an endowment exists for the purpose of the maintenance of the monument the collector is to be empowered to invoke the aid of the Civil Court to enforce its application to that purpose; or, as a last resort, Government may acquire the place or structure under the Land Acquisition Act, subject, however, to the important exception that no place of which any part is periodically used for religious observances can be so acquired. The Bill also confers on the State the right of pre-emption whenever a protected monument is being sold otherwise than within the family of the owner, or within any religious association to which he may belong. A penalty is provided for damaging or defacing a protected monument. The Bill also deals with antiquities of a movable nature, and empowers the Governor-General in Council, whenever he has reason to believe that antiquities are being sold or removed to the detriment of India or of any neighbouring country, to prohibit or restrict the importation into or exportation out of any part of British India of any specified class of antiquities. It is not proposed to follow the example of Italy and to attempt to prevent the removal from India of all antique or artistic objects, this being regarded as impossible and as involving inquisitorial measures which the circumstances of the case would fail to justify. The definition of "antiquities" is, therefore, confined to objects which, by reason of their historical or archaeological interest, the Government deems it proper to protect. The third part of the Bill is designed to prevent the removal of archaeological remains from the vicinity of the site or building to which they belong, and upon their connection with which their value to the student depends. The Government lays down the condition of being compelled to purchase such objects at the option of the owner, and of compensating him for any loss that may result from such prohibition. Finally, the measure empowers Government to restrict or regulate excavations within any local area, subject to the payment of compensation for resulting loss.

The Grand Duke of Weimar has decided that Goethe's house and garden are to be preserved in their present condition.

TESSERÆ.

Ralph Aggas and his View of London.

IT is not known when Ralph Aggas was born, or whether he was only a surveyor or combined that occupation with topographical representation and engraving. His views of English cities are valuable. The earliest, it is believed, was one of Cambridge which appeared in 1578. According to Ames, the plan with views of Oxford, measuring 3 by 4 feet, was produced about the same time, but it is also said to date from 1588. In 1589 the map of Dunwich appeared, and about the same time the great plan and view of London. Vertue, in describing it, says:—"This was reported to have been done in Henry VIII. or Edward VI.'s time, but from several circumstances it appears to be done early in the beginning of Queen Elizabeth's reign about 1560, being cut in several blocks of wood. The prints thereof being now of the greatest scarcity, no copies perhaps preserved, being put up against walls in houses, therefore in length of time all decayed or lost. 'Civitas Londinum.'—Probably this was published by Ralph Aggas, as he himself mentions in that plan of Oxford, done after this was begun. But it must be observed that this very impression is a second publication with the date 1618, and that there are several alterations from the first in this, and particularly instead of the arms as Queen Elizabeth bore them, those of King James I. (England, France and Scotland) are put in the place of them. And in the first have been explanations of the remarkable places in the City and suburbs, as may be observed in many places by letters of reference. The length of this printed plan, 6 feet 3 inches by 2 feet 4 inches, contained in six sheets and two half-sheets, I believe the full extent in length; but I apprehend the notes of explanation were at bottom printed on slips of paper to be added." Vertue specifies buildings or absence of buildings which affix this plan to the era in which he concludes it printed originally, as the water-gate at the Palace of Westminster, called the Queen's Bridge; Northumberland House wanting, which was not erected in 1560, but was before 1618; Paget Place, so-called in 1563, &c. Vertue had taken much pains to ascertain the ancient extent of London, and the site of its several large edifices at various periods. Aggas was unable to obtain permission to publish his plan until after the accession of James I. Whether he engraved it or prepared the material for Augustus Rytter to work from cannot be determined. The plan was afterwards engraved on copper and more recently was lithographed. Aggas is supposed to have died about 1617.

Strengthening Vaults.

The Romans had strengthened their vaults with semi-circular arched ribs, *i.e.* portions thicker than the rest of the vault, and appearing inwardly as flat bands projecting slightly from the inner surface, and harmonising well with the similar forms of pilasters in the walls; but they did not place these ribs where they were most needed, *viz.* along the elliptic groins, which bear all the rest of the ceiling. The early Freemasons took care to strengthen these important lines, and (on the same principle that modern joists are made deep and narrow) they gradually converted the broad shallow Roman band into a deep narrow rib, by first simply diminishing its width and increasing its projection or depth, then chamfering the edges till its section became a semi-octagon (as may be seen in the newer Romanesque portions of Winchester transept, but not in the older portions, which are examples of the Roman manner unaltered). They also beaded the two edges of the rib, and then enlarged these beads till the whole became a double roll with a mere fillet between them, whence the transition is easy to the deeper and more variously moulded vault-ribs of the early and complete Gothic.

James Barry as an Etcher.

Barry, whose impetuous ardour and fiery temper were well known, submitted to the drudgery of etching and engraving plates from his own paintings of the "Elysian Fields" and others presented by him to the Society of Arts in the Adelphi, which, from the size and weight of the plates and the way he used to work upon them, became a work of manual labour and strength. Instead of placing them on a board, the plates were held on his lap; and in the posture of a cobbler, with the copper slanted to receive the light, he would dig and strengthen the lines to the required depth and effect. In this way and in this attitude his friend and countryman John Dixon, the mezzotint engraver, found him employed, breathing like a pavior between every stroke he made. When the veteran Stothard—whose genius was as vivid and his pencil as ready, at the time when employed in etching the Wellington shield, with its centre and compartments, from his own design—was asked how he could undertake so long and laborious a task, he answered, in his usual quiet way, "It was the enterprise." And so it must be with all who would gain a name in the annals of art.

GENERAL.

The King has conferred knighthood on Mr. James Knowl, architect, who is also editor and proprietor of the *Nineteenth Century and After*. Among his architectural works are Aldworth, the Surrey residence of Lord Tennyson; Kensington House, Albert Mansions, in Victoria Street, Westminster; and several churches. The public garden in Leicester Square was laid out by him.

The Royal Society of British Artists will hold a special election of painters in water-colours on January 11 next. Candidates can obtain all necessary particulars from the secretary, Suffolk Street, Pall Mall.

The General Committee of the Irish International Exhibition, which it is proposed to hold in Dublin in 1906, considered on Tuesday a report from a sub-committee on a suggested site for the exhibition near Clyde Road, in the Pembroke township. The matter was postponed for further inquiry. Messrs. Ashlin & Ryan submitted a general scheme for exhibiting buildings in connection with the Clyde Road site, estimating the total cost of the buildings and arrangement of the ground at 150,000*l.*

The London County Council have authorised an expenditure of 64,000*l.* on the compulsory acquisition of the freehold and leasehold interests in property required, and the provision of a site for the accommodation of persons of the working class to be displaced in connection with the erection of an electrical generating station in Pimlico for the working of the tramway in the western portion of the county of London.

The Mayor and other official representatives of the borough of Colchester were presented yesterday, the 10th inst., being the three-hundredth anniversary of William Gilbert, with an historical picture, representing Dr. Gilbert showing his electrical experiments to Queen Elizabeth and her Court, to the Institution of Electrical Engineers. Colchester is the town in which Gilbert was born in 1544 and died in 1603.

The Wesleyan Methodists propose to expend 18,500*l.* on new mission premises at Plumstead. The scheme comprises a large central hall on similar lines to the recently-built halls at Bermondsey and Deptford, with sitting accommodation for 1,500 persons; also a smaller hall for Sunday school purposes, &c.

Mr. Temple Moore has reported that the tower of A Saints Church, Derby, is in need of restoration. The vicar says as it was the pride of the county it was not unnatural to expect the leading families of the county whose ancestors were associated with the church to interest themselves in the work.

The Blackburn Queen Victoria memorial committee have instructed Mr. B. Mackennal, the sculptor, to proceed once with his marble statue of the late Queen, to be erected on the boulevard near the railway station. The statue, which will show Her Majesty in a standing position, is to cost 2,500*l.*

The National Association Master House Painters and Decorators of England and Wales will hold their eleventh annual convention at Manchester next September. In order to provide funds for the equipment of the new school of decorative painting and the educational work of the Association an Exhibition of Decorative and Applied Arts, Processes and Manufactures will be held at the St. James's Hall, Oxford Street.

The Consultative Committee of the Board of Education held a conference last Friday on the desirability and feasibility of the introduction of a system of school-leaving certificates for England. Among the professional societies were the following:—Institution of Civil Engineers, Institution of Electrical Engineers, Institution of Mechanical Engineers, Pharmaceutical Society, and Royal Institute of British Architects.

The Brighton Corporation have resolved to purchase Mr. Stanhope Forbes's *Christmas Eve* for the Art Gallery. Six examples of sculpture were lately presented by Mrs. Freeman Gell.

The First Prize in the competition for the Stockport Town Hall has been awarded to Mr. A. Bramwell Thomas.

Diaries, &c., for 1904—Messrs. Hudson & Kearns, Ltd., have by their efforts gained a monopoly of the business of providing certain classes of stationery for the offices of architects, surveyors and builders. They have been so consistent in upholding the character for excellence during a long succession of years, it is unnecessary to recommend their manufactures. All that is required is to announce that the usual variety of specially arranged diaries can now be obtained, as well as the pads for writing. Both classes of aids to business are now considered to be indispensable in all well-regulated offices.



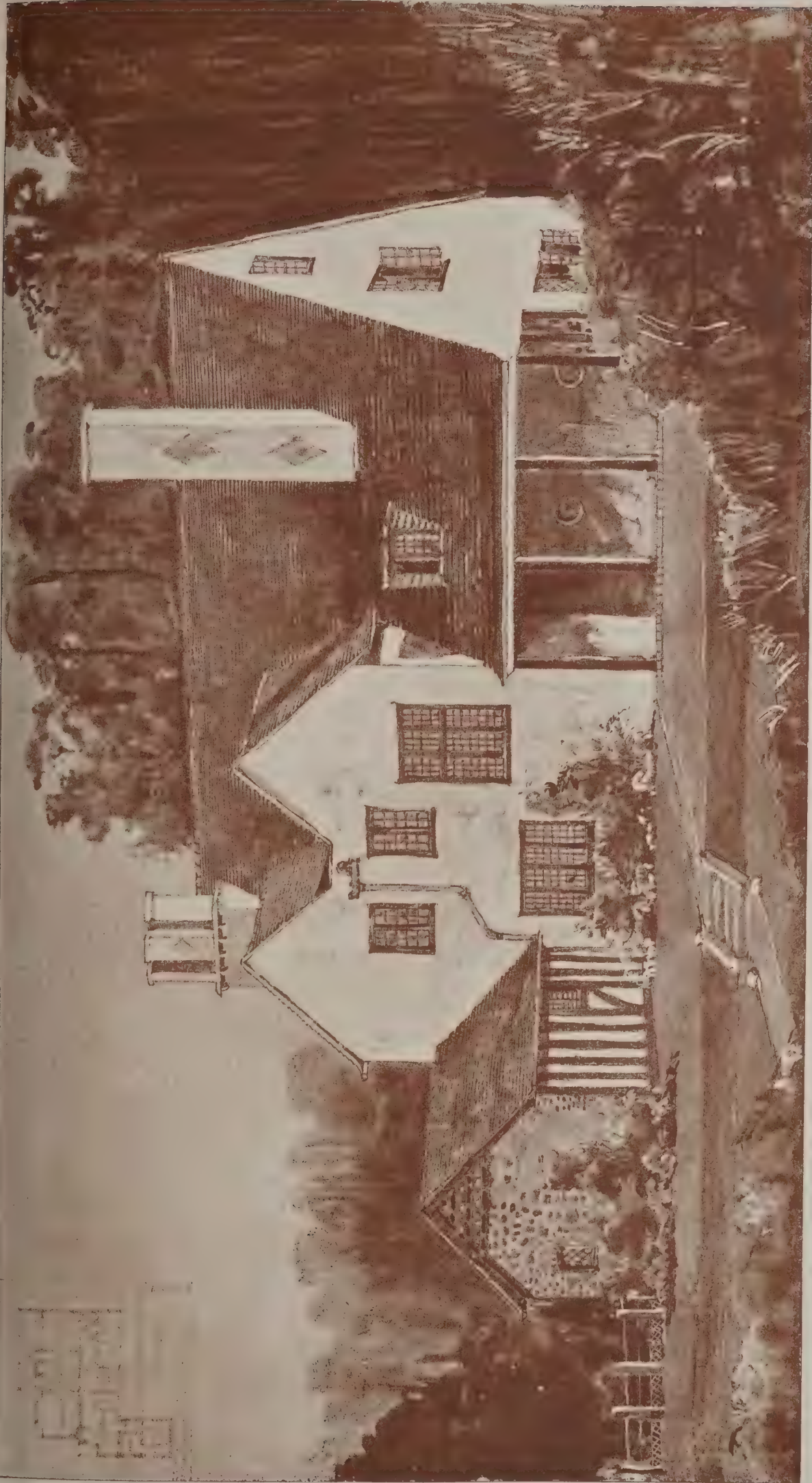




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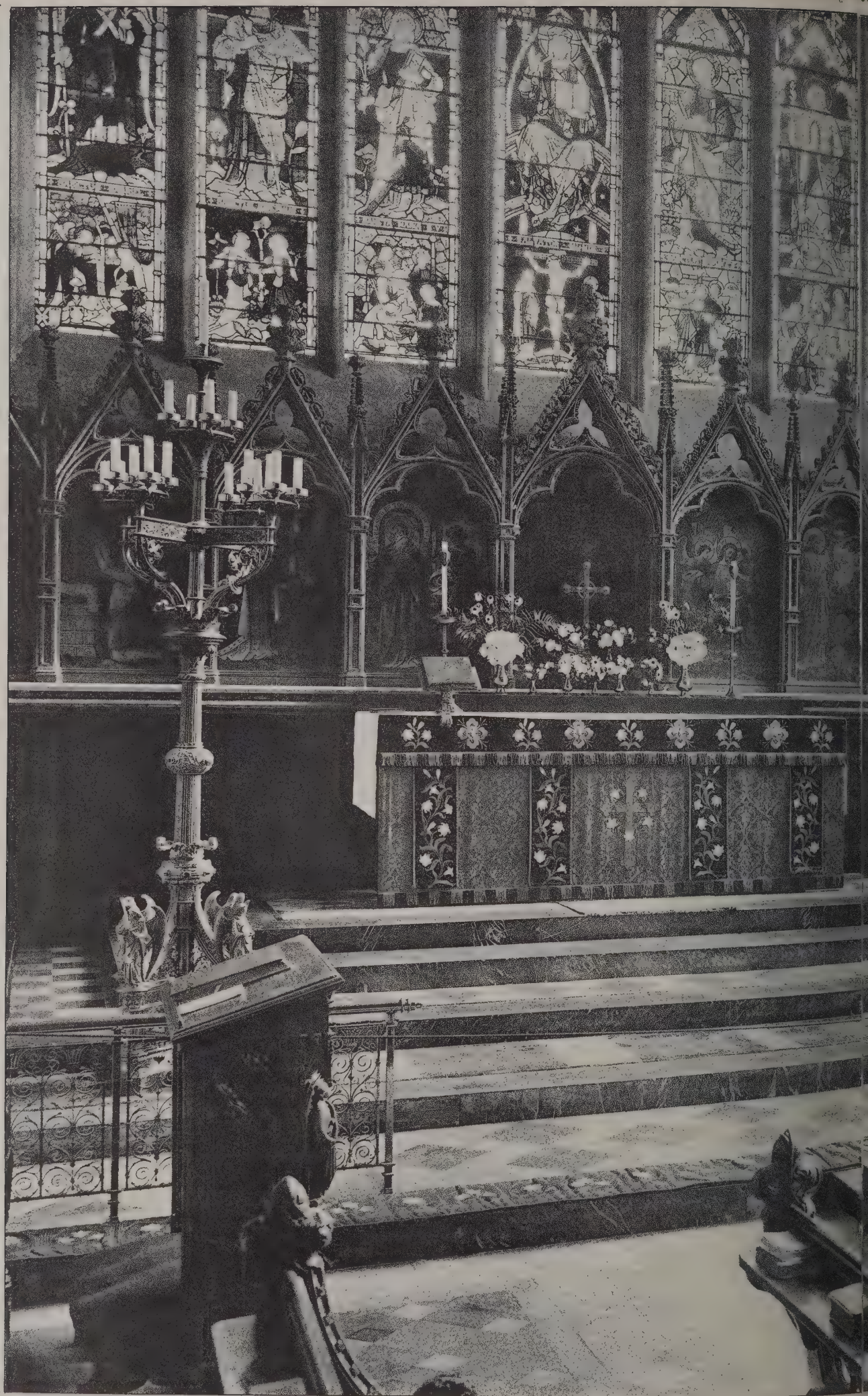
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EDWARD TURNER POWELL, Architect.



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THE
Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

BRADFORD.—Designs and estimates are invited for the cleaning and redecoration of Christ Church, Bradford. The Rev. R. B. McKee, vicar.

ERDINGTON.—Feb. 1.—The Urban District Council general purposes committee invite designs for new council house and free library buildings, to be erected at the junction of Mason and Orphanage Roads, Erdington. Premiums of 50*l.*, 30*l.* and 20*l.* will be awarded for the designs placed first, second and third respectively. Mr. Herbert H. Humphries, district engineer and surveyor, Public Hall, Erdington, Birmingham.

ILKLEY.—Feb. 1.—Competitive designs are invited for free library, public offices and assembly hall, intended to be erected in Station Road, Ilkley. Premiums of 100*l.*, 50*l.* and 20*l.* respectively are offered for the three best designs sent in by February 1. Mr. Frank Hall, clerk, Council Offices, Ilkley.

LONDON.—Dec. 16.—The Lambeth Borough Council are about to erect a public library, with residence for librarian, in the Herne Hill ward of the borough. Architects residing within the borough of Lambeth are invited to send in designs and plans for a public library, with residence for librarian, in the Herne Hill ward of the borough to Mr. H. J. Smith, town

clerk, Lambeth Town Hall, Kennington Green, by 12 noon on December 16. General information as to the extent and nature of the accommodation required in the proposed library and residence can be obtained on application to the town clerk.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l.* returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

ALNWICK.—Dec. 19.—For the erection of motor garage and cycle works in Bondgate. Mr. W. Robson Hindmarsh, architect, Alnwick.

BIRMINGHAM.—Dec. 14.—For the erection of the superstructure, internal finishings, &c., of the new university buildings at Bournbrook. Messrs. Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, London, S.W.

BRADWELL-ON-SEA.—Dec. 28.—For the erection of six workmen's cottages (under the Housing of the Working Classes Act) at Bradwell-on-Sea, Essex. Mr. Horace G. Keywood, surveyor, Maldon.

BRISTOL.—Dec. 16.—For alterations and repairs to the workhouse at Clutton. Mr. W. F. Bird, architect, Midsomer Norton, Somerset.

BURY.—Dec. 22.—For the erection of a hospital at the workhouse, Jericho, Bury, Lancs. Mr. Alfred Hopkinson, architect, 15 Agur Street, Bury.

CAIRO.—Feb. 1.—For the construction of three steel bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CANTERBURY.—Dec. 15.—For the structural works and works of renovation in the old Board school, St. John's Place, Northgate. Particulars on application to the Town Clerk, Canterbury.

COLCHESTER.—For the erection of electrical works at Hythe Causeway, Colchester. Mr. Ernest R. Beckwith, architect, 10 Trinity Street, Colchester.

DARTFORD.—Dec. 14.—For drainage works at the children's home, Manor Gate, Dartford Heath, and for laying about 830 feet of 9-inch pipe from the entrance gate of the Manor Gate aforesaid to the main sewer of the Dartford Urban District Council at Leyton Cross, Dartford Heath. Mr. Harston, engineer, 8 Hythe Street, Dartford.

DURHAM.—Dec. 15.—For the erection of sewage-disposal works, with caretaker's cottage, adjoining the present sewage farm, near Shildon. Mr. C. Heslop, surveyor, Council Offices, Shildon.

DURHAM. Dec. 18.—For the erection of seven houses at Sacriston, co. Durham. Mr. Geo. Thos. Wilson, architect, 22 Durham Road, Blackhill.

GATESHEAD.—Dec. 16.—For the erection of a grinding-shop at the locomotive works, Gateshead. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

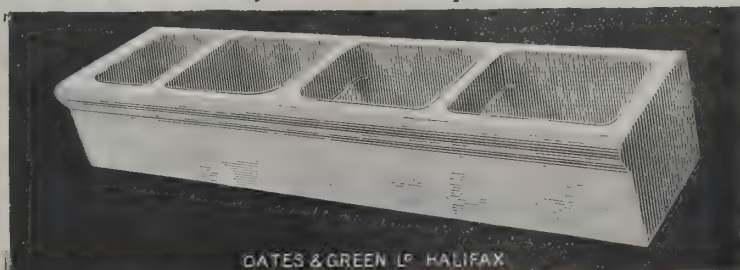
GILLINGHAM.—Dec. 22.—For the erection of a school at Napier Road, Gillingham, Kent, to accommodate 900 children. Mr. E. T. Atchison, secretary, 8 Waterloo Road, New Brompton, Gillingham.

HALIFAX.—Dec. 16.—For the erection of a pair of semi-detached villas in Moor Lane, Illingworth, Halifax. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

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HALIFAX.—Dec. 19.—For the erection of a villa residence on the Upper Greenroyd estate, Halifax. Mr. Arthur George Dalzell, architect, 15 Commercial Street, Halifax.

HAYWARD'S HEATH.—Dec. 18.—For plastering the walls of the female infirmary ward at the Brighton County Borough asylum, Hayward's Heath, Sussex. Mr. J. G. Gibbins, surveyor to the asylum, 3 Palace Palace, Brighton.

HORSHAM.—Dec. 30.—For the erection of stabling, sheds, mortuary, boundary wall, &c., on land adjoining Stanley Street, Horsham. Mr. S. Mitchell, 14 Market Square, Horsham, Sussex.

HOUNSLOW.—Jan. 4.—For the erection of public offices, public swimming-baths, &c., and public library. Messrs. Nowell Parr & A. E. Kates, architects, Brunswick House, Brentford, W.

HUDDERSFIELD.—For street and sewerage works of new streets at Honley. Messrs. Brook, Dransfield & Dyson, surveyors, &c., Estate Buildings, Huddersfield.

IRELAND.—Dec. 12.—For rebuilding shop premises at Waterloo Place, Londonderry. Mr. Daniel Conroy, architect, 21 Shipquay Street, Londonderry.

IRELAND.—Dec. 14.—For the erection of water-tower and pump-house, constructing filter-beds, &c., at the Ennis district lunatic asylum. Mr. John Enright, clerk of asylum.

IRELAND.—Dec. 14.—For the erection of a house at Carnmeen, near Newry, co. Down. Mr. Wm. James Watson, architect, Benvenue, Rostrevor.

IRELAND.—Dec. 14.—For the culverting of a portion of the river Blackstaffe, Great Victoria Street, Belfast. Sir Samuel Black, town clerk, Belfast.

IRELAND.—Dec. 16.—For rebuilding premises at Waterloo Place, Londonderry. Mr. T. Johnson, architect, 11 East Wall.

IRELAND.—Dec. 18.—For the erection of a coastguard station at Brandon Quay, co. Kerry. Plans and specification can be seen at the office of the Assistant Surveyor of Buildings, Cork.

IRELAND.—Dec. 21.—For the erection of Skibbereen new post office. Plans and specification can be seen at the Irish Lights Office, Dublin.

IRELAND.—Dec. 21.—For the erection of sixteen artisans' dwellings in the town of Mallow. Mr. Brian E. F. Sheehy, architect, 57 George Street, Limerick.

IRELAND.—Dec. 21.—For the erection of a church at Roseyards, co. Antrim. Mr. S. J. M'Fadden, architect, Queen Street, Coleraine.

IRELAND.—Dec. 31.—For the erection of two detached villas at Hillsborough, co. Down. Mr. Henry Hobart, architect, Dromore, co. Down.

KENDAL.—Dec. 15.—For providing and fixing a dado consisting of about 2,584 feet super white American figured oak, 855 feet lineal moulded cap and 855 feet lineal of skirting. Particulars on application to the Borough Engineer.

KENDAL.—Dec. 23.—For the erection of a mission hall, Sandes Avenue, Kendal. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

KINGSTON-UPON-THAMES.—Dec. 17.—For the erection of a museum and art gallery in Fairfield Road. Mr. Alfred Cox, architect, 4 Adam Street, Adelphi, W.C.

LANCASTER.—Dec. 18.—For the erection of dining-room, dormitory and sanitary block at the County Lunatic asylum, Lancaster. Particulars may be obtained on application to the Clerk of Works at the Asylum.

LANCASTER.—Dec. 28.—For the erection of an assembly hall and classrooms for the Society of Friends in Fenton Street, Lancaster. Mr. Spencer E. Barrow, architect, Liverpool Bank Chambers, Lancaster.

LIVERPOOL.—Dec. 16.—For the erection of a coach-house and alterations to stable at Belmont. Mr. Chas. H. Lancaster, architect, Brougham Terrace, West Derby Road, Liverpool.

LONDON.—Dec. 15.—For the construction of a river wall and the foundations of a chimney-shaft at the proposed power station, Old Barge House Wharf, Blackfriars, S.E. Drawings, specification and a copy of the conditions and form of contract may be seen on application to Mr. J. Wager, His Majesty's Office of Works, &c., Storey's Gate, S.W.

LONDON.—Dec. 18.—For the erection of the superstructure of the parcel office, Union Street, E.C. Drawings, specification and a copy of the conditions and forms of contract may be seen on application to Mr. J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.

NEW MALDEN.—Dec. 28.—For the erection of cottage homes at New Malden, Surrey. Mr. William H. Hope, architect, Seymour Road, Hampton Wick.

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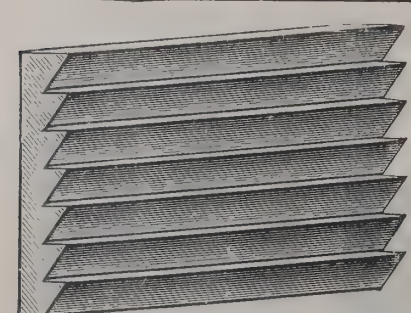
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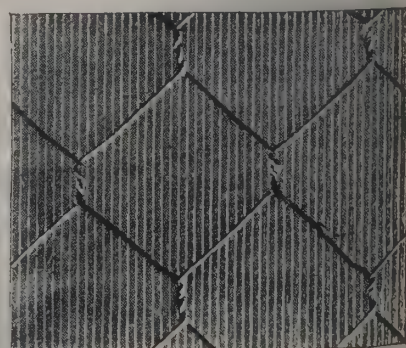
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PANNAL.—For the erection of a cottage residence, South End Park, Pannal, Yorks Messrs H. & E. Marten, architects, Cheapside Chambers, Bradford.

PORTSMOUTH.—Dec. 16.—For the erection of a wall with door on Corporation land in Woodland Street. Mr. Alexander Hellard, town clerk, Town Hall, Portsmouth.

PORTSMOUTH.—Dec. 18.—For the provision of new galleries at the Omega Street Council school (infants) Mr. Alfred H. Bone, surveyor, Cambridge Junction, Portsmouth.

REDRUTH.—Dec. 17.—For the erection of proposed business premises at Fore Street, Redruth. Mr. Sampson Hill, architect, Green Lane, Redruth

SCOTLAND.—Dec. 21.—For additions to nurses' home and alterations to present buildings at Gartloch asylum. Particulars may be obtained at the Master of Works' Office, Parish Council Chambers, 266 George Street, Glasgow.

SHEFFIELD.—Dec. 19.—For the erection of a new lock-up and court-house at Eckington, near Sheffield. Mr. J. Somes Story, county surveyor, County Offices, St. Mary's Gate, Derby.

SHIPLEY.—Dec. 15.—For the erection of an inclined retort house and other works. Mr. T. G. Wilcock, manager, Gasworks, Shipley, Yorks.

WALES.—For the re-erection after fire of warehouses, Collingdon Road, Cardiff. Mr. Henry Budgen, architect, 95 St. Mary Street, Cardiff.

WALES.—Dec. 14.—For the erection of stables, &c., at Aberaman. Mr. T. Roderick, architect, Aberaman.

WALES.—Dec. 15.—For the erection of a minister's house, schoolroom, &c., at Llansaintffraid. Mr. T. Morris, Cambrian Terrace, Llansaintffraid.

WALES.—Dec. 18.—For alterations to the county court, Pontypridd. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, &c, Storey's Gate, S.W.

WALES.—Dec. 20.—For repairing, painting and paper-hanging the Red Lion, Tredegar, and the Railway inn, Pontlottyn. Mr. T. Roderick, architect, Glebeland, Merthyr.

WALES.—Dec. 21.—For the erection of sixty-four houses at Tylorstown. Mr. D. C. Evans, Duke of York hotel, Tylorstown.

WALES.—Dec. 29.—For the erection of superstructure of the new Government offices at Cardiff. All particulars may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

TENDERS.

BARROW-IN-FURNESS.

For the electrical lighting of the chemical laboratory in the higher grade school.

W. R. THORNTON & SON, Ramsden Square (accepted) £15 12 0

For the erection of a store shed at Cambridge Street school. T. SLEE, Warwick Street (accepted) £23 0 0

BIGGLESWADE.

For the erection of a villa, Fairfield Road, Biggleswade. Mr. THOMAS COCKRILL, architect, Biggleswade.

Bartle & Sons £535 0 0

C. WRIGHT, Langford (accepted) 510 0 0

For alterations to Rose Bank, Biggleswade. Mr. THOMAS COCKRILL, architect, Biggleswade.

S. Redhouse, sen., Stotfold £140 0 0

W. French & Co., Sandy 130 0 0

C. Wright, Langford 122 0 0

BIRMINGHAM.

For the erection of waiting-room and car-shed to accommodate eight cars, &c., King's Norton. Mr. A. W. CROSS, surveyor, 23 Valentine Road, King's Heath.

Woodward & Miles £3,935 0 0

C. Bryant 3,900 0 0

G. & T. Robinson 3,700 0 0

T. Johnson 3,675 0 0

T. Loud & Sons 3,673 0 0

J. Smith & Sons 3,598 0 0

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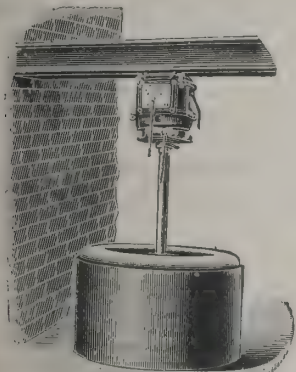
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T. Rowbotham 3,357 0 0

W. H. GIBBS, King's Heath (accepted) 3,185 0 0

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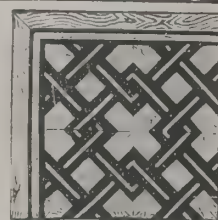
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BINGLEY.

For street works in Robertshaw Street, Yorks. Mr. H. BOTTOMLEY, surveyor.

J. Totty	£285	8	8
J. Brown & Son	275	0	0
W. Foster	260	0	0
W. Baker	257	3	11
R. Wood	256	16	6
MIDGLEY & BULLERFIELD, Bradford Road, Shipley (accepted)	254	1	2

BISHOP AUCKLAND.

For sewerage and sewage-disposal works at Leasingthorne. Mr. C. JOHNSTON, surveyor, Crofton House, Bishop Auckland.

G. H. Bell	£2,629	0	0
G. Hetherington	2,288	13	9
P. FRATER, Howden-le-Wear, Darlington (accepted)	2,196	10	0

For sewerage works at Witton-le-Wear, Toft Hill, Eldon Lane, South Church, Coundon and Byers Green. Mr. C. JOHNSTON, surveyor.

Witton-le-Wear.

P. Frater	£2,208	15	11
Walton Bros.	1,200	0	0
G. Hetherington	1,188	10	6
G. H. Bell	1,158	13	3

Eldon Lane and South Church.

G. Hetherington	45	18	0
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Coundon.

G. Hetherington	38	13	0
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Toft Hill.

G. Hetherington	50	2	0
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Byers Green.

G. Hetherington	38	2	6
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BURSLEM.

For the erection of the generating station on a vacant site at the gasworks, Longport.

T. Godwin	£2,235	0	0
Bennett Bros.	2,168	0	0
W. Cook	2,160	0	0
W. GRANT & SONS, Burslem (accepted)	2,100	0	0

CANTERBURY.

For the erection of oak stairs to the outside of Canterbury workhouse infirmary. Mr. G. SMITH, architect, Station Road (West), Canterbury.

W. J. Adcock	£100	0	0
G. Browning	90	0	0
H. W. Bateman	80	15	0
A. Joad	78	0	0
J. T. Dadds	76	8	0
G. Wiltshire	67	0	0
C. MOUNT, St. Dunstan's, Canterbury (accepted)	67	0	0

CHELTHENHAM.

For the erection of a detached house at Cleeve Hill, near Cheltenham. Mr. THOMAS MALVERN, architect and surveyor, 21 Winchcombe Street, Cheltenham.

A. WILSON (accepted)	£1,117	0	0
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For the erection of two houses in Hewlett Road. Mr. THOMAS MALVERN, architect and surveyor, 21 Winchcombe Street, Cheltenham.

E. SAUNDERS & SONS (accepted)	£825	0	0
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For the erection of four houses in Hale's Road. Mr. THOMAS MALVERN, architect and surveyor, 21 Winchcombe Street, Cheltenham.

H. BURROWS, Charlton Kings (accepted)	£1,120	0	0
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EVESHAM.

For the erection of a building for the reception of a sulphate of ammonia plant at the gasworks, Evesham.

F. W. GARDNER, Evesham, £91, after deduction for materials (accepted).

GATESHEAD.

For the erection of an isolation hospital at the workhouse.

ALNWICK FOUNDRY CO. (accepted)	£2,070	0	0
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GRAVESEND.

For the supplying and fixing of about 96 yards of unclimbable corrugated sheet-iron fencing at the electricity works, Gravesend.

Mitson & Harrison	£54	0	0
T. W. Palmer & Co.	51	4	0
A. W. Newby	50	17	6
J. Elwell	50	0	0
G. TURNER, Manor Road, Gravesend (accepted)	42	17	6

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HARTLEPOOL.

For plastering, colouring and painting at the Galley's Field school during the Christmas holidays. Mr. H. C. CRUMMACK, borough engineer.

Accepted tenders.

R. J. Marshall, Hartlepool, plastering . . . £29 16 0
Smyth Bros., Hartlepool, colouring, painting, &c. 34 18 0

HAYLE.

For the erection of a dwelling-house, Hayle Towns, Cornwall. Mr. HUMPHREY T. BROAD, architect.

R. Waters & Ford . . . £1,760 0 0
White & Thomas . . . 1,350 0 0
W. J. Roach . . . 740 0 0
W. Rutter . . . 690 0 0
W. J. Jary . . . 508 14 0
E. Dunn . . . 507 10 0

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For the construction of a storage reservoir at Marklands, catch-water reservoir at Wildersmoor, the laying of cast-iron pipes and sewerage works and street works in the district of Horwich, Lancs.

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ETHERIDGE & CLARKE, Manchester (accepted). . . 24,074 5 7
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For enclosing the proposed recreation ground for the Letterkenny district, and carrying out all works in connection therewith.

J. O. JOHNSTON, Castlebane, Letterkenny (accepted) . . . £265 0 0

For providing a water supply for the village of Saggart, co. Dublin.

R. HISLOP, 20 Clonliffe Road, Dublin (accepted) . £69 0 0

KEIGHLEY.

For the paving, &c., of Damens Road. Mr. W. H. HOPKINSON, borough engineer.

HIRD & HOULDSWORTH, Damens Road (accepted) . . . £460 14 5

LEYTON.

For the supply of 150 dual desks to the Sybourn Street temporary school. Mr. WILLIAM JACQUES, architect, 2 Fen Court, E.C.

Boulton & Paul . . . £259 0 0
J. & W. Stewart . . . 225 0 0
London School Furnishing Co. . . 176 5 6
Hammer & Co. . . 174 8 0
Educational Supply Co. . . 174 8 0
C. E. Hawes . . . 149 0 0
Bennett Furnishing Co. . . 148 3 6
Mallet & Wood . . . 146 5 0
North of England School Furnishing Co. . . 145 13 0
WAKE & DEAN (accepted) . . . 138 15 6

LIVERPOOL.

For alterations to Prince of Wales's Theatre, Liverpool. Mr. J. H. HAVELOCK-SUTTON, architect, Liverpool.

Holme & Green . . . £1,174 0 0
J. W. Weeks & Son . . . 1,125 0 0
Haugh & Pilling . . . 1,075 0 0
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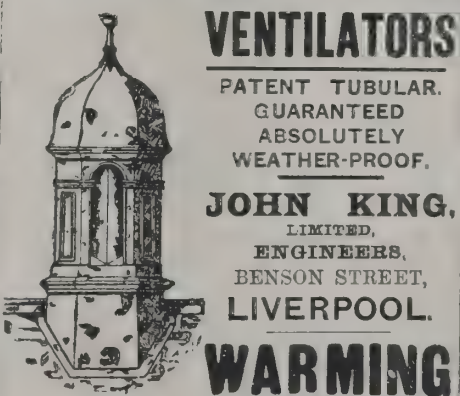
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For sewerage works at Blundellsands. Messrs. MELLARD, READE & SON, engineers, 2 South John Street, Liverpool. Quantities by engineers.	
Keating & Son	£2,885 11 1
P. Balmer	2,360 0 0
Marr & Son	2,350 0 0
Exors. of the late W. F. Chadwick	2,107 3 6

LONDON.

For alterations, &c., to 1 and 2 George Street, Hanover Square. Mr. HENRY TANNER, jun., architect, Carlton Chambers, 12 Regent Street, S.W. Quantities by Messrs. W. H. & P. B. STRUDWICK, 2 New Court, Carey Street, W.C.

Carmichael	£9,108 0 0
Holloway Bros.	8,490 0 0
Colls & Sons	8,465 0 0
Grover & Son	8,436 0 0
A. Webber	8,150 0 0
PATMAN & FOTHERINGHAM (accepted)	7,973 0 0

For sewerage works in Mill Hill Road, Brent Street, Bell Lane and New Brent Street, Hendon. Mr. S. SLATER GRIMLEY, engineer.

12-inch sewer, Mill Hill Road.

T. Adams	£425 19 6
H. Williams	344 7 6
R. Ballard, Ltd., Child's Hill*	282 8 0

Gullies, Brent Street.

H. Williams	92 10 0
T. Adams	70 10 0
R. Ballard, Ltd.*	59 10 0

Bell Lane footpath.

T. Adams	176 5 0
R. Ballard, Ltd.*	167 0 0
H. Williams	152 10 10

New Brent Street, tar paving.

T. Adams	99 5 0
H. Williams	97 0 0
W. E. Constable & Co.	85 10 0
R. Ballard, Ltd.*	83 5 0
Goddard & Co.	81 15 0

* Recommended for acceptance.

LONDON SCHOOL BOARD.

For building new boiler-room, flue, &c., Brewhouse school, Wapping.

Rockhill Bros.	£438 5 0
Belcher & Co., Ltd.	249 15 0
G. Barker	225 0 0
J. T. Robey	225 0 0
A. J. SHEFFIELD (accepted)	218 0 0

For additional heating in girls' department, Wood Street school, Woolwich.

Stevens & Sons	£175 0 0
Brightside Foundry and Engineering Co., Ltd.	165 0 0
W. G. Cannon & Sons	163 0 0
Paragon Heating Co.	149 15 0
Palowkar & Sons	148 0 0
J. Defries & Sons, Ltd.	135 17 6

For repairs, &c., to schoolkeeper's house, Hindle Street school, Shacklewell.

G. S. S. Williams & Son	£349 0 0
W. Martin	337 0 0
Woollaston Bros.	315 0 0
J. F. Holliday	310 0 0
J. Haydon & Sons	279 0 0
Barrett & Power	275 0 0
H. RUNHAM BROWN (accepted)	265 0 0

For work of reversing stepped flooring, &c., to be executed by local contractor, Whitfield Street school, Tottenham Court Road.

W. Hornett	£333 0 0
T. Cruwys	330 0 0
General Builders, Ltd.	159 0 0
Thompson & Beveridge	125 0 0
Marchant & Hirst	121 0 0
J. R. Sims	117 10 0
Barrett & Power	109 0 0

The interior cleaning at the following schools will be executed between December 19, 1903, and January 9, 1904:—

Glenister Road.

R. Woollaston & Co.	£216 10 0
E. Proctor & Son	211 0 0
W. J. Howie	207 0 0
H. Groves	164 0 0
W. Banks	159 17 6
P. S. HOWARD (accepted)	134 10 0

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LONDON SCHOOL BOARD—continued.

Fossdene Road.

R. Woollaston & Co.	£298	0	0
W. J. Howie	280	0	0
E. Proctor & Son	255	0	0
P. S. Howard	249	0	0
Sayer & Son	238	0	0
W. Jolly	230	0	0
H. GROVES (accepted)	168	0	0

Highway.

R. Woollaston & Co.	£288	0	0
H. Bouneau	280	0	0
A. W. Derby	280	0	0
J. Haydon & Sons	273	0	0
A. E. Symes	271	0	0
J. F. Holliday	265	14	0
G. BARKER (accepted)	255	0	0

Maryon Park.

W. Jolly	£235	0	0
E. Proctor & Son	197	0	0
P. S. Howard	179	0	0
H. Groves	165	0	0
W. Banks	153	17	6
W. J. HOWIE (accepted)	150	0	0

Redvers Street.

W. Silk & Son	£219	10	0
F. Bull	213	10	0
A. W. Derby	204	0	0
Gavin Bros.	199	12	0
H. Bouneau	195	0	0
J. Haydon & Sons	173	0	0
Barrett & Power	167	0	0
H. RUNHAM BROWN (accepted)	147	0	0

Beresford Street.

W. V. Goad	£335	0	0
Bargman, Son & Co.	279	0	0
W. Downs	250	0	0
W. Read	240	0	0
J. F. Ford	239	0	0
W. Hooper	230	0	0
W. SAYER & SON (accepted)	229	0	0

LONDON SCHOOL BOARD—continued.

Rochelle Street.

Barrett & Power	£119	0	0
W. Silk & Son	114	0	0
J. Haydon & Sons	107	0	0
H. Runham Brown	106	0	0
Belcher & Co., Ltd.	89	15	0
F. BULL (accepted)	89	0	0

SCOTLAND.

For the erection of a villa in Forteach Avenue, Elgin. Mr R. B. PRATT, architect, Town and County Bank Buildings, Elgin.

Accepted tenders.

J. McPherson, mason.
J. & A. Robb, carpenter.
Gordon & Son, plumber.
Thomson & Fraser, slater
J. Brodie, plasterer.
W. Fordyce, painter.
Younson Bros., ironwork.

SONNING.

For the erection of two houses at Sonning, Berks, for Mr. G St. Croix Rose. Mr. ARTHUR VERNON, architect 29 Cockspur Street, London, S.W., and High Wycombe Bucks.

Y. J. Lovell	£1,592	0	0
G. H. Gibson	1,525	0	0
G. Robinson	1,498	0	0
Silver & Son	1,494	0	0
H. Flint	1,485	0	0

WAKEFIELD.

For painting, whitewashing, &c., a portion of the interior of the workhouse.

FLEMING & BORN, Northgate (accepted)	£40	0	0
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WALES.

For sewerage works in the village of Bettws-y-Coed. HUGHES & ROWLANDS, Corona Villa, Colwyn Bay (accepted).

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5 FENCHURCH STREET, E.O.

WALES—continued.

For rebuilding shops and premises, Victoria Road, Ebbw Vale (known as the Anchor House). Mr. B. J. FRANCIS, architect, Abergavenny. Quantities by architect.

J. G. Thomas & Sons	£2,179	0	0
W. P. Lewis & Co.	2,097	0	0
J. Newcombe	2,060	0	0
Rees Edwards	2,000	0	0
S. J. Wride	1,985	10	0
Marsh & Sons	1,969	18	0
D. E. THOMAS, Ebbw Vale (accepted)	1,950	0	3

WARWICK.

For providing and fixing iron fencing and gates at the workhouse. Mr. F. P. TREPES, engineer, 1 Church Street, Warwick.

J. E. Hodgson	£305	5	3
H. H. Bissell	298	10	0
Dudley Art Metal Company	272	14	1
W. T. Burbidge	261	10	0
Boulton & Paul	248	14	0
J. H. Grant	245	0	0
Hill & Smith	214	2	6
Haywood & Sons	204	0	0
E. J. Raybould & Co.	201	0	0
W. Glover & Sons	203	10	0
W. Hiller & Sons	197	15	0
A. B. Wylie	197	12	9
J. ELWELL, Birmingham (accepted)	184	19	0

WEDNESBURY.

For street works in Brunswick Park Road. Mr. E. MARTIN SCOTT, borough surveyor.

J. Owens	£199	15	0
F. J. SMITH, Wednesbury (accepted)	198	0	0

WITHERNSEA.

For the embankment of Seaside Road, Withernsea, Hull. Mr. G. S. HIRD, surveyor, Bank Chambers, Scale Lane, Hull. J. HODGSON, Withernsea, 11d. per cube yard (accepted).

WEST HAM.

For street works in Pudding Mill Lane (part), Barber's Road, Torrens Road, Torrens Square, Perth Road (part). Mr. JOHN G. MORLEY, borough engineer.

Group 1.

J. Jackson	£3,691	3	4
D. J. Jackson	3,440	14	8
T. Adams	3,225	6	3
W. Griffiths, Ltd.	3,137	4	6
Parsons & Parsons	2,928	10	0
G. J. ANDERSON, North Street, Poplar (accepted)	2,915	4	11

Group 2.

D. J. Jackson	£1,791	10	0
W. Griffiths	1,758	6	6
T. Adams	1,749	3	2
J. Jackson	1,629	2	3
Parsons & Parsons	1,627	0	0
G. J. ANDERSON (accepted)	1,522	10	10

WHITEHAVEN.

For wiring and fitting-up for electric light the workhouse and new infirmary at Whitehaven. Mr. GEO. BOYD, architect, 33 Queen Street, Whitehaven.

RAMSAY BROS., Whitehaven (accepted) £432 10 0

For the erection of six houses at Wellington Row, Whitehaven. Mr. J. S. MOFFAT, architect, 53 Church Street, Whitehaven.

Accepted tenders.

Anderson, builder.

L. C. Harding, Fox Lane, joiner.

E. Burrows, Workington, slater.

R. Gamman, plasterer.

H. Burns & Sons, Duke Street, plumbing, glazing, electric light and bells.

R. W. Hinds, Tangier Street, grates, mantels, gates and palisading.

WIMBLEDON.

For making-up Cliveden Road and Rayleigh Road. Mr. C. H. COOPER, surveyor.

Accepted tenders.

E. Iles, jun., North Road, Cliveden Road, £619; Rayleigh Road, £500.

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Australian Patents.

SIR,—It may be of interest to your readers to know that the Federal Patents Act, 1903, has now been passed, by which inventions will be able to be protected throughout Australia by one patent only, instead of needing six separate patents as heretofore. The Act is not to come into force until a date to be named by proclamation, but there are provisions by which a patent application commenced in or an existing patent in any of the six States may, under certain conditions, be converted into a Federal application, so that in effect we may say that even now it appears that a single application may be so framed that the patent will eventually be obtained thereon for all Australia. The Act is not in all respects ideal, for there are numerous doubtful points which will tax the ingenuity of those who may be called upon to administer the law, as well as those who may have to advise upon it.—Yours truly,

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December 3, 1903.

BUILDING AND BUILDERS.

STEPS are being taken to obtain the funds necessary for the building of a new parish church at Forres, N.I.

THE Nelson Town Council propose to borrow 27,000*l.* for the purposes of sewage disposal and town improvements. At a recent Local Government Board inquiry it was stated that in ten years the borough had increased by 118 per cent.

A LOCAL GOVERNMENT BOARD inquiry was held by Mr. P. H. Bicknell, M.I.C.E., in the National school at Bramham, Yorks, relative to the application of the Wetherby Rural District Council to borrow 4,000*l.* for sewerage and sewage-disposal works.

THE foundation-stones have been laid of new schools connected with the oldest Welsh Calvinistic Methodist chapel in North Wales at Adwyr Clawdd, near Wrexham. The schools will provide accommodation for over 300 scholars, and are arranged and furnished on the most modern and up-to-date lines.

THE memorial-stone of the new building being erected at the corner of Ann Street and Dobbie's Loan in connection

with the centenary of Elgin Place Congregational church, Glasgow, for the accommodation of the mission hitherto carried on in Clyde Street, Port Dundas, was laid on Saturday afternoon.

At the meeting of the Evesham Board of Guardians on Monday a report was presented as to the cost of various new buildings and alterations now completed at the workhouse. It appeared that the total amount of Messrs. Espley & Co.'s contract was 9,465*l.* and the architect's charges were 675*l.* The vagrant wards on the cellular system have now been opened.

MR. BIGNOLD, M.P., arrived in Wick, N.B., on Friday, and on Saturday he met the members of the Harbour Trust and discussed with them the proposed harbour extension scheme, which is estimated to cost about 150,000*l.* Mr. Bignold said that it will be futile to approach the Government with the view of obtaining a grant, but he will heartily co-operate with the Trustees in securing a loan.

ONE of the oldest churches on the borders of the West Riding of York and North Notts—a district which once formed part of Sherwood Forest—is that dedicated to SS. Peter and Paul at Todwick, near Rotherham, a small village of 300 people. The church dates from Saxon times, and is now in a deplorable condition. It stands close to the historic site of Torquillstone Castle and to the young oak which marks the spot where flourished the trysting tree in Harthill Walk, so frequently mentioned in Scott's "Ivanhoe." A scheme is on foot for the restoration of the church.

THE Mid-Cheshire joint isolation hospital authority have adopted plans for submission to the County Council and the Local Government Board of a joint hospital for the Northwich, Winsford and Middlewich Urban and the Northwich Rural Districts. Estimates were presented showing that the cost, including the site, but exclusive of the furnishing and outfall works, would be 13,537*l.* The County Council will bear one-third of the cost, and will obtain borrowing powers from the Local Government Board. A smallpox hospital will have to be provided in addition on a separate site.

BUILDING operations will very shortly be commenced in connection with the erection of the second and more important section of the Birmingham University new buildings, and within a period of about nine months, according to the terms of the contract, one portion of the main structure is to be completed. Messrs. Smith & Pitts, of Balsall Heath, the

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builders who secured the contract for the erection of the power station, have practically completed this work, and the more extensive work of putting in the foundations, which was let to Mr. Thomas Rowbotham, contractor, Small Heath, will very shortly be finished. The mere word foundations conveys but an inadequate idea of the actual extent and character of the work already accomplished towards the structure of the new buildings. A better idea can be gathered from the fact that the cost of these foundations will be something like 70,000*l*. The work includes the construction of the basements, kitchens and subways, these rising to a height of 13 feet 6 inches, and the superstructures thereon rise to a further height of 18 feet 6 inches. In fact, at the present time a considerable portion of the building is nearly half completed. The work has been in hand about fifteen months, and for a long time some 500 operatives were employed daily. To accelerate the job the contractor has now upon the ground a large and up-to-date machine plant, without which the progress made could scarcely have been brought about. The tenders for the further superstructures, internal finishings and other work will be dealt with by the architects during the present month.

ELECTRIC NOTES.

THE Islington Borough Council have decided, after correspondence with Sir George Bartley, their representative on the Royal Commission on London's traffic, to forward recommendations with respect to two new "tube" extensions in North London in connection with those nearing completion. The first scheme is for an extension from Highbury Corner to the tramway terminus at the Archway, and thence across the borough from east to west, giving greater facilities between the West End, Islington and Stoke Newington. The second scheme is to extend the "tube" of the Great Northern Railway, which terminates at Finsbury Park, to the Alexandra Palace, and so give greater facility for reaching London's municipal palace.

A SPECIAL meeting of the Rhyl Urban District Council was held for the purpose of dealing with the question of laying a cable along Brighton Road to enable the residents of that part of the town to take in the electric light. The electric-light committee recommended that a cable be laid in Brighton Road, the cost being estimated at 310*l*., and that application be made

to the Local Government Board for sanction to borrow that amount. The clerk reported that the Local Government Board had replied that, under the exceptional circumstances of the case, they would offer no objection to the work being commenced at once. The recommendation of the committee was adopted, and it was decided to proceed with the work at once.

THE electrical post invention by which letters and parcels are to be carried at 250 miles an hour is shortly, says the *St. James's Gazette*, to be put to a practical test. A syndicate has been formed with a capital of 150,000*l*., divided into 60,000 6 per cent. cumulative preference shares of 1*l*. each and 90,000 ordinary shares of 1*l*. each. Two-thirds of the amount wanted will be raised in Italy and France and one-third only in England. The syndicate is formed to take over the patents from Count Taeggi Piscicelli, the inventor, and to develop the system. Amongst the objects aimed at are the following:—

(1) To demonstrate the invention on a practical scale; (2) to negotiate with the Governments and railway companies of various countries for user of the system. The directors are the Duc d'Uzès, the Duc de Morny, the Marquis des Cars, the Comte de Pradere, Sir Theodore Fry, Mr. Charles Edwards, Mr. Henry S. Saunders (a director of the Marconi Company), Count Piscicelli and Mr. William Digby, the two last joining the board after allotment. England, Italy, France and Spain are represented on the directorate.

AT a recent special meeting of Inverness Town Council the draft agreement with the Edmundson Electricity Corporation Company, Ltd., London, for the introduction of electricity into the town was considered. The company are to carry out the work, which will cost at the outset 18,000*l*. At certain periods it will be within the option of the Corporation to purchase it. Mr. Alexander Fraser, of the electric-lighting committee, moved the adoption of the agreement, ex-*Provost* Macbean seconding, remarking that no responsibility rested on the Corporation, who were under the scheme to receive 2,100*l*., which had already been expended by the Corporation in connection with the electric-lighting proposal. He was glad that they were getting rid of a question that had stood as a barrier in the way of many reforms that the Council might have carried out. *Provost* Ross approved the views expressed concerning the satisfactory settlement of a vexed question in the community. It was agreed to accept the conditions offered by the company, who have stipulated to carry out the works within one year of its commencement.

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- ATHEDRAL SERIES.—EXETER: EAST END OF LADY CHAPEL.
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- CHELSEA PALACE OF VARIETIES.
- THE SIX BELLS P.H., CHELSEA.
- HOUSE AT REIGATE.
- HOUSE AT HOLMBURY ST. MARY.

At a largely-attended public meeting held in Pitlochry, 13, to consider whether an installation of electric light for the district should take place, it was explained that, provided the consent of the proprietors concerned could be obtained, a private company proposed to utilise the Falls of Tummel for motive power; that the necessary 2½ miles of cable would be laid to Pitlochry—underground, so as not to interfere with the scenery—and that, further, wires would be put into houses and shops free of charge, the owners supplying the requisite fittings and lamps. The cost was given at less than half the present gas rate of 7s. 6d per 1,000 cubic feet, or an equivalent gas rate of about 3s 3d. The company were also prepared to light the streets on the same terms. Should Pitlochry become a burgh, the community would have the option of purchasing the undertaking at certain times on certain conditions. Mr. J. Leonard, architect, hoped the adoption of the proposal would lead to Pitlochry becoming an autumn and winter, as well as a summer resort. The meeting unanimously approved of the scheme, and instructed the local district committee to act in their interest, but without incurring any financial obligation.

SIR OLIVER LODGE explained to the members of the Scientific Society of the Birmingham Midland Institute on the 21 inst. how the practical difficulty of dispersing fog by means of electricity seemed likely to be overcome. Electricity of the high tension required to produce any appreciable effect upon a

fog could only be obtained from a dynamo giving an alternating current, but to cause the particles of water composing a fog to cohere and fall only one kind of electricity was required. In fact the alternating currents would neutralise one another, and the effect on the fog would be infinitesimal. It was this difficulty which had prevented him going on with the matter in a public way during the last fifteen years, but the recent American discovery of the mercurial electric lamp had suggested to him a way in which the positive current and the negative current, giving an alternating current machine, could be separated and sent off in different directions. The tube of the mercury lamp would only allow a current of one kind to pass one way. By attaching sets of these tubes to the wire carrying the alternating current the necessary division could be effected, the positive current going on to the point of discharge in the fog or cloud and the negative going to earth, or *vice versa*. This, Sir Oliver Lodge claimed, would commend itself to engineers as a thoroughly practical means of applying his discovery, whether on land or from ships at sea, especially stationary vessels, such as lightships.

VARIETIES.

At a special meeting of Rothesay Town Council on Monday Mr. John S. Hepburn, assistant to the town clerk of Leith, was appointed to the vacant town clerkship.

HERMES LODGE, a fourteenth-century house, near Tewkesbury, belonging to Mrs. Bidduiph Martin, was last week destroyed by fire. No one was living there.

PLANS are being invited by the vicar and wardens of St. Peter's, Swinton, for new and more commodious day-schools to meet modern requirements. The cost will not be less than 10,000l.

A NEW American chapel in Berlin was consecrated on the 26th ult. in the presence of Mr. Tower, the United States Ambassador, and the Crown Prince representing the German Emperor. It has accommodation for 400 persons, and has been built at a cost of 20,000l.

THE Marylebone Council have published the necessary notices for the promoting of an amending Bill in the next Parliamentary session to remove the existing legal bar that prevents completion of the purchase of the Metropolitan Electric Supply Company's Marylebone property, and empower the

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borough council to erect a generating station and provide a self-contained system.

It was decided at a meeting of local ratepayers held recently at the Freemasons' Tavern, under the chairmanship of Mr. J. F. Remnant, M.P., to form a deputation to wait upon the London County Council in order to point out the great inconvenience caused by closing one end of Great Queen Street during the progress of the Holborn improvement scheme.

At the monthly meeting of the Metropolitan Public Gardens Association, 83 Lancaster Gate, the Hon. Dudley Fortescue, vice-chairman, presiding, it was decided to protest against a proposal to extend Rosebery Avenue by way of Duncan Terrace to the Essex Road, which would have the effect of extinguishing one public garden laid out by the Association, as well as several green strips that it is hoped to eventually acquire as an addition thereto.

THE Countess of Warwick has just had erected at Easton Lodge, Essex, a dairy which contains all the latest twentieth-century improvements. Octagonal in shape, it resembles a bungalow in design, the roof being thatched with reeds and a verandah encircling the walls. In the centre of the interior is a circular fountain of Sicilian marble, and the floor is of polished Dove marble, while round the walls are double rows of shelves in St. Ann's marble. The walls are covered with old Dutch tiles depicting rural sports and pastimes, and adjoining the dairy is a suite of rooms for the use of milkmaids. The buildings are all lighted by electricity, heated by hot-water pipes, and are situated in the midst of a large and beautiful garden.

THE new Victoria Road U.F. church, Kirkcaldy, has been opened for public service. It occupies a beautiful site in Victoria Gardens. It is of massive proportions, and is in the Renaissance style of architecture, constructed of red stone from Dumfries. The main entrance is situated in Dunikier Road, the whole of the frontage being carved and panelled. The flooring of the vestibule is done in terrazzo, with a lovely designed border. The windows, which are plentiful, are filled with finely-tinted glass and light up the building very well. The church is seated for upwards of 700. There are two halls, which have accommodation for 350 and 180 respectively. The building is lighted with electricity and cost nearly 7,000/.

At a meeting of the joint committee of the Liverpool finance and parks and gardens committees, formed in connection with the laying out of St. John's Churchyard, held

recently, the Lord Mayor (Mr. R. A. Hampson) presented a report was submitted from Mr. Frampton, R.A., in which stated that the pillars which had been cast in plaster experimentally erected upon pedestals had been found not to harmonise with the surroundings, and had therefore been abandoned, together with the proposed bronze ships. In place of these features he suggested that four rising young architects should be commissioned to design pieces of sculpture to be placed upon the pedestals, the designs to be emblematic of the shipping and commercial progress of the port. The surveyor was requested to report on the subject.

THE new church of St. Mary Magdalene, Norwich, consecrated on the 30th ult. The walls of this building are of brick, faced externally with local flints and Monk's Park stone. The roof of the nave, which is of pitch pine, is covered with Broseley tiles, and that of the aisles with Cumberland gable slates. Inside the walls are covered with stucco, and there are stone columns and dressings. The floors under the seats are laid with concrete, covered with boards, and the paths of the nave with marble terrazzo, which also covers the chancel. There is a large east window with five lights. The other windows are glazed with cathedral glass. The church is lighted with electricity and seated with chairs.

THE improvements committee and the housing committee of the London County Council report upon the rehousing of the Millbank site of working men displaced in respect of Westminster improvement. The dwellings at Millbank have been completed, the former committee recommending that account of the Westminster improvement be debited with a sum of 50,000/ in respect of such accommodation. The latter committee recommend that the sum so charged be credited to the capital account of the Dwelling-house Improvement Fund and applied as directed by section 50 of the London County Council (Improvements) Act, 1900, towards the cost of acquisition by the Council of other lands under Part III of the Housing of the Working Classes Act. The housing committee also have a recommendation for the modification of Webber Row, &c., scheme, Southwark, so as to provide accommodation for 2,500 persons in lieu of 903.

SOME alarm was caused in Edinburgh on Saturday morning by a slight subsidence of a tenement at 216 Morrison Street. As it occurred a loud report was heard and this gave rise to the fear that it had been caused by a gas explosion. Examination by members of the Fire Brigade, which had been summoned, showed that the noise had really been due to the breaking of

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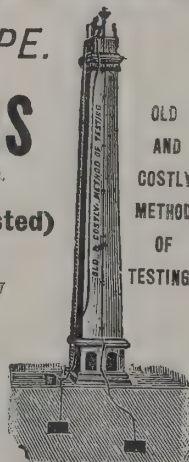
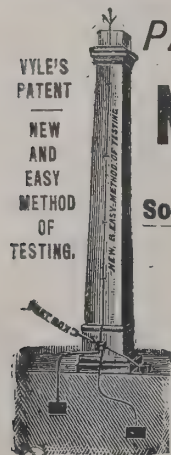
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For Index of Advertisers, see page x.

iron beam supporting an unoccupied shop. The floor of it subsided about 6 inches, and cracks were made in the internal walls, while the floor of a dwelling-house was also affected. The uneasiness caused by the mishap was increased by a belief that it was due to the building being immediately above the Haymarket tunnel of the North British Railway. Examination by the railway officials, who meanwhile had taken the precaution to divert the traffic, showed that the roof of the tunnel was in no way affected, and the running of the trains was accordingly resumed. The staff of the Edinburgh engineer, having shored up the broken beam, were able to assure the alarmed residents that there was no further danger, and the excitement with the wild rumours it had generated soon abated.

THE Pyx chapel in what are popularly known as the dark chambers of Westminster Abbey is at last to be thrown open to public view. The credit for this innovation is due to the Office of Works, which recently took over the custody of the building from the Board of Trade. How great is the concession which is about to be made may be gathered from the fact that hitherto this historic apartment, with its double doors of oak, has been guarded by no fewer than seven keys, each in the keeping of a separate official. Now the chapel is to be electrically lighted, so that the various objects of interest which it contains may be seen to advantage. These include a curious stone altar, which is supposed to have been used for coining purposes, and several chests. In former days the Government standards and assays were stored here, and the inner of the double doors was also covered with human skin—a hint, no doubt, to the prospective burglar—but all trace of this has long since disappeared.

THE new pier station at Wemyss Bay was opened on Monday by the departure of the eight o'clock train. The new station, with the platforms leave the old line about 1,000 feet east of the old terminus, and take a sweep towards the sea on a gradient of a little over 2 feet at the terminus. There are two island platforms and a short side platform on the sea side of the station. The island platforms are 180 feet in length and an average of 31 feet in breadth. There is a covered way from the platforms 360 feet long and 31 feet wide, and there is a large recess on each side at the end with seats; there are stairs on each side to allow passengers to get on board steamers lying well up the sides of the pier, and there are three doors at the bottom to give access to the end of the pier. The waiting-rooms, officials' rooms and telegraph office are on the platform

at the head of the covered way. There is a wide entrance to the station from the village, and the booking-offices are arranged for speedy sale of tickets in a crush. There is only one of the island platforms ready for use as yet, and it will be the spring before the others are completed. It is stated that the new station will allow of the steamers starting seven minutes earlier after the arrival of the trains than formerly, and the luggage will be more easily conveyed to the steamers.

TRADE NOTES.

A FIRE broke out at Mr. William Clegg's, Albert Mills, Milnrow, on the 3rd inst., which was speedily extinguished by two "Titan" sprinklers, with practically no damage.

MESSRS. ARTHUR L. GIBSON & CO. (the B. & S. Folding Gate Co.), 19, 20 and 21 Tower Street, Upper St. Martin's Lane, W.C., have just supplied to the Manchester Corporation twenty-seven large Kinnear steel rolling shutters, this being the third order they have received from this Corporation.

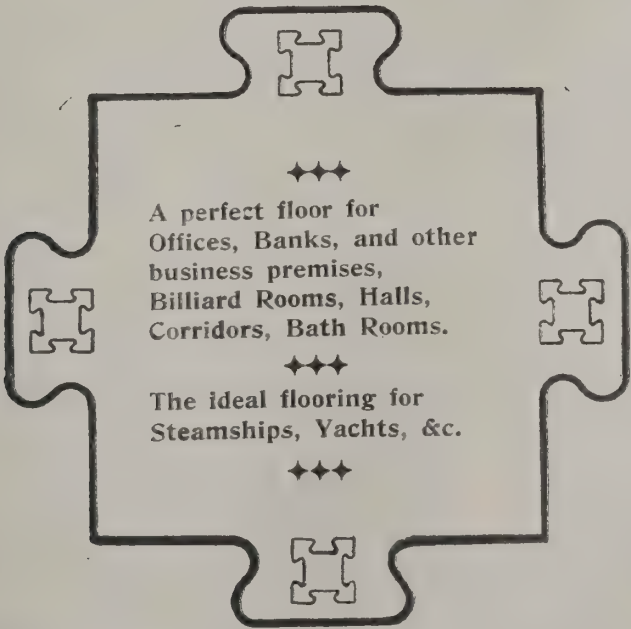
A FINE new hour-striking clock showing the time upon one large external dial, with all Lord Grimthorpe's latest improvements inserted and made by Messrs. Wm. Potts & Sons, Leeds and Newcastle, for Lady Pearce, was set going for the first time on Saturday last in the Macgregor Memorial Church, Govan, Scotland. Messrs. Potts are also making a clock for the parish church, Grange-over-Sands, N. Lancashire.

THE Sieg Rheinische Basaltwerke G.m.b.H., of Oberdellendorf, a/Rhein, through their sole agents in the United Kingdom (Messrs. Everitt & Co., 40 Chapel Street, Liverpool), have secured the contract for the supply of 14,000 tons of basalt columnar stone from the Blackpool Corporation, for use in the construction of the extension of their sea-defence wall and promenade. This makes over 25,000 tons supplied by this firm to the Blackpool Corporation in connection with this work.

THE MUNICIPAL AND COUNTY CLUB.

SIR SAMUEL PROVIS, K.C.B., secretary of the Local Government Board, was the guest of the evening at the house dinner of the Municipal and County Club, Whitehall Court, Mr. Laurence Gomme, F.S.A., clerk to the London County Council, presiding.

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Among the members present there were also the deputy-chairman of the London County Council, Mr. E. A. Cornwall, Mr. Lewis Coward, K.C. (Recorder of Folkestone), Mr. C. S. Murdoch, C.B. (Assistant Under-Secretary of State), Dr. Shirley F. Murphy (medical officer of health), Mr. Brook Kitchen (architect to the Local Government Board), Mr. Alfred Spencer (chief officer, Public Control, L.C.C.), Dr. Dudfield (medical officer of health, Paddington), Dr. Sykes (medical officer of health, St Pancras), the town clerks of Camberwell, Fulham, Greenwich, Harrogate, Leeds, St. Pancras and Poplar.

Mr. Gomme, in proposing the toast of the club-guest, Sir Samuel Provis, referred to the unvarying courtesy always shown to officials and others when seeking the advice of the supreme authority of local government, and had pleasure in announcing that Sir Samuel Provis had expressed his willingness to become a member and one of the vice-presidents of the club.

Sir Samuel Provis, replying to the toast, which was most enthusiastically received, returned thanks for the honour the club had bestowed on him in entertaining him at their house dinner. He considered the Municipal and County Club distinctly filled a void, and was the beginning of a great institution. He was only too glad to have the privilege of joining the club, thereby coming into contact socially with those with whom he had official relations. As for the latter, sometimes they might be of a reprehensive nature; but they must understand in dealing with local government that the Local Government Board had the advantage of seeing the same questions dealt with by one local authority and another, and in this way it was able to give that consideration which they could not otherwise obtain.

Mr. Cornwall, vice-chairman of the London County Council, responding for the club as chairman of its executive committee, referred to local government as a science to be studied by every man in order to become a good citizen. In no other country in the world had local government attained such a position as in this country to-day.

A most successful musical evening followed under the direction of Mr. T. Noakes, and contributed to by Mr. Barclay Gammon, Mr. Wilson James, Mr. Harry Turnpenny, Mr. Robert Dennant and Mr. Owen Clark.

The club was formed at the beginning of the year and its success is already assured. The club-house has now been newly furnished and decorated and a grill-room added, and

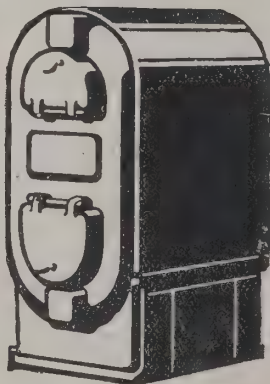
the bedrooms for country members are a special feature. The executive committee enrolled forty-three new members at the election on Monday.

SIR LEES KNOWLES, M.P.

THE following is the text of the resolution passed by the committee of representatives acting with the County of London Plumbers at their meeting at Guildhall on November 18, 1900, conveying their congratulations to Sir Lees Knowles, M.P., "That the committee of representatives of the chief cities and towns of the United Kingdom appointed in general conference of plumbers and health and water authorities, held in Birmingham in 1900, acting in conjunction with the Worshipful Company of Plumbers in carrying out the national registration of plumbers assembled at the Guildhall, London, November 18, 1900, desire to offer their respectful and hearty congratulations to Sir Lees Knowles, Baronet, M.P., on the mark of royal favour conferred upon him, and to record their high appreciation of the public service rendered by him to the cause of public health by his advocacy in Parliament during the past ten years of the national registration of plumbers, as a necessary link in the chain of sanitary security, and particularly of his conspicuous services as chairman of the Select Committee appointed in 1897 wherein the necessity for the system was demonstrated and the subject exhaustively dealt with, largely owing to his ability and assiduity, as appeared by the Parliamentary report." Sir Lees Knowles wrote in reply to express his warmest thanks.

THE CRITERION RESTAURANT.

THE Criterion Restaurant, which was first opened to the public on November 17, 1873, has been altered and improved in many respects from time to time. Thus, in 1899, the 1st Room was reconstructed and, together with the West Room, decorated in a new style. A year later the new buffet, which is one of the sights of London, was opened. In pursuance of this up-to-date policy some important alterations tending further to the public comfort have just been completed, and were examined with interest by invited guests on Tuesday. The most noteworthy of these changes is the reconstruction of the King's Room, a handsome apartment 52 feet in length



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width, which is approached from the wide staircase
 main, or Piccadilly, entrance. Special features of this
 the new oak panelling and the mode of ventilation.
 pelling, which possesses much appropriateness and inter-
 rounds the room to the height of 8 feet, and is the work
 es. Howard & Son, of Berners Street. Above is some orna-
 tencilled tapestry, having a zigzag *motif* in brown, with
 n pant and *fleurs-de-lis*. The ceiling is covered with
 ta decorations. The lighting is entirely from a number
 ic lamps fixed immediately under the ceiling itself, and
 ing a brilliant but not glaring effect. The modern
 ny which the King's Room is ventilated is due to the
 n of Dr. Glover Lyon. The air is filtered through
 inool and is thus freed from fog microbes and all solid
 es. It is then ozonised so that gaseous impurities are
 and the air vitalised. The air passes through a
 an 54 inches high and then to an electric heater. This
 is 6 feet high by 4 feet broad and 18 feet in depth.
 re sixty heat-radiators contained in it, absorbing a
 equal to 6,000 candle-power of light. The advantages
 is means of heating are:—(1) The small space required;
 igs have not to be brought through the building; (3) no
 boiler, or labour, is required; and (4) perfect control
 ained over the temperature of the air. There are five
 b, controlling various numbers of radiators, so that the
 ure of the air can be regulated to within 2 degs. Fahr.
 in allation was planned and carried out under the super-
 of Dr. Lyon and Messrs. Shone & Ault.
 In a few feet of the King's Room is the Edinburgh
 m for use as an ante-room to the larger apartment.
 ing the Edinburgh are the Chapter Room and its ante-
 . These three rooms are *en suite*, and can be used
 h or separately. They have all been newly panelled
 and fitted with the latest designs in electric lighting.
 Chapter Room and its ante-room—the former of which is
 long by 16½ in width—are especially useful, not only
 ivers, but for functions in the daytime, as they both face
 y Street. The well-known Prince's Room has also been
 sely redecorated. In connection with the latter and
 t. Edinburgh and Chapter Rooms it should be mentioned
 ctically private access can be obtained to them by
 ns of the covered entrance from Jermyn Street. There is
 senger lift on both sides of the Criterion to all floors. It
 further noted that a new kitchen, which combines
 eanliness and ventilation in perfection, has been con-

structed on the top floor of the establishment. By the additions
 the Criterion is now equal to the demands of the most fastidious
 and has become more firmly established as foremost among the
 institutions of its class.

MASTER PAINTERS' ASSOCIATION.

THE members of the above Association hold their eleventh
 annual convention at Manchester next September. To mark
 its importance, and provide funds for the equipment of the new
 school of decorative painting and the educational work of the
 Association, they intend holding an important exhibition of
 decorative and applied arts, processes and manufactures. For
 this purpose they have secured the St. James's Hall, Oxford
 Street, where the immense area will enable them to do justice
 to the project which they have in hand.

The exhibition will include furniture, carpets, hangings,
 furnished rooms, wall-papers, relief materials, paints, colours
 and varnishes, water-paints, tiles, pottery, sanitary appliances,
 &c., stained glass, &c. An important section of the exhibition
 will be devoted to "Processes," where various handicrafts will
 be seen in actual operation—a never-failing source of interest
 to the public. Good music will be brought to the aid of the
 sister arts, and the exhibition will have attractions to the
 general public equally with those more directly concerned.
 The Right Hon. the Earl of Derby, K.G., has consented to
 become patron of the exhibition. All particulars may be ob-
 tained from the registered offices of the Association, 26 Oxford
 Road, C.-on-M., Manchester.

LABOURERS' COTTAGES IN IRELAND.

THE following letter has appeared in the *Irish Times*:—

I read with much interest the report of Mr. Synnott's
 paper before the Statistical Society on this subject. I do not
 think that his suggestion that existing cottages should be pur-
 chased and repaired is at all a wise one. The farmer is prob-
 ably making 1s. per week out of the existing hovel, and would
 expect not less than 50s. for it. It would need new doors, new
 windows, new floors and a new roof, and all that is left is the
 old walls, made of small stones without any damp course,
 and quite unfit to carry a slated roof. Besides, a Board of
 Guardians can give a contract for the erection of a cottage and

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compare the cost with others, but it is impossible to check a contract for repairs.

Again, the aspect is of much more importance than is generally considered. The house should face the south, even if the gable be turned to the road in order to secure this. We consider ourselves more civilised than the Chinese, yet in North China, where fuel is dear, they have sense enough to face all houses to the south, and one side of a street is simply a dead wall. They say, "The heat of the sun costs nothing."

The windows should be very much larger than are being put into the recently-built cottages, and all should have sashes hung on pulleys. These are the only windows that can be opened more or less in all weathers. The great foes of health are want of cleanliness and want of fresh air. Darkness and dirt are inseparable, whereas sunshine not only reveals but purifies. Unless the inmates are encouraged to open their windows by making this easy to do the "model" cottages, with tight-fitting doors and windows, will be less healthy than the old ones, which let in air everywhere.

I have put a ventilator of my own construction in the roofs of all the cottages which our firm has recently built and in a large national school. The results are admirable, as there is no draught even in the most stormy weather. Besides it cannot be closed, at least not without much trouble. It is simply an inverted "V"-shaped opening through the ceiling made of wood, with an opening $1\frac{1}{2}$ inches wide above and 6 inches below and 5 or 6 feet long. This is equal to a hole 10 inches square, but no draught is felt from it, on the same principle that if a cone-shaped funnel of paper be tied to the nozzle of the bellows hardly any draught can be made with it. If a whitewashed board be nailed above the opening separated 1 inch from it so as to shut out the view of the slates, the result is not unsightly.

Each house should be built by itself; the windows can then all face to the south, the east, or the west, so that all rooms can get sun at some time of the day, the kitchen of course facing south. The saving in building two cottages together is very small when the cost of separating the back yards is taken into account, and from experience I know how much ill-will often comes from disputes between the children or from trespass of fowls.

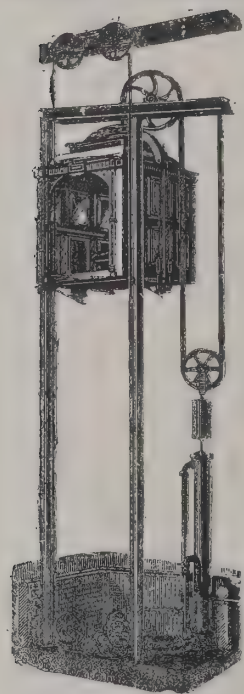
I should like to see fruit trees growing all round each cottage. Where there are two together this would be more than likely to cause trouble, for if any were stolen the neighbour would probably be blamed.

The suggestion that model plans should be prepared by the Local Government Board is an excellent one. I wish to "enthuse" the architect with a love of sunshine and fresh air. Cottages that were really models in this respect would be a taste of our people in that direction, and do much to remove the stigma that while every civilised country in the world is rapidly reducing its death-rate from consumption, in Ireland it steadily increases.—Yours, &c.,
ROBERT BRIDGES,
Honorary Secretary of National Association for the Prevention of Consumption, Ulster Branch.

LONDON LYING-IN HOSPITAL.

A SPECIAL court of governors of this Institution was held at the hospital, City Road. The meeting had been convened for the purpose of receiving a report from the committee of management recommending that the old portion of the hospital be pulled down and a new building erected. The committee stated that the construction by the Great Northern and City Railway Company of a tube railway in close proximity to the hospital buildings had caused serious damage to the foundations and structure. The damage was so considerable that the committee, acting upon the advice of experts, had made a claim for compensation against the railway company. The protracted negotiation and litigation the railway company had admitted their liability, and in September last the matter was settled by the company paying the sum of 3,000l. It became the duty of the committee to obtain tenders for the restoration of the old buildings, in doing which they took advantage of the opportunity of including certain alterations and improvements that had become necessary. The lowest tender sent in was 100,000l. ever, for the work amounted to so much more than that the committee were advised to accept from the railway company that the question arose as to whether the time had not arrived at which it would be more prudent entirely to rebuild the old portions of the hospital rather than spend a considerable sum in partial restorations and attempts at improvements of a building which, in the opinion of the medical staff, had been found for some time past inadequate. The report mentioned that the buildings had been erected for over 130 years, and that not only were the ventilating and heating arrangements obsolete, but a considerable part of the buildings stood on the ground, without any cellars or arches. A committee was appointed, and, having considered the

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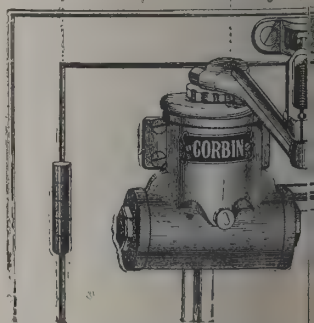
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ended the management to invite the governors to use the expenditure of funds to an amount not exceeding in the rebuilding of the old portions of the hospital. Berry asked if the committee had made sure of their ground on the present site. Dr. Langton said that the ground had been purchased from St. Bartholomew's Hospital, and was subject to a lease of 50/ a year and a "fine" of 50/ every 14 years. So they remained on the site St. Bartholomew's Hospital not turn them off. Mr. H. C. Gosness moved the following resolution:—"That the trustees be authorised to sell the land forming part of the invested capital not exceeding 500,000, to be applied towards the cost of the new building." This was seconded by Mr. F. G. Ivey and carried unanimously.

ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN.

On Tuesday last H.R.H. Princess Louise (Duchess of Argyll) opened the new out-patient department of the Royal Edinburgh Hospital for Sick Children. The new dispensary, which is situated to the west of the hospital and has its main elevation on Sylvan Place, differs architecturally from the hospital in that it is built of yellow freestone instead of red sandstone. No attempt has been made at ambitious architectural treatment of the design, which is a severe expression of the Renaissance with pillars and cornices of the Ionic order. It is a two-storey building, about 103 feet long by 43 broad. All patients enter by a gateway at the south end of the building. To the right is a covered verandah for perambulators in the like in wet weather. From the entrance hall there are three isolation rooms, where any children who are suspected of infectious or contagious disease will be placed so that they can be seen by the doctor. Medical patients are placed on the ground floor. Those requiring surgical, ophthalmic or electric treatment will be taken upstairs. The large waiting-room is a large apartment—36 feet by 38 feet capable of seating over a hundred persons. From it patients pass in turn into the dressing-room, where the children are stripped in readiness to be taken to the physician, the consulting-room is beyond. The doctor's room is large and airy and is flooded with light. To it there is a special entrance from Sylvan Place for the staff, and on the other side a passage leading into the hospital grounds, by which patients

who require indoor treatment will be taken to the main building. From the dressing-room the prescriptions are handed into the dispensary, which is fitted with all facilities for rapid and convenient working.

Upstairs the rooms on the south front are devoted to ophthalmic and electric treatment. These apartments include, besides waiting accommodation, a dark room with special apparatus for eye-testing, and an electric bath-room. Occupying a central position on the same floor is the laboratory for the experimental work of the staff, and adjacent is a photographic dark room, which will prove specially valuable in view of the large amount of Röntgen-ray work which is to be done. The north end of the flat is occupied by the surgical department, which includes a large waiting-room, a consulting-room, a chloroform-room, an operating theatre, a room where the little patients will lie in cots until they recover from the effects of the anæsthetic, a store for splints and bandages, and a "new-case" room. Though only minor operations will be performed—the more serious cases being admitted to hospital—the theatre is splendidly equipped with sterilising apparatus, baths, &c., and is beautifully lighted by windows both in the vertical wall and in the sloping roof.

No special effort has been made at internal embellishment. The whole attention of the architects (Messrs. Peddie & Washington Browne), in consultation with the directors and the staff, has been directed to securing its equipment in a thoroughly complete and up-to-date manner, combined with ease in maintaining freshness and cleanliness. The floors consist of concrete finished with cement, and in some cases overlaid with linoleum for warmth. The walls are tiled to a height of about 7 feet from the floor, and all corners at floors and ceilings alike are rounded, so that there are no nooks where dust can accumulate. The floors have "scuppers" so that they can be flushed and the walls hosed. All pipes are kept clear of the wall in order that they may be dusted and washed and no lurking-place be afforded for dust. The premises are heated throughout by steam in pipes on the low-pressure system, and ventilation is aided by electrically driven fans for extracting vitiated air. All sinks and slabs are made of enamelled metal, and the shelves are sheets of plate-glass resting on metal supports. A feature of all the rooms is the flood of light which pours in through the large windows. Electric light is also provided in abundance, and there are special lamps for surgical and medical purposes. Altogether the dispensary as now enlarged and improved will be an even more valuable adjunct

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to the hospital than it has been in the past. It will enable the staff to overtake a still larger volume of work, and with even more efficiency. Its total cost has been about 6,000*l*.

AUCTIONEERS' INSTITUTE.

THE autumn meeting of the members of the Hants, Wilts and Dorset branch of the Auctioneers' Institute was held recently at Eastleigh. The chairman of the branch (Mr. J. T. Woolley, Salisbury) presided at the luncheon, and was supported by Mr. J. H. Townsend Green (president of the Auctioneers' Institute), Mr. Rowland Peck (past president and member of the Council), Messrs. T. Llewellyn Puttick (Gosport), W. E. Moory (Christchurch), R. L. Badcock (Lymington), Samuel C. Gale (Lee-on-Solent), E. A. Scammell (Eastleigh), Edwin Fear (Winchester), Percy Shenton (Winchester), E. H. Cooper, hon. treasurer (Portsmouth), John H. Drewitt (Fareham), James Clark (Portsmouth), and A. Godwin Pratt, hon. secretary (Bournemouth). The Chairman proposed "Prosperity to the Auctioneers' Institute," and spoke in cordial terms of the efforts of the Council to promote the interests of the profession and to raise the status of the auctioneer. Mr. W. Rowland Peck replied. Mr. W. E. Moory (Christchurch) contributed a paper entitled "Valuation: its Objects, Principles and Responsibilities," in which reference was made to the disabilities under various Acts of Parliament from which the profession suffered; the divergent scales of fees in different districts; the principles governing real estate, transfer, mortgage, estate duty, valuations, &c. Mr. Moory called attention to the anomaly that persons, oftentimes without any previous training, were enabled to pose as valuers merely by payment of 2*l*. for a license. A discussion followed.

THE NATIONAL REGISTRATION OF PLUMBERS.

DR. MATTHEW HAY, medical officer of health, presided at the annual meeting of the Aberdeen District Council for the National Registration of Plumbers, which took place on the 4th inst. at the Robert Gordon College, Aberdeen.

In submitting the report of the past year's work Dr. Hay referred to the satisfactory work of the plumbing classes held at the Robert Gordon College. He also referred to the conference of representatives of the Plumbers' Company, architects

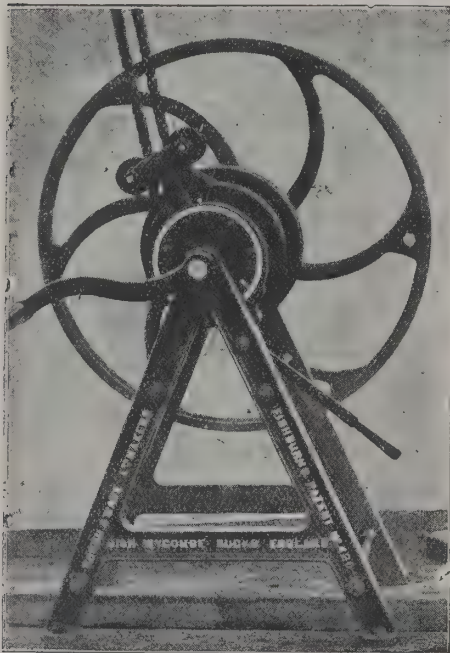
and water authorities on the prevention of waste of water for domestic use, remarking on the important bearing of plumbing work on that subject as well as in connection with sanitation. An interesting lecture was delivered by Mr. Wm. K. architect, on "Early Plumbers and Plumbing," and illustrated by lantern-slides.

The District Council for the National Registration of Plumbers for the counties of Norfolk and Suffolk held its annual meeting on the 4th inst. The chair was taken by Alderman Dakin, who was supported by Dr. Newman and other gentlemen.

The Chairman referred to the excellent work done by the movement, and urged all plumbers to associate themselves with it. He said that often veritable death traps were created by bad plumbing. Dr. Newman said that the health of the community was at the mercy of the plumber. He referred to the admirable plumbing classes at the Technical Institute. He hoped the time was not far distant when all who took to the plumbing trade should be required to make themselves efficient as to carry out their work satisfactorily, and in any way as to insure due attention being paid to sanitation and general conditions of health.

The annual dinner was held on the evening of the 5th inst. at the Oxford Arms hotel, Norwich, under the chairmanship of the president, Mr. W. H. Dakin. Mr. A. E. Collins, in proposing "Success to the Registration Movement," said that in his opinion, registration of plumbers ought to be made compulsory, a thing which would insure plumbing being properly done. A trade whose work had such a great effect on the health of the public required to be registered for the protection of the public. During recent years an extraordinary improvement had taken place in plumbing work carried out in Norwich. He believed registration, together with the work of the Technical Institute, was responsible for that, and proposed the latter in a greater degree than the former. Mr. King, in replying to the toast, said that Norwich stood high in respect to its number of registered plumbers. G. H. Morse gave the toast of "The President and District Council," and Mr. Dakin and Mr. Claude King responded. Mr. C. Mase proposed "The Health of the Visitors," associated with it the names of Mr. E. T. Boardman and Dr. Newman. The remaining toast was that of "The Open Plumbers," proposed by the Chairman, and replied to by Mr. Murrell.

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ELECTRICAL ENGINEERS.

Evening meeting of the local section of the Institution of Electrical Engineers was held on the 3rd inst. in the Physics Laboratory of the University, Edmund Street, Birmingham. There was a good attendance, amongst those present being Mr. J. H. Morris (local secretary) and Mr. Henry Lea (retiring chairman).

At the commencement of the meeting Dr. Sumpner proposed a vote of thanks to the retiring chairman (Mr. Henry Lea) and added that Mr. Lea, with Mr. Vaudrey and Dr. Brown, had been primarily responsible for the inception of that technical body three years ago.

Mr. Brown, of Walsall, seconded, and Mr. Lea then vacated the chair in favour of Mr. Vaudrey.

At the customary expression of thanks for the honour conferred upon him, the new Chairman went on to say that he was of the opinion that the time would very soon arrive when all the engineering societies of the town and district would be brought together and meet at some common centre. Proceeding, he pointed out that Birmingham and the district had been the home of engineering work for over a century, and rendered famous by the labours of Bolton & Watt at Soho. The first practical application of the use of electrical energy were to be found in the tramway works of Elkington's and the existence in the district of machine manufacturers and trained workmen undoubtedly had been a great help in developing electrical engineering. At the present time in Wolverhampton, Stafford, Walsall and Birmingham there were many works engaged in the manufacture of electrical machinery, and the importance of these and the immense variety of allied work to the city could hardly be over-estimated. The Chairman then emphasised that we were being continually beaten on our own ground by the technically educated German or American, but that we were applying to electrical enterprise. When electricity, as a source of illumination and later as a source of power, was available, the trammels that were found here did not apply in America. Most of our large cities owned and worked on gas systems, and could not but look with a certain amount of suspicion and disfavour on anything which would alter or modify the success of their own enterprise. The marks applied to power and traction, for before we had laid in this country hundreds of miles of electric tramways were laid and working successfully in America. The

reason of the great development by the Germans and the Swiss had been in part due to such natural advantages as the water-power available in those countries. But we were now making up for lost time, and making plants which were at one time entirely manufactured in Belgium and the United States. Standardisation was the next subject of comment, and he emphasised strongly the importance of manufacturers turning out thoroughly tried work. The engineering section of the University when completed should place at the disposal of engineers means of investigating and testing problems not readily solvable except in the laboratory. The use of electricity for tramway and railway purposes led the lecturer to express his views that the tramway problem in Birmingham was not yet properly solved. The system must be completed with full regard to the outlying districts, and for a radius of ten miles it should certainly be possible to travel without changing cars. The great branch of enterprise to be shortly opened up was the conversion of railways to electrical working, and there appeared to be no economic difficulty in working lines up to fifty or sixty miles long. Of importance at the present time was the need of an exact knowledge of the amount of power required in the district. There were vague statements to the effect that some 30,000 or 40,000 horse-power was required. The figures should be thoroughly investigated.

Professor Threlfall moved a vote of thanks to the Chairman, which Mr. Brown, of Walsall, seconded, observing that to his knowledge there were large works in the locality who were paying not twice or three times too much for their power, but actually ten times as much as they should do.

NEW TOWN HALL, CHELTENHAM.

THE new town hall which has been erected by Cheltenham's Town Council was formally inaugurated on Saturday last by Sir Michael Hicks-Beach. For the erection of this handsome edifice the Local Government Board sanctioned the borrowing of 35,000*l.*, and the Corporation selected as a site a portion of the Winter Garden enclosure, on the north-east of the big glass structure on the Promenade. Mr. F. W. Waller, of Gloucester, designed the building, and the chief contract was placed in the hands of Messrs. Collins & Godfrey, of Cheltenham and Tewkesbury.

The new town hall, in general design, is Classic, freely treated. An imposing façade, beautifully carved, meets the



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gaze as the visitor turns out of the Promenade at the New Club corner, and a projecting carriage porch in the centre helps to relieve the massiveness of the exterior from severity. Here, on the north side of the building, is the main entrance, which gives access to the crush-hall, the dimensions of which are 40 feet by 20 feet. The floor of this hall is of marble mosaic, with borders of floral pattern; the ceiling is panelled and painted in cream and white, with circular decorations, and the semi-arches of the wall provide alcoves, also effectively ornamented. At either end of the entrance hall is an octagonal-shaped hall, measuring 24 feet across; adjoining that on the east side is the ladies' cloak-room, while similar accommodation is provided for gentlemen on the west side, and here also is one of the staircases to the galleries which surround the great hall or entertaining room. From the octagonal halls the main corridors, 92 feet in length and 12 feet wide, run the whole length on either side of the great room, and give access thereto at several points, as well as to the various other rooms mentioned. A series of six arches with spandrels add to the effect of the vistas, by dividing the corridors into sections, the flat ceilings of which are panelled and provided with square lights of muffled plate-glass.

Coming next to the great hall, which is designed to fulfil the double purpose of balls and of concerts and public meetings, its dimensions are 112 feet in length by 62 feet in width and 43 feet in height. It has a lofty and coved ceiling, which is panelled, and the room is divided into five arched bays on either side, with galleries in the arches and over the corridor below, while there is in addition a large gallery at the north end over the entrance hall. The interior of this, the chief room of the building, has been most artistically treated, and, with its balconied walls and scagliola columns and ornamental woodworks and tasteful decorations in coloured fibrous plaster, presents a charming appearance. At the south end is an elegantly designed proscenium and orchestral platform, 31 feet across, with organ loft, as yet empty, and at the opposite end the front of the gallery is elliptically treated to agree with the proscenium. A striking feature in the decoration scheme is the scagliola columns, sixteen in number, already mentioned. The warm red colouring affords a pleasing contrast to the softer tints of the walls, and the fluted columns, whatever may be said against them on other scores—for they are merely an imitation of marble—they certainly add dignity and impressiveness to a hall of noble proportions. The balconies, five on either side of the hall, are elegantly rounded quadrants

with elliptic fronts and turned balustrades. From the miniature galleries an excellent view of the floor space can be obtained, and this will be appreciated at the balcony; the view of the stage is largely obscured, and the balconies consequently will not be so advantageously used at concert public meetings. Behind the balconies run the promenade 12 feet wide, corresponding to the corridors below, and these will be convenient for lounges at social gatherings; they will lose their value to concert patrons, as from them nothing can be seen of either floor or platform. Surrounding the balconies are arches springing from the piers between the columns, and above the capitals of these columns are piers which help to support the roof principals. Over the key of each arch is displayed a handsome cartouche shield which gives variety to the bays of the frieze, and the cornices, &c., are richly treated with scroll, floral festoon and other decorations in fibrous plaster. In fact, the whole decoration scheme, which was modelled by Mr. H. Frith, of Gloucester, and is in the Renaissance style, freely treated, is most effective. Not the least delightful feature being the three capital columns are clustered above the balconies, with a background of gold, and with their leaves picked out in gilt. As to the great hall, it is obtained both from the ceiling and from circular-headed windows and bulls'-eyes in the gallery. The dancing-floor has been scientifically constructed, three feet of the best maple ($3\frac{1}{2}$ inches by $1\frac{1}{4}$ inch), carried on roller joists with patent springs. It is estimated the hall will accommodate from 1,200 to 1,500 people.

Subsidiary halls are the large drawing-room, 57 feet by 27 feet, the ceiling of which is curved, and the main ribs of which are carried on marble columns; the lesser drawing-room, 26 feet by 16 feet 6 inches; the card-room, with lavatory, 26 feet by 16 feet 6 inches; the smoking-room, 26 feet by 16 feet; the supper-room, some 55 feet square, the ceiling being carried on marble columns; and a room for light refreshments, 37 feet by 37 feet; while ample kitchen accommodation is given beneath.

It is only necessary to add that much care has been bestowed on the heating and ventilation, and that, for a full illumination, the building is wired throughout for the electric light.

A VOLUNTEER drill-hall, erected at a cost of 1,100, has been opened at Nuneaton.

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The Architect.

THE WEEK.

EVERYONE who is even remotely connected with building must have a feeling of relief at the escape of the QUEEN from the effects of the fire at Sandringham on Thursday, the 10th inst. There have been many casualties from time to time which can be ascribed to building operations, but one which might be appalling was providentially escaped. The moral of the case however remains. The majority of accidents which have occurred in English buildings of late years, it evidently arose from the carelessness of a workman. There is no use in concealing the fact that our building operatives are deteriorating. Sometimes the men employed are little more than apprentices, and are wanting in experience. That is mainly owing to the operation of the Workmen's Compensation Act. The modern workman also satisfies himself that the responsibility for his work rests with somebody else, and when what he does is not always visible to the eyes of others, he has no scruple in leaving it in a worthless or dangerous state. At Sandringham alterations had to be effected while the house was occupied. In making provision for a new fireplace it was necessary to remove a part of a joist. The instructions were disobeyed; the joist was left and caught fire through the ignition of felt and rubbish. The fire thus commenced, which mercifully had no fatal consequences. No architect or builder was concerned on reading the report of the circumstances, for, unfortunately, the apprehensions of concealed dangers are not uncommon. We do not suppose that workmen commit errors culpably, although cases of the kind are known; but their negligence has become so general an evil it is impossible to put any limit to the consequences.

THE position of Trier or Trèves, in a valley of the Alps, with the Moselle running by it, must have attracted the Roman emperors who were compelled to visit that part of Europe in the course of the contest in Rhenish Gaul. They made of it a residence, and in that way it was a seat of empire. In the amphitheatre there is no doubt the Roman emperors and civilians enjoyed the destruction of Frankish people by wild beasts. As a consequence of the occupation there is a variety of Roman remains. Besides the amphitheatre, the basilica, which is now a church, the gate known as the Porta Nigra and other works, testify to the greatness of the place. The discovery in the course of carrying out the works in connection with the altar of a large piece of mosaic in the Constantine Platz near the basilica is suggestive of the importance of the site. The houses which were in Roman Trier. The subjects represented appear to be ATHENE and the Muses. The style of the mosaic is excellent, and the pavement is arranged in geometrical divisions, which form a framing for the figures and inscriptions. It is remarkable that another mosaic pavement was laid some twenty years ago, and now in the Trier Forum, is also suggestive of similar treatment, for it contains figures of muses, philosophers and poets. Unfortunately a large part of the mosaic must have been long ago destroyed. But sufficient remains to testify to the artistic importance of Trier.

THE exhibition in the Shire Hall, Chelmsford, of which Mr. A. FAWKES was promoter and honorary secretary, has been so successful we may assume it will be the first of a series. Enough was visible to give confidence to the people of their competence to take part in the efforts being made to elevate English manufactures through education in art and technical knowledge. Mr. FAWKES, as an exhibitor, and his doorway and section of room, showing application of enriched joinery and mouldings, of mantels and overmantels, exemplified a class of work which has made Chelmsford a familiar name in most parts of England. The model of the new Westminster Cathedral exhibited in public for the first time. The students of the local art school exemplified carpet and rug weaving, bookbinding, glazed tile making, china painting, pottery painting, stained glass, metal repoussé, pierced metal, enamelling, inlay and intarsia, gesso, embossed and deco-

rated leather, stencilling, production of woodcuts and colour prints, painted decoration, poker work, art needlework and lace, the whole forming a variety of production which must have amazed the majority of the older visitors. A school which has proved itself to be so extraordinarily successful merits generous support.

THE removal of sand is not now regarded with favour in the suburbs of London, and we suppose there is a similar prejudice in the neighbourhood of all large towns. Some people, in the interest of sanitation, would prevent the removal, for should the land from whence it is taken ever be adopted as building sites, what substance is to fill the void? A case came again before the Chancery Division on Tuesday which suggests that the removal may be attended with serious consequences to the conveyers. Messrs. WHEATLEY & Co. owned land at the end of Hartington Road, Chiswick. In taking away the sand by means of traction engines and trucks, the road was cut up, and the owners of the houses along it brought an action through the Attorney-General against the defendants, which was heard in July. The defendants undertook to repair the road to the satisfaction of the local surveyor. As the work was not done in October application was made to commit the directors for breach of their undertaking, and in the alternative to obtain an order to have the road made up within three months. The defendants pleaded that 1,500*l.* would be required to carry out the surveyor's plan, while when entering into the agreement they imagined the cost would not be more than 800*l.*, of which they were willing to contribute 500*l.* They further said they were unable to find the money. They sought that the order should be changed into sequestration of property rather than commitment of directors for breach of undertaking. Mr. Justice JOYCE made an order that the work should be executed within three months. He refused the application for commitment, but gave a warning that this would be without prejudice to any application that might be made against the directors in case the company did not carry out the order. From this it will be seen that injury to public roads may have consequences which are not always foreseen.

THE Local Government Board have a difficult task in dealing with proposals by local authorities for the erection of workmen's houses. The tendency at the present time is to make them of a costlier character in proportion to the rent to be charged than would be attempted by speculators who sought only from 3 to 4 per cent. on the outlay. The Brighton Town Council some months ago submitted plans for dwellings to be erected on the Spa Street area. In September a letter was received from the Local Government Board stating that "with regard to the proposed self-contained houses, they are too ambitious in character and design for persons of the labouring class, and the Board feel that upon the information before them they could not properly sanction a loan in respect of these houses as providing accommodation for persons of the working classes." It was pointed out in reply that the houses were not exactly for persons displaced by clearances, who would be accommodated elsewhere, but for houses which, from their position in a central part of the town, required to be of a better character than the ordinary class. After much deliberation the borough surveyor has prepared amended plans for thirty terrace houses, each with a frontage of 16 feet 6 inches, and containing parlour, living-room, scullery and usual offices on ground floor, and three bedrooms upstairs, at a total cost of 459*l.* per house. Originally it was proposed to repay the cost in forty years, but local authorities now usually seek to obtain a longer period before the debt is cleared. The sum of 459*l.* borrowed for sixty years would require for repayment of principal and interest per annum at 4 per cent. 18*l.* 7*s.* 2*d.* If let at 10*s.* 6*d.* a week, the house would produce 27*l.* 6*s.* per annum; and after one-third had been deducted for outgoings on value of house and land, there would remain 18*l.* 4*s.* It will be observed that the returns are calculated on a liberal basis, for it is assumed the houses would not be empty or stand in much need of repair.

MEMORIALS IN CHURCHES.

A LETTER appeared from the Bishop of SALISBURY on Monday, in which his lordship said:—"A certain parish in this diocese has a very generous, diligent and much-respected incumbent. Certain of the parishioners desired to mark their sense of his merits, and to co-operate with his efforts, by adorning the church with a stained-glass window. To this, after inquiry, I gave my consent. But when it came to a request to put up near it a laudatory inscription referring to the incumbent, I entirely declined to permit that addition. My principle is that to praise any man before his death is always dangerous, but to do so in an inscription set up as part of the fabric of the House of God is inadmissible. However eminent a man may be for piety or virtue, he may fail before the end." Gratitude is so rare a virtue it deserves to be recognised, although an occasional departure from precedent is involved. Besides, an inscription in or about a stained-glass window usually carries a date, and if a clergyman should fail subsequently, it would show that at one time he stood high with his parishioners. Would anyone now object to a window with a laudatory inscription, if it had been erected at St. Mary's, Oxford, at the time JOHN HENRY NEWMAN, the vicar, was delivering his famous sermons? It is often prudent to make allowances for the weakness of human nature. The sight of the inscription to which the Bishop of SALISBURY objected might be an incentive to the incumbent to endeavour to guard himself against a failure. The shrewd Vicar of WAKEFIELD composed an epitaph for Mrs. PRIMROSE and having got a fair copy in an elegant frame placed it over the chimney-piece. He tells us how "it admonished my wife of her duty to me and my fidelity to her; it inspired her with a passion for fame, and constantly put her in mind of her end." There is perhaps more gratification in a record of that kind, especially when placed before the eyes of living people, than the one sanctioned by his lordship, and which has been set up, but which "makes no mention of the incumbent."

A great many critics, including some architects, would go beyond his lordship, and would condemn all manner of inscriptions in churches, whether they relate to the living or the dead. A church, it can be argued, is not a place for commemorating people, and laudatory epitaphs, if they are noticed, which rarely happens, only serve to distract the attention of a congregation which should be concentrated on matters of a different kind. The abuses of monuments and monumental inscriptions have been often discussed and ridiculed, and indeed it now requires some courage to undertake the expense of engraving the praises of defunct people either in marble or in brass.

The philosophy of the subject may be very clear, and reason may say there is extremely little utility in seeking renown by the lapidary art. But the weakness of human nature should also be considered. There is no doubt that in all ages men have endeavoured to obtrude not merely their names but their virtues on posterity. Relatives have also endeavoured to make out that they belonged to a family who were worthy of affection. As Sir THOMAS BROWNE said:—"Who cares to subsist like HIPPOCRATES'S patients, or ACHILLES'S horses in HOMER, under naked nominations, without deserts and noble acts, which are the balsam of our memories, the entelechia and soul of our substances? To be nameless in worthy deeds exceeds an infamous history." The history of Christianity exemplifies not only a desire to be remembered, but willingness on the part of ecclesiastical authorities to gratify it. The catacombs abound in inscriptions relating to early Christians, and the study of them in the endeavour to identify the persons named now forms an important section of archaeology. There are monuments in churches of all ages, and some of the most successful efforts of Mediæval artists are memorials of ecclesiastics and laymen. The inscriptions on them are sometimes undecipherable. It cannot be asserted that they were always laudatory, but it would be difficult to find many examples like that nameless slab in Worcester Cathedral which bears the one word "Miserimus." A monumental mason would probably be unable to engrave lines which recorded that the remains beneath the stone were those of an ordinary sinner.

The illustrations which we have been giving of the English cathedrals show how often the prelates on coming

into possession of a see lost no time in arranging where they were to be buried. Sometimes they erected special chapels for the purpose, sometimes they appropriated existing chapels. At Exeter Bishop QUIVIL chose the centre of the lady chapel. Bishop GRANDISSON restored the chapel of St. Radegund for a like purpose. Bishop BRONESCOMBE selected the St. Gabriel chapel, and Bishop OLDHAM the St. Saviour's chapel. Bishop BRUERE'S tomb was in the middle of the choir at one time. Powerful laymen were also able to obtain possession of positions in churches which they desired, although all laws of fitness and propriety might have to be set aside. Our readers will remember long litigation which arose out of the construction of a wall by which the chancel of the parish church at Arundel became a distinct structure. It was believed by archaeologists that the walling was illegal, but the courts of law took an opposite view. In the chancel were tombs of the NORFOLK family, and they were considered to be evidence that the place was appropriated for private use, and a representative of the family was therefore allowed to use the building as a private chapel. This case by itself is enough to reveal how important in an historical and legal sense is the subject of monuments in churches. Ecclesiastical authorities should consequently be careful in their manner of dealing with it, for it is not one to be determined by the notions of good taste or of fitness which belong to any individual.

To an age like our own, in which nervous people about it may seem strange that in Mediæval or earlier times people adopted such a matter-of-fact treatment of monuments during their lifetime, Masons who produce a kind of work are aware that even at the present day men and women are to be found in England who have no tombstones prepared, and sometimes more than one in order to anticipate posterity and read their own praises. It should also be remembered there is little or nothing to cause a shock in arrangements of the kind, and that as especially so among the Mediævalists. Architecture is a very exalted art, but none is so limited in appealing to the emotions. A sense of grandeur could be excited by such a tomb as an Egyptian pyramid, but the actual monument chamber within it was after all only a commonplace resting-place and could move no one to pity. The Mediæval mortuary chapel was like any other small chapel. It was made up of elements familiar in shape, and associated with life rather than with death. There was no terror in the altar tomb, and as the figures of prelates, ecclesiastics, knights and other people were of determined forms, it was not possible for a sculptor to perform any feat that would excite terror. Occasionally a man who was ambitious about teaching rustic moralists to die might have himself represented as a *écorché*, or as a skeleton. But the common sense of the age was opposed to such efforts, and figures of stereotyped kinds were wisely preferred. It was not thought advisable that death should be made ridiculous.

BROWNING, who knew more concerning art than all other English poets combined, has in a mocking but profound manner suggested the spirit in which monuments were regarded at a time when art was supreme. A dying bishop relates how he fought to save a special niche in a Roman church, and, although he failed, the site obtained was not cramped. There were to be four columns on each side of him, and one at his feet, all of peach-blossom marble, rosy and flawless. He tells how he concealed under rotten fig-leaves in one of his vineyard a lump of lapis-lazuli "big as a Jew's head cut off at the nape," which was to be poised between his knees. The slab was to be black basalt in order to give effect to the relief in bronze placed under it. There was to be a common travertine employed in the masonry, but jasper alone, and his regret was that he could not use his bath, which was hewn out of a single block "pure green as a pistachio nut." This and much more was to be provided by his heirs. It may seem now unbecoming for a bishop to be possessed by such vanity in his last hours, but we should remember that in the sixteenth century art accompanied Italians from the cradle to the grave, and, as it was inseparable from life, it was likely to abide with the Roman prelate in his parting hours. It is possible that the bishop, with all his admiration for beautiful things, was as orthodox as was necessary.

It may be incomprehensible to us how in Italy they could contrive to rob death or its representations of many of the terrors supposed to belong to it in northern countries. But it was an old practice. The Etruscan artists were adepts in the use of "properties" that terrified; but the terra cotta sarcophagus in the British Museum, which is only one of a numerous class, on which a man and woman are shown enjoying themselves and playing a game, is evidence that they could believe the comedy of life did not end with the tomb.

Ecclesiologists have from time to time endeavoured to reform the character of monumental memorials, and those designed by some modern Gothic architects cannot be condemned as out of place in a church. But however quiet may be the form, it is not always possible to restrain the writer of inscriptions. It seems absurd to have it inscribed on the monument of a bishop in Salisbury Cathedral, "*De nobilibus primordia duxit principibus, propeque tibi gemma reluxit*," especially when there can be no identification of who his lordship was. But the Salisbury relate was not the only one who sought notice for other qualities besides episcopal virtues. On that account we limit it would have been advantageous if a stricter censorship had been exercised. What is said about ordinary monuments is applicable to some extent to stained-glass memorials. But when parishioners are willing to acknowledge their obligations to an incumbent the character of the inscription is altered from those which are read with criticism. The great defect of all the fulsome phrases found on memorials is that we are ignorant of the authority which certifies so many virtues. We can easily imagine them to be paid for by the letter, in the same way as the engraver's work. But when parishioners testify to benefits received, it is only an excess of scrupulousness which would condemn their expression and in that way turn a pastor's work into one of ordinary servitude for wages.

THE STUDY OF ANTIQUITY.

A MODERN reader cannot but consider it to be incredible that so simple-minded a student as JOHN STOW, the London tailor, and author of "The Survey of London," should have been reported to the Council of ELIZABETH as a suspicious person possessing many dangerous and superstitious books. On the information of his own brother he was a second time accused before an ecclesiastical commission. It is possible that the danger incurred by STOW arose from his humble position. In the reign of ELIZABETH popular education was very limited, and it could hardly be supposed that a tailor would investigate antiquity and other subjects to which no profit was apparently attached, unless he was inspired by ulterior motives. For people of a different class such studies were useful. Archbishop PARKER in 1572 founded a Society of Antiquaries. He realised the importance of the manuscripts which were likely to be destroyed owing to the dissolution of the monasteries, and there were meetings at which topics were discussed. JOHN STOW belonged to this body. An invitation to him to attend a conference on Friday, November 11, 1598, exists. The question for debate was "The Antiquitie, Etimologie and Priviledges of Frishes in Englande." The secrecy attached to the proceedings is shown by the notification on the document:—"It ys desyred that you give not notice hereof to any but such as haue the like somons." The Society appealed for a charter of incorporation under the title of "The Academy of the Study of Antiquity and History, founded by Queen ELIZABETH." It was also proposed to establish a library bearing Her Majesty's name. The death of the Queen put an end to the gatherings.

There was also an Antiquaries' College, which may have been the Society under another name, possessing members who used to assemble once a week. Sir WALTER RALEIGH was one of them. After the death of ELIZABETH some years elapsed before an effort was made to resume antiquarian studies in England. Members of both bodies then endeavoured to found a new Society, but JAMES I. took a prejudice against the meetings, and as it was dangerous in these Star Chamber days to do anything doubtful, the

project suddenly came to an end. JAMES was desirous to form a college of his own at Chelsea in order to train a body of theological controversialists, and some antiquaries were attached to it. It is believed by inquirers that members of the Society of Antiquaries continued to come together in secret, and in that way they resembled the astrologists and the freemasons. The Society of Antiquaries now existing commenced to meet in 1707, and the minutes date from 1718. The charter was not, however, granted until 1751. The Society has therefore a continuous history of nearly two centuries, and during that period it has rendered important services in nearly all branches of archaeology, including those which were not recognised as part of the science in the eighteenth century.

There arose a prejudice against the study. An antiquary was supposed to "love all things, as Dutchmen do cheese, for being mouldy," and his chamber was regarded as a kind of charnel-house. Some years after the granting of the charter we find the man who was treated as the embodiment of English common sense, Dr. SAMUEL JOHNSON, making little of antiquarian researches. Speaking of the subject as it related to England, he said:—"All that is really known of the ancient state of Britain is contained in a few pages. We can know no more than what the old writers have told us; yet what large books have we upon it, the whole of which, excepting such parts as are taken from those old writers, is all a dream." JOHNSON could not realise that writings are not the only source of historical knowledge.

The so-called Revival of Learning was mainly exhibited by means of books and manuscripts. But it was soon found there were records of other kinds which were also important. JOHN SELDEN in 1629 gave a description of the inscriptions forming part of the Arundel marbles, which are now at Oxford. They were chronological, but a number of treatises and disquisitions also appeared in the seventeenth century which likewise related to Greek and Roman life. A Dutchman named MEURSIUS is recorded to have written sixty-seven works, the majority of which treated of Grecian manners and customs, and many of his conclusions are still accepted as correct. It was not therefore likely that LOUIS XIV., who had founded an Academy for the promotion of French literature as well as one for art, should have been indifferent to the new interest shown in Classic antiquity. In 1663 an addition was made under the title of a "Classe d'Histoire et de Littérature ancienne," which in 1716 was altered to "Académie des Inscriptions et Belles-Lettres." The love of ancient art which the "classe" was expected to systematise had already taken root in France. LOUIS XIV. had done much to encourage the desire to enrich cabinets with ancient examples. The amateurs who bought statues and busts took care to have them restored before they were presented to the public gaze, and in that way occupation was found for some of the most prominent of French sculptors. The love of antiquity, which in England was a sign of pedantry, was accepted in France as an accomplishment in which fine gentlemen could indulge without any diminution of reputation. After the death of LOUIS XIV. the enthusiasm was continued, for the Regent was an amateur. The researches, it is needless to say, were not systematic, and a great many spurious examples came into France about that time. The Academy of Inscriptions was recognised as a centre, and more than any of the other academies it was distinguished by the zeal of its "correspondants." It was then directed by BOZE, a man whose name is now rarely heard, but who gladly sacrificed the reputation he might have won, preferring to encourage others to follow out his suggestions and in that way to gain some temporary fame for themselves.

The interest in antiquity which had been created by the agency of the Academy of Inscriptions is indicated by one circumstance. BERNARD MONTFAUCON, a French Benedictine, had published some works relating to ancient literature and ecclesiology, but he was carried away by the new excitement, and visited Italy in order that he might give some attention to antiquities. In 1719 he was elected a member of the Academy, and he signalled the distinction by publishing five great volumes entitled, "*L'Antiquité expliquée et représentée en Figures*," which in 1724 were followed by five additional volumes. They form a pictorial

encyclopædia which was intended to enable people who could not visit collections to realise the shapes of an infinite variety of objects. It was impossible to have anything better adapted to suggest the extent of connoisseurship at the time. There are some 40,000 figures, but no attempt is made to explain them in a way which would now be thought necessary in manuals intended for the higher classes of schools or of university students. In most cases the figures were expected to serve without further comment. The public were more pleased with the book than if it presented a great many erudite dissertations. Although at the time it was supposed to be necessary to have the text of a book on archæology in Latin, the observations of MONTFAUCON were given in French. His work, therefore, became widely known. But, indeed, the plates might be considered as being the most successful of all attempts to express an universal language, viz. that of the engraver. MONTFAUCON'S colossal store has been superseded by others in which typical examples alone are introduced, but his courageous effort will always be memorable as an endeavour to provide a substitute for costly collections and one which could be enjoyed by those who were curious about antiquity, but uninstructed.

MONTFAUCON died suddenly in 1741. Six years afterwards there appeared in London a most interesting folio by JOSEPH SPENCE, who had been Professor of Poetry at Oxford, and was a great friend of POPE. It was entitled, "Polymetus; or, an Inquiry concerning the Agreement between the works of the Roman Poets and the Remains of the Ancient Artists. Being an attempt to illustrate them mutually from one another." It is in the form of dialogues, and one of the speakers, who does not possess a collection, asks if he could not make a shift with MONTFAUCON'S work. The remarks made against the work show that in England there was some knowledge on the subject and capacity for criticism. The absence of method is alleged as the chief defect:—

That father's work is largely stocked with figures, and perhaps too largely to be of service in the design we are talking of. We are much obliged to him for his industry, but his choice is rather too loose and unconfined. He has taken in all the different figures he could meet with, of whatever age or country. You have, even in the better part of his collection, Tuscan gods mixed with Romans, old Gallic figures with those of Syria, and the monsters of Egypt with the deities of Athens. This must bring in a great deal of confusion, and strangely multiply the appearance and attributes of nearly every deity. As you see them there, the descriptions of them in the Roman poets do not agree with the artists, nor the works of the artists with the poets. As my view was a more particular one, I found myself obliged to confine my attention to the deities as received in Italy, and even in such parts of Italy only where they were uniformly received. This cuts off any figures that were not of the growth, or at least made free of Rome. The forms used in the different parts of Italy were not indifferently copies to the Roman poets. Etruria had certainly a manner to itself; and the figures used in the Cisalpine Gaul, for example, might have very great variations from the Roman. On the other hand, we are by no means to omit the figures of the true Roman deities because made by Greek artists. Almost all their best were so, for the Romans despised the practice of the arts themselves, and a Roman workman in the Æmilian square was probably pretty near on a level with our artists of Hyde Park Corner, even at the very time that they were bringing in all the most beautiful pieces of antiquity from Greece, and encouraging the best living artists of that country to come and settle at Rome. Hence many of the Grecian deities, together with the modes of dressing them, were in a manner naturalised at Rome, and after that may be looked upon as Roman deities. But there are some that never were so received there.

A critic of a different class arose in JOHN WINCKELMANN. His admirers still consider him to have possessed an instinctive insight into the causes of the beautiful which is found in Greek art. The only drawback to his skill in criticising works of art arose from his intimacy with RAPHAEL MENGES, a painter who was heavy of hand and not subtle in opinion, but who believed he was a genuine follower of the Greeks, and who was not above putting forth a painting of his own as if it were an antique. WINCKELMANN sometimes attached too much importance to MENGES'S counsels. But in judging MONTFAUCON'S book he appears to have relied on himself. He points out that MONTFAUCON

was compelled to trust to his artists and engravers, and accepted works entirely or partly modern as examples, some of the greatest of Greek sculptors. Most of the erroneous opinions spread abroad at the time, WINCKELMANN ascribes to inability to recognise the extent of clumsy restorations. It is also noticed that SPENCE was less liable to error than MONTFAUCON. Compared with French Benedictine, WINCKELMANN'S "History of Art" may be considered as deficient in illustrations; but, on the other hand, it abounds in theories, most of which are respected. His countrymen especially hold him in reverence for he was the first to suggest that a system evolved in Germany was applicable to the most refined creations of Greece.

A new critic appeared who was dangerous both to SPENCE and to WINCKELMANN. LESSING was described by GOETHE as the impersonation of sublime reason, and in his book on the *Laocoon* he grappled with the two writers of ancient art in a manner which was then novel. It became the more remarkable when we remember that he knew little or nothing concerning ancient sculpture, and his book is no more than a fragment hurriedly prepared in order to suggest that he was acquainted with literature under many forms, and was therefore competent to undertake the duties of a librarian. He opposed the theory of SPENCE, by which art and poetry were held to have a mutual interest,

The verse and sculpture bore an equal part
And art reflected images to art

LESSING insisted that each had its own laws, and exemplified this by comparing VIRGIL'S description of LAOCOON the priest and his sons with the well known group discovered on the Esquiline, and for which half the revenues levied at one of the gates at Rome were paid during several years. WINCKELMANN had said that the statue expressed no violence either in the features or in action, and that the priest of APOLLO did not shriek, but softly emitted a sigh. LESSING maintained that a Greek was not ashamed to give expression when he suffered pain, and if any restraint was suggested by the group it was owing to the resolution of the Greek sculptor to avoid everything disagreeable for the sake of the spectator. Consequently he remarks, "MONTFAUCON displayed little taste when he pronounced an old bearded head with a gaping mouth to be a bust of JUPITER, uttering oracles." WINCKELMANN, who was not wanting in self esteem, was at first disposed to pay no attention to the "Laocoon," because, as he said, the author was without knowledge. But afterwards he was able to realise LESSING'S point of view, and came to the conclusion that a reply was needed. For, according to him, "as it is honourable to be praised by the worthy, also it may be honourable to be considered deserving the criticism of the worthy." Soon afterwards LESSING resolved to make a journey to Rome, and, indeed, he marked an edition of "The History of Art" with annotations, which expressed his objections; but the two never met. WINCKELMANN was murdered in Trieste. LESSING never visited Rome.

The four men, MONTFAUCON, SPENCE, LESSING and WINCKELMANN, undoubtedly exercised great influence and gave an impetus to the study of Classic art. Photography has deprived the Benedictine of any trust which at the time might be given to his representations of antiquity. SPENCE, who deserved a better fate, for it was his volubility that gave rise to the "Laocoon" is now, we fear, forgotten in the dust. Considering the state of England at the time, SPENCE'S work was a most ingenious effort, and exemplifies so much Latin scholarship. WINCKELMANN must always be respected with respect, for the susceptibility of the cobbler's son coming in contact with the treasures of Rome is creditable to human nature. LESSING was the most vigorous of them all. HEINE did not exaggerate when he described him as the equal of LUTHER in stirring the German nation to its depths. HEINE said he resembled that fabulous Norman who inherited the knowledge, talent and faculty of the men whom he slew in battle. Controversy is essential for the development of his mind. His knowledge of ancient art was infinitesimal if compared with WINCKELMANN'S. But his sound sense supplied a canon of criticism which is never likely to be set aside, and which such men as GOETHE and MACAULAY applied to subjects of a different kind.

THE LATE HERBERT SPENCER.

ON Monday the remains of the late Mr Herbert Spencer were removed from Brighton by train and hauled to Folders Green, where cremation was arranged. The following address was delivered by Mr. Leonard Courtney:—

I am not worthy to be called to the most honourable duty which has this day fallen upon me. So much I am bound to confess in all simplicity and sincerity at the outset of the few words I may utter. I cannot claim to have been in any fit sense a student of Herbert Spencer's works. I cannot plead for recognition as one of the great company of his disciples. You know, indeed, that Herbert Spencer's first desire was that no other man, known and honoured of us all, should speak on this occasion. His consent had been sought and obtained, and his words would have been fitting memorial of the work and worth of the dead. But four years of unremitting and, towards the end, of exhausting toil have induced John Morley to seek recovery of health and strength by the Mediterranean Sea, and he news of Herbert Spencer's death overtook him as he reached the Sicilian shores of imperishable memories and ever-renewed beauties. His weariness has passed away, his normal vigour is re-established, but it would have been impossible for him to return here to-day had it been right to make the attempt, and it was represented to me that Herbert Spencer had expressed the wish that I should take the place of John Morley if he could not be present himself. This message was sent to me four days since, when I was in the Northern capital. I was immersed in another sphere of action and occupied with far other thoughts, but to such a call I could not be disobedient, and I am here to-day, craving all forbearance if I fail to satisfy the unspoken desires which attend this office. I am indeed borne down when I think how vast a concourse of learners and workers in all lands are, in spirit, if not in body, attending here to-day to testify with gladness and gratitude the depth of their debt to the departed. Yet I must not shrink from adding a few more words of a personal and private character. It is many years since I first became acquainted with Herbert Spencer, and more than a score since our acquaintance became more intimate and my opportunities of intercourse more frequent and more fruitful by my entering into a family of which he had been an habitual guest and honoured friend. Women of that family are here to-day in whose earliest recollection Mr Spencer's personality dwells, who passed from childhood to girlhood, from girlhood to womanhood, under his eye, and to whom his death is the passing away of the last survivor of the grown-up people into whose society they were born. Their memories have in some measure become my own and upon the advantage thus secured friendship grew and sympathy increased, a sympathy in respect to public affairs never so great, so animated and so helpful as in the years which have quite recently passed.

The first thought of every one musing over the life of Spencer must be that of admiration for the vastness of the work he planned for himself and of gratitude and even joy that he lived to see his self-ordained task completed. Rarely or never in the history of thought have we seen so vast a conception carried forward by a single man into execution. The *Albion* which he issued in the year 1860 inviting support to his undertaking must have appeared to many readers a dream that could never be translated into reality. A thousand chances, apart from a failure in the pertinacity or resolution of the planner, might be counted against the fulfilment of his plans. We know, indeed, that such evil chances soon asserted themselves. A delicacy of constitution of which, having regard to his long years, Spencer himself was perhaps too sensible, threatened to interfere with, if not to arrest altogether, the progress of his work. The support he received was inadequate to meet the charges of his undertaking, and his means were being consumed at a rate which would soon exhaust them. His second hindrance was more easily set aside than the first, a circular intimating that the work must be suspended quickly sought a sufficiency of help. Spencer had already obtained more readers and more disciples than he knew, and friends across the Atlantic united in offering aid substantial enough to remove anxieties. As the result proved, a continually growing sale of his books quickly afforded all needful support, and the special response to his appeal was scarcely necessary. Indifferent health proved a more lasting difficulty. He was reduced to working very few hours a day, and sometimes to abstaining altogether from work for considerable intervals. The wonder that with the moderate allotment that was possible so much work was done. Thirty-six years did indeed pass from the first announcement of the undertaking before the final volume was issued. But what a range of inquiry, what an accumulation of illustrations, what a width of generalisation do the volumes of the series not cover. All history, all science, all the varying forms of thought and belief, all the institutions of all the stages of man's progress were brought together, and out of this innumerable multitude of data emerged one coherent, luminous and vitalising conception of the evolution of the world. It is

this harmony issuing out of many apparent discords, this oneness of movement flowing through and absorbing endless eddies and counter-streams and back currents, that constitutes Spencer's greatest glory and caused the multiplying army of readers of Spencer's successive volumes to feel the joy of discovering a great and ennobling vision of progress hitherto unrealised. If in later years some sense of the limitation of the inquiry has supervened, if some feeling has arisen of the insufficiency of the explanations offered, of some steps in the proof, some apprehension of gaps uncovered in the synthesis, there still remains throughout all the varied populations of the civilised world the abiding, undiminished conviction of a great gain realised, of a new plane of thought surmounted and mastered, new footholds of speculation secured which will never be lost in the education of man and the development of society.

Admiration of the range of his inquiry, of the vigour of his analysis, of the scope and comprehension of his great theory, must be our first impression in reviewing Spencer's work; yet must it never be forgotten that his one overmastering and dominant purpose was practical, social, human. Let it be noted that when it seemed too probable that his life would not endure to complete his design in all its parts, he broke off the sociological analyses to reach forward to the right determination of the bases of individual and political ethics. To lay the foundation of these on bedrocks of truth had always been his ultimate purpose. It was indicated in the first sketch of his proposed labours, and when preparatory clearances threatened to overwhelm him he left these works to achieve the essential purpose of his plan. The leading principle of his previous inquiries gave him the clue to the solution of this final problem. The self-adjustment of forces which he had found explaining all cosmic movements had a parallel in the self-adjustment of the forces through the working of which has been developed the society of man. In Spencer's vision it seemed inevitable that this should lead him to the highest exaltation of the worth of individual freedom, and to contest with all his energy the interference of the rules of the many with the growth of the one. We may be permitted to cling to the faith that this conception presents a true aspect of ultimate evolution; and yet it must be admitted that not many of us could accompany Spencer in all the thoroughness of the immediate application of his principles to society as it is. If we know but imperfectly what we are, and know not yet what we shall be, we may still believe in the ultimate realisation of a perfect order without coercion, and of the service that shall be perfect freedom; and we may be bold to insist that meanwhile the presumption is against interference, the justification of which is a burden to be discharged.

Spencer, indeed, in his late years sadly took note of movements apparently in contradiction to the leading principles of his doctrines; and here I may recall a conversation within a week of his death between him and a friend who had once been wholly with him, but had latterly leant to Collectivist action. "We have been separated," said Spencer, "but if we have been moving along different lines I know we have both been moving to the same end." "Yes," she replied—it was a woman who showed that divergence of opinion could not detach her from offices of tenderness and of love—"and it may be that in time some other method of attacking the great problem will be adopted, which will be neither wholly yours nor wholly ours." "Yes, it may be," said Spencer, thus revealing, in the last week of his life a mind open to receive new suggestions and to accept new proposals of change. Standing here by these poor remains so soon to be reduced to "two handfuls of white dust," we are irresistibly drawn on to accompany Spencer in his last brave effort to scrutinise the implacable facts of life. The last chapter of his last book grapples with ultimate questions and propounds his final judgment on the "Riddle of the Universe." No record can be more candid, no confession more striking than that in which he is even appalled by the thought of space, with its infinite extension and everlasting laws enduring before evolution and creation declared things as they are. What is the place of man in this great vision? The brain so full and so powerful has ceased to act. There is no longer any manifestation of consciousness. Can consciousness survive after the organ on which it depended has ceased to be? Is the personality that dwelt in this poor frame to be admitted as in itself indestructible? Or must we acquiesce in its reabsorption in the infinite, the ever-abiding, the ineffable energy of which it was a passing spark? If indestructible in the future, must it not have been as incapable of coming into existence as it is incapable of ceasing to be? Our master knew not. He could not tell. The last enigma defies our question. The dimensions of the unknown may be reduced through successive ages, but compared with our slender discoveries, estimated at the best, a vastness that remains must ever overawe us. Some fringes of the unknowable may yet prove to be capable of being known, but the great central secret lies beyond our apprehension. Yet two thoughts remain. If the night cometh in which no man

can work, we may work while it is day. If we can work, it is somehow within our power to work for what is noble, for what is inspiring, for what is broadening, deepening and strengthening the life of man. We may devote our lives to the service of supreme goodness. Looking back on the years of Spencer we may say that he thus worked, he thus dedicated himself as truly and as bravely as any man enjoying the solace of a more definite creed. To this spirit, then, whose work survives, whose words yet speak, the wave of whose influence can yet pass from generation to generation, we may say in all the fulness of interpretation which the phrase can bear—"Farewell."

AN ACADEMY ADDRESS OF 1823.

THIS year the members and students of the Royal Academy were deprived of the anticipated address by Sir E. J. Poynter, owing to the indisposition of the President. The time may therefore be considered opportune for printing the address which was delivered by Sir Thomas Lawrence on December 10, 1823, or eighty years ago. The successor of Benjamin West did not over-estimate his own powers of literary composition, and he was disposed to consider the delivery of a biennial address as a voluntary task which could be omitted if the feelings or ability of any President prevented him from its execution. Lawrence did not take steps, like Reynolds, to preserve his discourses, and the following is therefore likely to be unknown to students of art:—

The Council and General Assembly have great pleasure in witnessing the number of candidates on this occasion, and are well satisfied with the general progress of the schools.

In adjudging the premium for the best historical picture, they have been governed by those principles of art which form its real dignity—they consider the successful work as presenting the most striking representation of the subject; a bolder character of composition; an effect well suited to poetic incident (though perhaps carried to artificial excess), with that approach to historic depth and richness of tone which appears in unison with the general design, and promises the future colourist. These are the merits which in their opinion have deserved the prize.

Your own good taste, gentlemen, will remind you that we are to judge of works by the presence of beauties, not by the absence of defect; and that even if it fully reached the faultlessness of the character, the picture which should exhibit only the "coldly correct" would with difficulty obtain our sanction.

It must not, however, be considered that we apply this term of negative praise to the pictures that receive the second premium: but as nothing can compensate for the entire want of original power, so the superior value we assign to it will command our decision in its favour, where considerable ability is not distant.

The works which have gained the silver medal have much in them to commend. They show that careful attention to the drawing and anatomical knowledge of the figure so desirable in academical studies, and they are not deficient in very pleasing colour: whether the tone of that colour be strictly appropriate is doubtful; the premiums were adjudged on other grounds, and the design, chiaroscuro and colour, proper to historical or epic subject, will probably be more deeply considered by the artists on future occasions.

Your judges, gentlemen, are but students of a higher form. Continuing our exertions at a more advanced station, the obstacles we have ourselves to encounter remind us of the difficulties that await you, and we limit our expectations of your success by the uncertainty of our own. It is part of the triumph of our art that it is slow in progress, and that, although there are frequent examples in it of youthful promise, there are none of youthful excellence. Even the early paintings of Raphael bear no comparison in finished merit with the juvenile productions of the poet, with those of our own country, of Milton, Pope, or Cowley. Proceed then with equal firmness, humility and hope; neither depressed nor vain; chiefly elated that you determine to do better; as knowing that in a state of reasonable progress the seeds of beauty are already sown if you retain the consciousness of defect.

The rising school of England ought to do much, for it proceeds with great advantages. It has the soundest theory for its instruction, the brightest example for its practice, and the history of past greatness for its excitement.

The paternal care of the revered founder of this institution, by the judicious selection of its officers and the assignment of their duties, provided the most effectual means of study; and the councils of this Academy have been watchful to extend them; while, as the establishment advanced, the care of its professors was seconded by the general exertions of the members, till in knowledge and ability it attained an eminence under its former and late President that more than placed it on a level with the most enlightened schools in Europe. The noble works of those celebrated artists and of others of their

time—the comprehensive labours of Barry—the Shakespear and Milton galleries—the many sublime designs by the great author of the latter (Fuseli), whose unapproached invention and high attainments enforce this tribute to living genius—the numerous illustrations of our novelists and poets, in the greater number of which the purest spirit of Raphael may be traced—the rich embellishments of Eastern fancy displayed by others, with as fine delineations of the pathos and comedy of Cervantes—the series of outlines from Homer and the Greek tragedians, which embody the principles of ancient art, and in the expression of sentiment as well as grandeur seem coeval with its brightest age—these various and unrivalled efforts of the pencil fully support me in the assertion; while in the sister arts the names of Banks, of Nollekens and Baccio, Sir William Chambers, Mr. Dance and Mr. Wyatt still more confirm it. We must be careful not to surrender this distinction; and although one obvious disadvantage presents itself in the inadequate powers of the individual who now fills the chair, I yet hope, gentlemen, that remembering by whom he has been preceded, and by whom he is surrounded, you will yourselves endeavour to make up the amount of honour; justice to the scene of your education and the expectations of the country, and perpetuate by your own the services of the great men who so largely contributed to its fame.

Except in less brilliant periods, when decision may be between equality of talent, the voice of a profession is usually just, and of those distinguished persons the pre-eminence must undoubtedly be given to our former and late President.

The elevated philosophy of Sir Joshua Reynolds, in the golden precepts which are now acknowledged as canons of universal taste, and that illustrious Society of which he was the centre, combined with his genius to give a dazzling splendour to his name which seemed to leave him without competitors; yet the powers and knowledge of Mr. West deserved not to contrast in their present fortunes.

At an era when historical painting was at the lowest ebb (with the few exceptions which the claims of the beautiful allowed the eminent permitted to the pencil of Sir Joshua), Mr. West, sustained by the beneficent patronage of His late Majesty, produced a series of compositions from sacred and profane history profoundly studied and executed with the most facile power, which not only were superior to any former productions of English art, but far surpassing contemporary merit on the Continent, were unequalled at any period below the schools of the Carracci. The picture of *The Return of Regulus to Carthage*, preserved with gracious attention in the palace of Buckingham House, and of *The Shipwreck of St. Paul*, in the chapel of the Royal Hospital at Greenwich, are examples that may securely be adduced in testimony of the fact.

Towards the close of an honoured and laborious life, and when his advanced age might reasonably have deterred him from exertion, he produced a large and interesting work, *Christ Healing the Sick*, which, meeting with liberal reward, so forcibly excited the admiration of the public as even by its attraction to add new means of patronage to the prompt benevolence that secured it. This was succeeded by others of still more arduous subject, of greater magnitude, and, if possible, more powerfully impressive. The display of such astonishing ability in age (for he was employed on them in his eightieth year) combined with the sacred importance of his subjects, gave him celebrity at the close of his life, far greater than he had ever before enjoyed, and he became (almost to forgetfulness of deceased greatness) the one popular painter of his country. What slight circumstances may retard the effect usually produced by death on the fame of the eminent and good. It is now more than three years that we have witnessed at his residence an exhibition of the accumulated labours of a venerable and great artist, whose remains were honoured with a public funeral, and whose loss was felt as a national calamity, totally neglected, and deserted the spacious rooms in which they are arranged, erected in just respect to a parent's memory and due attention to the imagined expectations of the public, destitute of spectators as the vacant halls of some assembly, and, but for the possession of other property of known value threatening to injure the remaining fortunes of the filial hand that raised them. But though unnoticed by the public, the gallery of Mr. West remains, gentlemen, for you and exist for your instruction, while the extent of knowledge that he possessed and was so liberal to convey—the useful weight of his opinions in societies of the highest rank—the gentle humaneness of his nature, and that parental fondness with which youth and its young aspirations were instructed and cherished by him, render his memory sacred to his friends and endeared to the schools of this Academy, while respect for worth and gratitude for invaluable service are encouraged in them.

For myself, indebted to his friendship for no inconsiderable portion of that service, I can truly say that I never estimate the comprehensive ability of that great artist so highly as when comparing his labours in my memory with many of the celebrated compositions then before me of the revived modern art, and were the revered friend now living to witness

letters were addressed his report would be evidence of that passion.

I hope it is impossible that the nation should long continue neglect, and seem to prove by this indifference that the general enthusiasm so recently excited by those fine productions, and the respect then shown to their venerated author, are but the impulse and fashion of an hour, dependent on the convenience of place and distance, instead of the rational tribute of the judgment and the feeling protection of an enlightened and just people.

Yet, whatever in extent of fame had been the successful career of Mr. West with his illustrious predecessor, the integrity of your late lamented President would still have added the chief honours of the English school to our beloved Sir Joshua, of whose works, character and conversation he often spoke in the last years of the intercourse I had the honour to have with him with that pleased and proud remembrance which great minds always hold of the competitor who had most severely tasked their powers, of the genius that had surpassed them.

With what increased splendour did that genius lately reappear amongst us.

Many of us must remember when, after long absence, the great tragic actress of our time, Mrs. Siddons, returned for a season to the stage, to correct the forgetfulness of taste and restore the dignity of her art: it was so with the return—the recovered glories of Sir Joshua. They who believed themselves best acquainted with his works and entitled by their knowledge to speak of them with enthusiasm, felt how much that knowledge had forgotten; how inadequate to their merits was the praise they had bestowed. The prejudices, so injurious to modern art, were gone—time seemed to have advanced the future with double speed, and presenting Truth, vested her with new radiance. The few remaining competitors and scholars of this great artist saw him then with the eyes of posterity, and beheld in their own narrow period the sure stability of his fame.

It is singular that the judgment, the unpretending sense and manly simplicity so generally acknowledged to have marked the character of Sir Joshua should have been impugned only on those opinions upon art which seem to have been the most deliberately formed, and were enforced by him with parental zeal as his last remembrance to this Academy. Efficient proof of the sincerity of his admiration of Michelangelo had previously existed in the actions of some of his best groups having been taken from him, but we want no other evidence of its truth than his picture of Mrs. Siddons, a work of the highest epic character, and indisputably the best female portrait in the world.

The link that united him to Michelangelo was the sense of ideal greatness—the noblest of all perceptions. It is this similitude of thought that marks the first-rate genius; this simplifying fancy, which has nowhere its defined form, yet everywhere its image, and while pursuing excellence too perfect to be attained, creates new beauty that cannot be surpassed. It belongs only to that finer sagacity which sees the essence of the beautiful or grand divested of incongruous detail, and whose influence on the works of the great President is equally apparent in the calm firm defender of the national Rock (Lord Bathfield) as in the dying Queen of Virgil or the grandeur of the Tragic Muse.

To a mind so enlarged and liberal as Sir Joshua's—who carried not the value of an art that gave the world its Shakespeare, and in whose society a Garrick and a Kemble lived in grateful intercourse with Mr. Burke and Dr. Johnson—we may well imagine how gratifying were the contemplation and progress of that divine work; and allowing much to anticipated fame, we may equally believe that part of the noble purpose was protection of the genius he admired; to pass to passing excellence an imperishable name, extend the justice withheld by the limits of her art, and in the beauty of that unequalled countenance (fixed in the pale abstraction of some lofty vision, whose "bodiless creations" are crowding on the view and leave in suspended action the majestic form), to vivify the testimony of tradition, and by the mental grandeur that invests her record in resistless evidence the enchantment of her power.

That the works, gentlemen, of this illustrious man should have the strongest influence upon you cannot be matter of surprise; that the largest style of painting that perhaps is known should captivate the scholar as it has charmed the poet is the most natural result that could have been produced in minds of sensibility and taste—but let it not mislead them. If they determine to make the labours of Sir Joshua their example let them first examine by what only means their excellence was acquired.

His early pictures bear evidence of the utmost delicacy of finishing, the most careful imitation. That sensitiveness of touch which probably from boyhood he possessed could never have permitted him to enter into the mean details of Denner, to content himself with the insipidity of Cornelius Janssen;

but in mere finishing he was inferior to neither, and the history of the greatest masters is but one. Truth is the key of art, as knowledge is of power; within the portals you have ample range, but each apartment must be opened by it. The noblest work that perhaps was ever yet projected, the loftiest in conception and executed with as unequalled breadth, is the ceiling of Michelangelo; the miniatures of Julio Clovio are not more finished than his studies.

On you, gentlemen, who, with the candidates of this evening, are entering on the first department of the art, the conduct of Sir Joshua should act with treble force. Mr. Burke says of him, "In painting portraits he appeared not to be raised upon that platform, but to descend to it from a higher sphere." To that sphere let his example guide you, and it will lead you to the highest—to Correggio, to Titian, to Raphael, to Michelangelo. To "those divine men, in whose presence" (to use his own eloquent language) "it is impossible to think or to invent in a mean manner; and by the contemplation of whose works a state of mind is acquired that is disposed to receive those ideas of art only which relish of grandeur or simplicity."

Tasks of great difficulty lie before you, and with them you have one essential duty to perform; fulfil the latter, and the former will more certainly be achieved. Be faithful at all times to the dignity of your art; let nothing tempt you to bend a noble theory to imperfect practice; be constant to it in failure as in success, remembering that the most insidious approach of error is masked by disappointment. There may be new combinations, new excellences, new paths, new powers (of which, to the glory of a sister country, we have fortunately high example); there can be no new principles in art, and the verdict of ages (unshaken during the most daring excitement of the human mind) is not now to be disturbed. The variety of nature has no limit, and in the subjects she presents there is ample scope for the utmost diversity of thought, but since the judgment of mankind has limited the circle of greatness but to few, be these your audience, your tribunal; reject all meaner association, assured that once admitted to the highest, the rest are at all times sufficiently at your command.

The present auspicious circumstances indicate an approaching era that may teach us to look with less regret on the splendour of the past—a people more and more informed on the subject of the fine arts, a Legislature alive to the importance of encouraging them, a Government adopting measures to secure for them the noblest examples, and a gracious Monarch to command its efforts—at all times the munificent patron of this establishment, and whose reign has not been more the glory of his people than their advancement and happiness are his reward.

MANCHESTER ART GALLERY.

THE members of a special sub-committee of the Manchester Art Gallery committee held a meeting on Monday at the City Art Gallery in Mosley Street to consider the present cramped condition of the gallery and devise a remedy. It has been the opinion of the art gallery committee for a long time, says the *Manchester Guardian*, that the gallery ought to be enlarged. To this end they secured a plot of land at the back of the building, and were preparing plans for an enlargement scheme when the proposal came from the City Council that the committee should stay their hands pending the result of the negotiations for the purchase of the Infirmary site by the Corporation. The committee fell in with the Council's request. It was then suggested that an art gallery and a free reference library might be erected where the Infirmary now stands. The committee felt the force of the arguments that were addressed to them. They were, in fact, attracted by the prospect of seeing the city's art and literary treasures housed in a fine building in the best position that could be found. It is clear to them, however, that much time must elapse before this desirable end can be attained. It is beginning to be thought, also, that there may after all hardly be sufficient room for a reference library and art gallery in Piccadilly, especially if Professor Royd Dawkins's scheme for having a great museum there as well finds favour with the authorities. Meanwhile the art gallery committee feel that no time should be lost in deciding whether to extend on the present site or not. The meeting on Monday was private as usual, but we are informed that in the opinion of the majority it will be better for the gallery to remain where it is and seek greater accommodation at the rear of the building. The arguments for and against were discussed at great length, and in the end it was resolved to ask the City Council to authorise the committee to let the gallery stay where it is and proceed with their preparations for enlargement. The prevalent feeling was that in any case good will be done by stirring up inquiry and discussion.

NOTES AND COMMENTS.

It is rarely a metropolitan magistrate orders the demolition of buildings in which the line of frontage has not been respected, unless there is good cause for exercising summary power. The case which was heard on the 10th inst. before Mr. CURTIS BENNETT is therefore the more remarkable. There is now a desire in a great many parts of London to erect shops, and the defendant proposed to put up two in Westbourne Grove. They would extend beyond the line of frontage, but the County Council consented on the understanding that 6 feet of the forecourt should be added to the footway. The defendant surrendered only 2 feet 6 inches, and the remainder of the 6 feet was enclosed by a hoarding and a wall. On behalf of the defendant it was asserted that the wall belonged to the owner of the adjoining property, and the hoarding was intended for the public protection. It was also stated that the defendant was prepared to fully comply with the stipulation of the County Council. The magistrate treated the case as one of fraud and issued an order for the buildings to be taken down. An appeal was made to him that defendant's surveyor might be heard. But the magistrate refused to do so, or to alter his decision. Land is so valuable in most parts of London it is no wonder the County Council find a difficulty in having the building line respected. But the Building Act is decisive in such cases, and the leniency of magistrates has no doubt led owners to imagine that rigorous measures could always be obviated.

ALTHOUGH the Bourse of Paris is considered by speculators to be the most important building in the city, it was reopened after enlargement on Monday in the simplest manner. The building, it will be remembered, consisted of an immense parallelogram, measuring about 220 feet by 165 feet. As it has been altered, the plan may now be described as cruciform, but with very short arms. The arrangements are changed. There is still the familiar central hall and two smaller halls. But several offices and special rooms for bankers and their clients have been introduced. In other words, there are parts of the building from which the ordinary public will be excluded. It has been recognised that the general public take deep interest in the operations, and the din usually heard under the front colonnade is deafening. By the new arrangements non-professional financiers will be able to share in the speculations with less discomfort on wet days. The original architect of the structure was A. T. BROGNIART, who was a pupil of BLONDEL, and architect to the king. The foundation-stone was laid in 1808, but at his death in 1813 the works were incomplete. They were continued under the direction of LABARRÉ; the building was completed in 1826, and cost about eight millions of francs. The additions and alterations have been carried out under the direction of M. CAVEL, and it is the general opinion that the building has been improved in appearance externally, while it is better adapted to the requirements of the time.

TROYON is by many people supposed to have been a brilliant animal painter. There is no question of his success in that line, for he was able to represent not only cows, but the pastures in which they were found. It is difficult to say whether the landscape or the figures should be preferred. The power he displayed seems the more remarkable when it is remembered that he was one of the artists attached to the porcelain manufactory at Sèvres, and practice of that kind is not favourable to breadth of treatment or depth of colouring. Living at Sèvres, he was acquainted with the locality, and therefore it did not surprise his friends when in 1838 he obtained a medal for a view of St. Cloud. The collections of the city of Paris did not contain any representation of the chateau, and accordingly inquiries were made about TROYON's picture, which had escaped notice for several years. The picture was in the possession of M. CHARVET, a well-known shop-keeper. He has with great generosity presented it to the Musée Carnavalet, of which it will form one of the ornaments.

ILLUSTRATIONS.

CATHEDRAL SERIES.—EXETER: THE CHOIR.

BRITISH LINEN CO. BANK, THREADNEEDLE STREET, E.C.—DETAIL FRONT.

LUXMORE, LEEK, STAFFS.

OCCUPYING a pleasant site on the Buxton Road the house is built of common local bricks covered with cement plaster, and dashed with yellow Loughborough pebbles washed clean. The base of chimney-tops are in pressed red bricks from local make, and the stone is red Roche. The sash windows and casements are all built in from the front, and have English sills. The bottom panes are polished plate, and top sashes lead glazed. The staircase and angle-nooks are in other joinery in pine. The roofs are covered with Basford red hand-made sand-faced tiles, and are already weathered down to a quiet green.

The general contractor was Mr. T. GRACE, and plumber Mr. STEVENSON, both of Leek, while the bronze rim-locks and furniture and the ironmongery throughout (bronze) was supplied by Messrs. ELGOOD BROS., Leicester, to the design of the architects, Messrs. W. SUGDEN & SONS, of Leek.

ST. MARY'S CHURCH, STONE, KENT.

AS Stone Church, near Greenhithe, was built about the same time as a large part of Westminster Abbey, it was the belief of the late Mr. STREET, R.A., that the architect designed the two. He found resemblances in the arcades, tracery and foliage, as well as in the employment of similar materials for certain kinds of work. The chancel, nave, aisles and western tower were probably erected during the episcopate of LAURENCE DE ST. MARIE between 1251 and 1274. In the next century the vestry and western windows were introduced. The Wilsch chantry is a sixteenth-century addition. It will be observed that one peculiarity of Stone Church is that the roof of the chancel is higher than the nave, and in the interior work will be found to increase in beauty and richness of detail on passing from west to east. The building was restored about 1860 by Mr. STREET.

MILTON HOUSE, 8 AND 9 CHISWELL STREET, E.C.

THIS building occupies a site having about 30 feet frontage to Chiswell Street and a depth of about 92 feet, and has a rear frontage on to the Honourable Artillery Company's ground. The buildings were designed primarily as supplemental premises to Messrs. RAPHAEL TUCK & SON'S, LTD., headquarters at Raphael House, Moorfields, and the name of Milton House was given to the buildings and a portrait of MILTON carved over the entrance by reason of his literary association with the district. The floors are of fire-resisting construction, and are served by a hydraulic lift. The elevation has been carried out in Portland stone. The general contractor of the works was Mr. HENRY LOVATT, of London and Wokingham, and the architect Mr. DELISSA JOSEPH, F.R.I.B., of 73 Basinghall Street, E.C.

HOUSE AT REIGATE.

THIS house, the sketch of which was published in the last issue, has been erected at Reigate from the plans of Mr. C. E. SALMON, architect, Bell Street, Reigate. It is situated at the foot of the North Downs, and has views of Leith Hill, Box Hill, and across the Weald to the South Downs. The elevations are faced with rough-cast and portions in half timber work, left rough from the saw and tarred. The roof tiles are hand-made sand-faced tiles. Messrs. S. & E. COLLIER, of Reading, and weather quick-set. All the woodwork for doors, staircases, &c., was supplied and executed by the contractors from details by the architect. Chimney corners, with arched recesses, are formed in two of the rooms, and in one bedroom an open-timber ceiling occurs, with all woodwork stained a dark colour. The contractors were Messrs. W. BAGALEY & SONS, of Maresfield, Redhill.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. Aston Webb, R.A., president, in the chair.

The Secretary announced the decease of the following members:—Mr. Charles Fowler, Mr. N. Y. A. Wales, elected 1901, and Mr. W. Warlow Gwyther, elected Fellow 1880.

In referring to the decease of Mr. Charles Fowler, the President said he would be known and be loved by a great many present that evening. He was elected as Associate in 1851 and Fellow in 1862. His father was one of the founders of the Institute, and had acted for some time, as honorary secretary. He held for many years the appointment of surveyor to the Portland Estate. He was an enthusiastic worker in the interests of the Institute, and had acted as Chairman of the Board of Examiners. On the motion of the President, a vote of condolence was passed to the widow and family of the deceased.

Mr. W. HENMAN read a paper entitled

The Royal Victoria Hospital, Belfast.

He said there was much that was unique in its inception, original in its design and novel in its equipment which had attracted attention to the Royal Victoria Hospital, Belfast. It seemed therefore advisable that an authentic description should be published of the reasons which had led to what had been termed a "revolution in hospital design," as well as of the methods and means by which it had been accomplished. If the plan was revolutionary in its tendency, he hoped to show that it was a serious endeavour to simplify and, if possible, to improve hospital design. Whether it was destined to secure permanent approval or be pointed at as an example to be avoided, depended upon, first, whether the essentials in hospital design had been properly appreciated and applied; secondly, whether those having the care and management of the institution would maintain it in efficiency. As regards the development of the design in question, distinct variations in hospital planning had been principally brought about as knowledge increased of the necessity for efficient ventilation and of the means by which it could be secured. Hence, with mechanical means at their disposal, an attempt was made at Belfast to design a hospital that could be efficiently ventilated by such means. The author acknowledged his indebtedness to Mr. William Key, of Glasgow, who had proved the possibility of securing efficient ventilation on the plenum system—the system which had been adopted at the hospital. The wards of a hospital are occupied both day and night by patients in a low state of health, and continuous change of air, with an equable temperature and freedom from draughts, secured without noise or dirt, is necessary to the cure of the patients. The question therefore is, How can hospital wards be designed and arranged so as economically and effectively to secure the desired conditions? Reference was made to correspondence which had appeared suggesting that in consequence of the proved success of plenum ventilation, combined with antiseptic treatment, it might be possible to dispense with the "pavilion" arrangement of wards, and advocating double wards divided longitudinally by dwarf partitions. This idea had seemed altogether wrong, and he had set forth his views in a letter in which he suggested that "instead of erecting detached pavilions of several storeys, it might be better to spread out the wards on one storey only, placed side by side and lighted by continuous lantern lights. Such an arrangement would secure greater comfort to the patients, simplify ventilation by mechanical means, and very considerably reduce corridor communication as well as dispense with the inconvenience of stair-cases and lifts, thereby facilitating administration. For the accommodation of the staff there would be no objection to buildings of several storeys, but with all the patients compactly arranged on one floor-level their wants could be easily supplied, and other difficulties of the pavilion plan would be overcome." The letter concluded:—"Only those who study what is possible with the plenum system of ventilation properly applied can realise the practicability of such an arrangement; yet by its employment I feel convinced that some such revolution in hospital planning will be accomplished, and do not doubt that in time it will be demanded, partly in consequence of the great cost of the pavilion plan, but more particularly in consequence of the excessive labour thereby involved."

When the author was requested to meet the committee of the Royal Victoria Hospital, Belfast, reference was made to the suggestions contained in the above letter, and he was questioned as to the practicability of constructing a hospital such as he had proposed. On attempting to fit together on entirely new lines the intricate requirements of a complete hospital for 300 patients and a large staff, he began to realise the difficulties he had imposed upon himself. With the assistance of his partner, Mr. Thomas Cooper, the plan in time, however, assumed the

generally symmetrical arrangement in which it now appeared in the erected building.

He referred to the opposition raised against the scheme before it was finally sanctioned by the committee. Professor Byers, member of Council of the British Medical Association and honorary member of the medical staff, averred that "when first he heard that it was proposed to place all the wards side by side without intervening open spaces, to light them principally from above, and to have no windows to open, it appeared to him so contrary to all his preconceived ideas on hospital design that he determined to oppose the carrying out of such a plan by every legitimate means, and to enable him to do so effectually, he set about independently to study the subject in all its bearings, but to his surprise, the more thoroughly he probed it the more and more convinced he became that Mr. Henman was right."*

The cost of the buildings, including all engineering requirements and a complete steam laundry, was but a trifle over 300*l.* per patient's bed—proof that the arrangement of plan is capable of being carried out at an economical figure. The site is six acres in extent, to which another six is to be added. The hospital stands comparatively high, has a pleasant outlook in every direction, and is readily accessible from most of the large manufactories and works and from the poorer parts of the city, whence the majority of the patients will come. From west to east there is a fall in the level of the ground of over 20 feet, of which advantage has been taken; by keeping the main floor level well above the ground adequate height is secured for the principal fresh air-duct, which runs under the main corridor, for the branch ducts conveying fresh air to the several wards and accessory rooms, also for a pipe-duct running parallel with the principal air-duct—a necessary provision, so that heat from the steam and hot-water pipes may not penetrate the buildings during the summer months, and that convenient access may be obtained to all piping.

Opening directly from the hall opposite the porch entrance runs the main corridor from east to west, some 450 feet long and 9 feet wide. Branching southward are seventeen short corridors, giving access to as many wards, each with fourteen beds, with their accessory rooms, all practically under one roof. The eight wards to the east are for medical cases, then come eight wards for surgical cases and one for gynaecological cases. To the north are two for ophthalmic cases.

A description was given of the general arrangement of the rooms—male and female wards, classrooms, clinical-rooms, operating-rooms, ward kitchens, store-rooms for clothing, nurses and cleaners' rooms, sanitary conveniences, &c.; also the "extern," or outpatients' department, with its waiting-hall and medical, surgical and specialists' consulting-rooms, examination-rooms, dispensary, &c. Intercepting lobbies between wards and conveniences are dispensed with. Open windows with plenum ventilation are objectionable, and without open windows intercepting lobbies are an anomaly. By simple adjustment air from sanitary turrets is prevented from entering the wards, air pressure in their direction being maintained from the wards outwards. To the ward-kitchens no doors are provided. With plenum ventilation an equable temperature and freedom from draught are secured, consequently inner doors are required only for the sake of privacy, or where difference of temperature is desired to be maintained.

Two small detached buildings at the west end of the site are for isolation purposes. They receive fresh air by a continuation of the main duct underground; and, although at least 600 feet away from the fans, are amply supplied with fresh air.

The author showed sections through a portion of the ward-block to give a general idea of the method of lighting and of the construction adopted. The windows are not skylights, as generally understood, but may be more properly defined as clerestory windows, slightly sloping, and glazed with $\frac{1}{2}$ -inch plate glass. The result is most perfect lighting to every portion of the building. Surgeons using the operating-rooms state that nothing could be better for their purpose; the light is ample, well diffused, and free from shadowing. An advantage of plenum ventilation is that the cubical contents of buildings may be very considerably reduced. Given sufficient floor area for nursing and teaching purposes, the height of wards need be no more than appearance demands, and when lighted, as they are in this instance, the cubical contents are much reduced, being not more than two-thirds of what is ordinarily required.

After referring to the administrative buildings, he described the various fittings and appointments of water-closets, sinks, bath-rooms, operating-rooms, post-mortem rooms, pathological and microscope rooms. The whole of the sanitary appliances

* Asked recently for his personal experience of the working of the hospital, Professor Byers said that the building "more than fulfilled his expectations, the plenum system worked admirably, and whether from the point of view of administration, ease and comfort of patients, or adaptability to clinical teaching, he knew no hospital equal to it."

were carried out from the architects' designs by Messrs. Morrison & Ingram, and fixed by Mr. John Dowling, plumber, of Belfast.

Mr. Henman concluded with a word of caution about plenum ventilation. It is, he said, essential it should be applied with full knowledge and by those competent to deal effectively with it. Distrust an engineer who will give a scheme for ventilating any building indiscriminately on the "plenum" or "extraction" system, or by what are termed natural means; but try to realise that every building should be designed for the particular method of ventilation intended to be employed, and that the means for procuring ventilation must be specially designed on scientific principles to meet the actual requirements of the building.

Mr. HENRY LEA, M.Inst.C.E., followed with a second paper, entitled

Engineering Work of the Belfast Hospital.

Speaking of the ventilation, he said that the design which Mr. Henman had originated facilitated to an extraordinary degree a simple arrangement of air-ducts of ample proportions. To emphasise the importance of this point, he mentioned two large buildings now ventilated by mechanical means, each having about 13,000,000 cubic feet of fresh air driven through them per hour. In one building, owing to the liberality with which the air-ducts are proportioned, the total amount of power required to drive the fans was 19 i.h.p.; in the other building, owing to the air-ducts being restricted and very crooked, the power required was 53 i.h.p. Putting this into money value, in one case the driving-power cost 766% per annum and in the other 2,164% per annum.

The main air-duct at the end nearest to the fan chambers has a height of 20 feet and a width of 9 feet. The full width is preserved to the far end of the wards block, a distance of 443 feet, but the bottom slopes upwards, so that the height is diminished to 6 feet at the far end. The total cubical capacity of the hospital buildings ventilated on the plenum system is 703,000 cubic feet. With seven changes of atmosphere per hour in the winter the velocity of the air entering the main duct is 7.06 feet per second, and with ten changes per hour in the summer the velocity is 10.85 feet per second. The proportions of the branch ducts and of the vertical air-flues are based upon similar liberal lines, as are also the air-ways through the fan chambers and the water screens. This accounts for the reduction of power for working the system.

Another point in relation to economical working is that the fans are driven by a steam-engine, the exhaust steam from which is utilised for heating the water for the baths and lavatories. The lecturer showed that there was a saving under this head of 275% per annum.

The main engineering features in connection with the ventilation of the hospital having been fully detailed, the lecturer treated of the arrangements for hot and cold-water supply. The supply of cold water is brought from the cold-water cistern in the roof of the east wing and is connected to the return-pipe, so that the cold water, after passing through the rotary pump, enters and is heated by the two steam calorifiers before it passes to the various portions of the building.

The general arrangement of the hot-water circulation includes two hot-water cylinders, each containing 900 gallons of water. To the system of circulation are connected eight subsidiary circulations under the ward block for the purpose of supplying the baths and lavatories in that block. Other subsidiary circulations are also provided for the ophthalmic block, the extern and the administrative block. All the hot-water mains and the branch circulations are covered with non-conducting composition. The effect of the rotary pump is such that the hot water is caused to circulate through the whole system about once every fifteen minutes, which insures evenness of temperature.

The system of cold-water pipes follows substantially the course of the hot-water pipes, with the exception that no circulation arrangements are provided. Wherever the cold-water mains and pipes are exposed to cold air they are covered with non-conducting composition to protect them from frost.

In each of the operating-rooms is an apparatus for sterilising water for surgical purposes. The water for these purposes is first warmed by means of a steam coil, and is then passed through a Berkefeld filter, which frees it from every kind of microbe, and is thereby rendered innocuous for surgical use. The temperature is regulated with the greatest facility.

The laundry is designed so that the articles to be cleansed go through the consecutive stages of treatment without being carried over the same ground twice. The ordinary type of machinery is employed. The exhaust steam from the laundry engine is used to heat the drying closet and water for the washhouse. A fan draws air from the ironing-room, forces it through the heating coils of the drying closet, and thence into

the washhouse, upon the steamy atmosphere of which it has beneficial effect.

Electricity for lighting is supplied from the town main. The system of wiring is that which is now well known and generally used, but which the author believes he was the first to use, namely, placing a suitable number of fuse-boxes about the building; using the same sized sub-mains throughout supplying the fuse-boxes; using the same sized fuses in all the fuse-boxes; placing not more than five 60-watt lamps on each fuse for 100 volts, or eight lamps on each fuse for 220 volts, and using the same sized lamp leads throughout the whole building. The total number of 16 candle-power lamps, or the equivalent, installed in the establishment, is about 1,100.

Sir JOHN HOLDER, chairman of the Birmingham General Hospital, proposed a vote of thanks to the authors of the two papers for the intellectual treat they had given the meeting. When it was decided, he said, to build the large hospital at Birmingham there was a limited competition for designs, the committee having as their adviser Mr. Alfred Waterhouse, R.A. The competition was fruitful, and he could say with confidence that Mr. Henman's successful plans were far ahead of those of the other competitors, and in the accomplishment the committee had every reason to be proud of their selection. The building was designed for natural ventilation, but after the plans had been accepted it was decided to adopt the plenum system of ventilation, and Mr. Key was asked to co-operate with the architect. In the working of the hospital the results of the system had been satisfactory, for in the coldest days of winter an even temperature could be maintained in the building. There was a constant supply of fresh air, which benefited both patients and nurses, and they found no contamination of diseases in the wards. If measles or scarlet fever broke out it was rarely necessary to close the ward in which it occurred. He had visited modern American hospitals in Baltimore, New York and Montreal, and an inspection of the institutions there made him the more satisfied with their hospital in Birmingham.

Mr W. E. RILEY asked whether the hospital at Birmingham was on the pavilion plan.

Sir JOHN HOLDER said the pavilion plan had been adopted and the building admirably constructed. In conclusion, he congratulated Mr. Henman on the result of his labour, and Mr. Key for the scheme of the ventilating and heating arrangement which he had so successfully introduced.

Dr CHILDS said though he was a believer in the plenum system of ventilation for crowded buildings, he must strike a discordant note when it was proposed as a successful arrangement for hospitals. He wished to know a little more about inlets and outlets, their position and size. He had never seen a satisfactory description of such details. They all recognised the necessity of having a sufficient quantity of fresh air in hospital wards, and it was the custom to gauge its purity by certain phenomena. If the air in a building contained too much organic matter, a condition which could be proved by chemistry, then they knew the air was not properly ventilated. They knew very little about the properties of fresh air. In a hospital with large floor area the question arose, Was the plenum system of ventilation really a necessity? Did it give the invigorating essence which they recognised was possessed by fresh air? This, to his mind, was the one thing wanting in the plenum system when applied to hospitals. The benefits by natural ventilation were not imaginary, and though a strong advocate of the efficacy of the plenum system for churches and crowded rooms, he questioned whether it was the best ventilation for hospitals.

Mr A. SAXON SNELL suggested that as the hour was late, and many would like to have the question of natural ventilation as opposed to the plenum system thrashed out, that the discussion should be adjourned for another evening.

Mr H. T. HARE seconded the vote of thanks.

The PRESIDENT, in putting the motion to the meeting, said if it could be arranged, a meeting would be held at which the question of ventilation could be fully discussed.

It was announced that at a business meeting to be held on January 4, 1904, Messrs. G. A. T. Middleton, Butler Wilson, J. W. Beaumont, John Woolfall, E. C. Down and H. Davis would move—(1) That this Institute is in favour of the general principle of the compulsory examination and registration of architects. (2) That a committee be appointed to consider what steps should be taken to give effect to this principle, and to report thereon to a special general meeting before the opening of Parliament. (3) To nominate this committee.

The meeting then terminated.

A Memorial to the late Bishop Creighton has been placed in Peterborough Cathedral. It consists of a slab of white Sicilian marble bearing a life-sized figure of Dr. Creighton in cope and mitre, and holding in his left hand the pastoral staff of Peterborough.

ROYAL ACADEMY SCHOOLS.

THE prizes awarded to the successful students of the Royal Academy Schools were distributed at Burlington House on the 10th inst. In the absence, through indisposition, of the President, Sir E. J. Poynter, the distribution was made by Mr. Ernest Crofts, R.A., keeper of the Academy. The following is the prize list:—Historical painting (the meeting of Diogenes the Cynic and Alexander at Corinth, *cf.* Plutarch, *lex. c. 14*), gold medal and travelling studentship (200*l.*), not awarded. Landscape painting (an express train at sunset), Turner gold medal and scholarship (50*l.*), John Hodgson obelisk. Landscape painting (a bank of ferns or bracken), reswick prize (30*l.*), Walter Percy Day. Painting of a figure from the life (open to male students only), silver medal, 1st, William Charles Penn; silver medal, 2nd, William E. Gladstone Solomon (disqualified owing to having received the same prize before). Painting of a head from the life, silver medal, 1st, Walter Percy Day; silver medal, 2nd, John Holman Vybrandts. Painting of a draped figure (open to female students only), silver medal, 1st Catherine Oules; silver medal, 2nd, Marjory Violet Watherston. Cartoon of a draped figure, silver medal and prize (25*l.*), William E. Gladstone Solomon. Design in monochrome for a figure picture (Elijah cursing Ahab and Jezebel in the Vineyard of Naboth, I. Kings, chap. xxi.), Armitage prizes, 1st (30*l.*), and bronze medal, not awarded; Armitage prizes and bronze medal, 2nd (10*l.*), not awarded. Design for the decoration of a portion of a public building, prize (40*l.*), Lilian Price Edwards; *proxime accessit*, Walter E. Webster. Set of six drawings of a figure from the life (open to male students only), 1st prize (50*l.*) and silver medal, William E. Gladstone Solomon; 2nd prize (25*l.*), William Charles Penn; 3rd prize (15*l.*), Thomas Dargan Philpot; 4th prize (10*l.*), William George Simmonds (disqualified owing to having received the same prize before). Drawing of a head from the life, silver medal, 1st, not awarded; silver medal, 2nd, Francis E. D. W. Fitzjohn Crisp. Drawing of a statue or group, silver medal, 1st, not awarded; silver medal, 2nd, not awarded. Perspective drawing in outline (open to painters and sculptors only) (Mr. Willoughby's temple in Sir William Chambers's "Architecture"), silver medal, no competition. Composition in sculpture (three generations), gold medal and travelling studentship (200*l.*), Arthur Charles White. Model of a design (David cutting off Goliath's head, I. Sam., chap. xvii. v 51), 1st prize (30*l.*), Leonard Jennings; 2nd prize (10*l.*), Frederick Brooke Hitch (disqualified owing to having received the same prize before). Set of four models from the life (open to male students only), 1st prize (50*l.*) and silver medal, Frank Ransom; 2nd prize (20*l.*), George Gilbert Walker. Design for a medal (to commemorate the Durbar with an allegorical figure of India on the obverse), silver medal, Henry William Page. Model of a bust from the life (open to female students only), silver medal, 1st, no competition; silver medal, 2nd, no competition. Model of a statue or group, silver medal, 1st, Louis Fritz vai Roselieb; silver medal, 2nd, not awarded. Design in architecture (a domed church), gold medal and travelling studentship (200*l.*), Lionel Upperton Grace. Set of architectural drawings (the interior of St James's Church, Piccadilly), silver medal, 1st, Leslie Wilkinson; silver medal, 2nd, James de Caynoth Ballardie. Set of architectural designs (upper school), prize (25*l.*), William Edward Brooks. Set of drawings of an architectural design (lower school), prize (10*l.*), George Forsyth. Plan of a building (a general hospital), prize (10*l.*), not awarded. Original composition in ornament, silver medal, no competition. Perspective drawing in outline (open to architects only) (interior of the hall at Eltham Palace, Kent, looking eastward), silver medal, Percy Ion Elton. The Landseer scholarships in painting and sculpture, of 40*l.* a year each, tenable for two years, have been awarded—in painting, to Walter Percy Day and Ernest Stafford Carlos; in sculpture, to Frederic Charles Chrisfield.

The secretary (Mr. Fred A. Eaton) read a communication from the President, in the course of which Sir Edward Poynter said that the Royal Academy had recently made some very considerable and important changes, which should have a very far-reaching effect in the conditions under which admission was granted to those schools, and in the course of study which they and future students would pursue while there. It was thought by many members of the Royal Academy that much was taught there with which candidates for admission should be conversant before entering the schools, and that by omitting the more elementary stages of instruction subjects of study could be introduced for which there had not hitherto been sufficient time or opportunity, and after long and serious consideration, extending over some two years, the Academy had formulated the system of study which was embodied in the new regulations, and which came into working for the first time at the beginning of the present term. The changes made were in some respects so sweeping that some little time might be required to get the system into working order, and it was con-

ceivable that some modifications in the direction of a return towards former arrangements might be found desirable. Much would depend on what capacity schools in which candidates received their preliminary instruction might develop towards meeting their requirements. The most valuable effect of this change, if the higher standard for admission which was demanded under the new rules was properly insisted on, ought to be in raising the quality of instruction in other schools of art.

THE ULSTER SOCIETY OF ARCHITECTS.

UNDER the presidency of Mr. W. J. Gilliland, the Ulster Society of Architects held their annual meeting in Belfast on the evening of the 8th inst. The hon. secretary (Mr. N. Fitzsimmons) read the report of the Council, which contained the following:—"The work of the past year, although not of the eventful character of previous years, has been none the less satisfactory in that the position of the Society has been materially strengthened, its influence extended, and the various matters affecting the welfare of the profession in this province carefully watched and its interests as far as possible safeguarded. The important question of the registration of architects was fully discussed at a general meeting, and the following resolutions were passed unanimously:—"That the absence of the restriction of the use of the title "architect" to those properly qualified to use same is a great injustice to architects who are so qualified, and seriously retards the progress of architecture in Great Britain and Ireland." "That it is the duty of the Council of the Royal Institute of British Architects, as representing the profession, to make an immediate and serious effort to obtain statutory powers for the purpose of establishing such restriction." Copies of these resolutions were sent to the Royal Institute of British Architects and to the Royal Institute of Architects in Ireland, and it is gratifying to be able to announce that the latter body, on the motion of one of your representatives, also carried these identical resolutions unanimously."

Mr. Seaver (hon. treasurer) submitted a statement of accounts, showing a satisfactory balance to the credit of the Society.

The reports were adopted and the following officers were elected:—President, Mr. W. J. Gilliland; vice-president, Mr. J. J. McDonnell; hon. secretary, Mr. W. B. Fennell; hon. assistant secretary, Mr. W. Hartley Patterson; hon. treasurer, Mr. H. Seaver; council, Messrs. N. Fitzsimmons, F. H. Tulloch and R. M. Young; associate members of council, Messrs. T. Houston and E. R. Kennedy; auditors, Messrs. J. St. J. Phillips and Vincent Craig.

The annual dinner of the Society was held later, also under the chairmanship of Mr. W. J. Gilliland.

The Chairman, on rising to propose the toast of "The King, Queen Alexandra and other members of the Royal Family," expressed regret at the absence, through indisposition, of Sir Thomas Drew, who should have taken the chair. Dealing with the toast, he said the Royal Family, from the King down, were all keenly appreciative of art and architecture. Some members of the Royal Family were themselves no mean artists, and had shown a power and an ability which, had they not enjoyed the elevated rank they did, would have placed them in a foremost position amongst the artists of the country.

The toast was received with musical honours.

Mr. Henry Seaver, in submitting the next toast of "The Learned Professions," said they were very pleased to have present with them representatives of the church, medicine, law and engineering. They had there the distinguished head of the Presbyterian church (the Moderator); a distinguished professor of the Queen's College, Professor Symington; their old friend Alderman Harper, who would remember the deputations of the architects to the law committee two years ago; and they had also Professor Fitzgerald, the head of the engineering school at Queen's College.

The toast was cordially received.

The Moderator, in responding, said he had always had a great sympathy with architecture. Ministers frequently came into friendly contact with architects in regard to buildings, and he thought there ought to be a very close harmony between the two professions. The time was when the buildings that the members of their profession were perhaps most proud of were those that were connected with the profession to which he belonged, and he did not think that the connection was by any manner of means falling away.

Professor Symington said he considered that a man to be a successful architect should be first of all an anatomist. They found in the human body the application of the principle of the best use of the best materials for the best purpose. There was a maximum of strength with a minimum of material. However high an architect might attain in his profession,

however complicated the buildings he undertook, he would never construct anything at all equal in perplexity to the structure of his own body. In the medical profession it was necessary that a man should give a proper guarantee of his qualification before he could practice, but it seemed that the State were quite prepared to allow anybody to put up a building without any real proof of his being fitted for the task. He thought the State should protect the public by seeing that the men who belonged to such an important profession were properly trained for their work; and the architect's profession would never be on a proper footing till this was done.

Alderman Harper and Professor Fitzgerald also acknowledged the toast in appropriate speeches.

Mr. W. J. Fennell proposed "Our Guests," the toast being responded to by Mr. Vinycomb, who referred to the great strides architecture had made in Belfast during the past half-century.

Sir Otto Jaffe, in giving the toast "The Ulster Society of Architects," said it was a gratifying circumstance, for which the architects deserved a share of the credit, because of the encouragement they had given to sanitary reform, that the death-rate in Belfast during the last two months had been only a little above 18 per 1,000. A funeral was a most expensive luxury, not only to the family directly concerned, but to the community in general. They heard a great deal nowadays about the fiscal question, and there could be no doubt that Great Britain had not made the same progress commercially as other nations during the last twenty years. Some people thought a duty on manufactured articles would provide the remedy; in his opinion, what they needed was an improvement in their educational system. He was recently on the grand jury, and after hearing some of the witnesses who came before that body he had to ask himself whether we were really living in a civilised country. The whole question of the progress of the nation was involved in the progress of education. Another matter which had hampered the commercial development of the country was tardy legislation, and the commercial laws were not adaptable to modern needs.

The Chairman, in responding, alluded to the Moderator's remarks on the association between architecture and religion, and said he would go further and assert that architecture was founded on the primal wants and aspirations of human nature. In that way their profession was closely allied to religion. He did not see any tendency to return to the conditions of the neolithic age and adopt the open-air treatment in practice. He complained that they had not the proper facilities for educating young architects; and even if they had those advantages what would it avail them when the absolutely incompetent could put up a brass plate on the door and label themselves architects? This was an anomaly against which they were struggling. The majority of the profession saw the desirability of State recognition of the status and position of the architect, and he thought the time was not far distant when this recognition would be given, and an end put to the intrusion of interlopers without any qualifications.

During the evening an interesting musical programme was rendered.

MANCHESTER SOCIETY OF ARCHITECTS.

AT the Manchester Society of Architects' annual dinner, which took place on December 11, Mr. Butler Wilson, F.R.I.B.A., the president of the Leeds and Yorkshire Architectural Society, in responding to the toast of "The Allied Societies," said:—

Mr. President and Gentlemen,—I must express to you my appreciation of the great honour which you have conferred upon me by your request that I should respond to this toast of the allied societies. I feel that we are allied in more senses of the word than one; we are not only allied to the Royal Institute, but we are, particularly at the present time, allied and bound to one another by a common interest, by a mutual desire which is shared by the majority of our profession in this country. Our desire is that the status of the architect should receive legal recognition, that those who practise our art should be duly qualified to do so. The architectural profession should no longer be a dumping-ground for those who are unfit or unwilling to properly qualify themselves for other recognised professions. One hears rather less nowadays of the fool of the family being destined for the Church. Well, this may or may not be significant so far as our profession is concerned. But there can be no doubt that matters have arrived at a deplorable pass when some of the designing which an architect should do for himself is being conveniently done for him by others. The unqualified architect is largely responsible for the offers of "designs free" on the part of the trade, whilst the client is paying twice over. When we insist upon qualification by examination we are told that the student cannot be examined in art, although the Institute finds no difficulty in examining him in design; but surely the artistic student can be made to

qualify himself in construction. When we insist upon registration we are told that education will solve the problem, education has not solved the question, and never will. When you have educated the student, and he starts practice as a qualified man, to whom has he to appeal for his commission? If to the public, then to a public who, the late Lord Salisbury said when asked to appoint a Royal Commission on art, do not care about art. They are a commercial people. Where public funds are to be expended in building operations—as, for instance, by boards of guardians, district councils and corporations—are the members of those bodies recruited from artistic members of the community? I would suggest to you that they are recruited largely from the people whom the late Lord Salisbury referred to as commercial, and can it be wondered at if they give the preference to the commercial architect? Our remedy is registration, which in due course will guarantee to the public the possession by all registered architects of a knowledge of both design and construction. We are rapidly nearing this goal. Motions in favour of registration will be submitted at the next business meeting of the Institute on January 4. Should these motions fail in being carried by those present at that meeting, then a demand must be made that the whole membership of the Institute should be permitted to voice their opinion by means of voting papers sent through the post. Should this not be feasible, then we could form an association of allied societies, with the object of nominating and electing registrationist candidates on the Council. Union is strength, and much may be accomplished thereby. I do not refer to the kind of union which the late Mr. Whistler had in his mind in a certain instance. A close personal friend who had quarrelled with the artist, was admonished in the following terms:—"My dear So-and-so," said Whistler, "you should remember that united we stand, divided you fall." Provincial members of our profession might seek a closer union, and as one means of bringing this about, I suggested to the President of the Institute in June last the holding of an annual congress in London and various other cities in turn—a course which is followed by many institutions with excellent results. I read that your worthy President has recently stated that competitive contracts did much to interfere with good architecture. Perhaps some of us are more fortunate than others in having contractors who will conscientiously interpret our designs. The most conspicuous instance of the careful workman that I know of was an Irish foreman, who was accompanying the architect on a periodical tour of the building. They came to a somewhat dark portion of a corridor and the architect suggested that a fanlight should be inserted so as to borrow light from an adjoining room. "Oh!" said the foreman, "would it be wise to do that, sir; there's none too much light in the room already?" I must thank Mr. Percy Worthington for the generous way in which he has spoken of the allied societies, and there is no doubt that of late years they have displayed some activity in forwarding the interests of the profession. I need hardly say how much we in Yorkshire envy you the possession of your chair of Architecture in Manchester, of your efforts for the advancement of our art and the difficulties which you have successfully surmounted. Surely there could be no more signal proof. We allied societies have done much and we hope to do still more, because we feel that by organisation, cohesion, by uniting our forces, there is no object which we could not ultimately achieve for the general good of architecture and architecture. Gentlemen, I thank you for the cordial way in which you have received this toast.

FEES IN AMERICA.

THE following schedule of minimum charges was adopted at the convention of the American Institute of Architects in Cleveland for the professional practice of architects:—

The architect's professional services consist in making the necessary preliminary studies, general working drawings, specifications, large scale and full-size details, and in the general direction and supervision of the work, for which the minimum charge is 5 per cent. upon the cost of the work.

For new buildings costing less than 10,000 dols., and for furniture, monuments and decorative work, and for interior cabinetwork, it is usual and proper to charge a special fee in excess of the above.

For alterations of and additions to existing buildings 10 per cent. of the cost of the work.

When heating, ventilating, mechanical, electrical and sanitary problems in a building are of such a nature as to require the assistance of a specialist, the owner is to pay for such assistance.

Chemical and mechanical tests, when required, are to be paid for by the owner.

Necessary travelling expenses are to be paid by the owner. The architect's payments are due from time to time during the progress of the work in proportion to the value of his

services to his full commission at the time. Sixty per cent. of the commission of the architect is due when the general drawing and specifications are completed.

Until an actual estimate is received, charges are based on the proposed cost of the works, and the payments are received in instalments of the entire fee, which is based upon the actual cost. The architect bases his charges upon the entire cost to the owner of the building, when completed, including all the fixtures necessary to render it fit for occupation, and is entitled to extra compensation for furniture or other articles purchased under the architect's direction.

If any material or work used in the construction of the building is already upon the ground, or come into the possession of the owner, without expense to him, the value of said material or work is to be added to the sum actually expended upon the building before the architect's commission is computed.

Consultation fees for professional advice are to be paid in proportion to the importance of the questions involved, at the discretion of the architect.

For alterations and additions to contracts, drawings and specifications, an additional charge is to be made for the time and services rendered.

None of the charges above enumerated cover professional or legal services connected with negotiations for site, disputed party walls, right of light, measurement of work, or services incidental to arrangements consequent upon the failure of contractors during the performance of the work. When such services become necessary, they shall be charged for according to the time and trouble involved.

The supervision of an architect (as distinguished from the continuous personal superintendence, which may be secured by the employment of a clerk of the works) means such inspection by the architect or his deputy of a building or other work in studios and shops, and in process of erection, completion or alteration, as he finds necessary to ascertain whether it is being executed in conformity with his design and specifications or directions. He is to act in constructive emergencies, to order necessary changes and to define the true intent and meaning of the drawings and specifications, and he has authority to stop the progress of the work and order its removal when not in accordance with them.

On buildings where the constant services of a superintendent are required, a clerk of the works shall be employed by the architect at the owner's expense.

The basis of settlement in cases of abandonment or suspension of the work shall be as follows:—Preliminary studies, a fee according to the magnitude of the work; preliminary studies, working drawings, 60 per cent. of the entire fee.

MEMORIAL TABLETS.

IN 1901 the London County Council took over the work, initiated by the Society of Arts, of commemorating the residence in houses in London of distinguished persons. From a statement lately issued by Mr. Laurence Gomme, the clerk of the Council, it appears that the necessary preliminaries in connection with the preparation of a design to be adopted for the memorial tablets, the obtaining of tenders for the work of making the tablets and the investigation of a number of houses which it had been suggested should be distinguished have occupied a considerable time, but now that these preliminaries are completed the work will proceed rapidly. The Council has already approved of the fixing of tablets on the following houses:—

1. Holly Lodge, Campden Hill—the house in which Lord Macaulay died.
2. No 122 Great Portland Street—which stands on the site of the house in which James Boswell died.
3. No. 67 Wimpole Street—a residence of Henry Hallam.
4. No. 48 Doughty Street, Mecklenburgh Square—a residence of Charles Dickens.
5. No. 22 Theobald's Road—the birthplace of Benjamin Disraeli, Earl of Beaconsfield.
6. No 4 Whitehall Gardens—the house in which Sir Robert Peel died.
7. No 56 Devonshire Street, Portland Place—a residence of Sir John Herschel.
8. No 1 Devonshire Terrace, Portland Place—a residence of Charles Dickens.
9. No. 12 Clarges Street, Piccadilly—a residence of Edmund Kean.

The necessary preliminary inquiries and investigations concerning a number of others are almost completed. Among the persons in commemoration of whom it is probable that the Council will, at no very distant date, be recommended to erect tablets may be mentioned Henry Cavendish, James Clerk-Maxwell, Charles Darwin, William Hazlitt, William Pitt, Samuel Richardson and Thomas Young. Of the tablets which the Council has already determined to erect, tablet No. 1 was

unveiled on the 26th ult. by the Earl of Rosebery, thus inaugurating the Council's work in this direction. Tablet No. 4 is ready to be fixed, and Nos. 3, 5 and 6 will be ready very shortly. Since the Council determined to affix a tablet in the case of No. 2, very careful consideration has been given to the question whether it is desirable to continue the practice, occasionally adopted by the Society of Arts, of putting up tablets on comparatively new houses which occupy the sites of the actual premises in which the persons to be commemorated lived. As a result it is probable that in the near future the Council will be recommended to abandon the proposal to erect a tablet on No. 122 Great Portland Street, and to indicate instead a house actually occupied at one time by Boswell.

The procuring of the necessary consents for the erection of tablets in the cases of the above houses has necessitated a correspondence with a large number of persons having interests in the premises, and the Council acknowledges the courtesy and consideration which has been extended to it in the matter.

The form of tablet has been designed under the direction of the Council's superintending architect, Mr. W. E. Riley, who advises the Council as to the position in which the tablets should be fixed and under whose supervision they are erected.

GLASGOW ARCHITECTURAL ASSOCIATION.

AT the fourth ordinary meeting of the Glasgow Architectural Association, held in the hall of the Philosophical Society, Bath Street, on Monday last, a very interesting paper was read by Mr. Theodore Fyfe, architect, on "Dr. Evans's Excavations at Knossos, Crete." Excavations have been carried on at Knossos for four seasons since 1900 by Dr. Arthur Evans, and there is every probability of a fifth. Knossos is perhaps the most important of a series of palaces in the island of Crete of the Minoan period—a period anterior to that which produced the Mycenaean palaces on the mainland of Greece. Probably no other site, either in Greece or Egypt, has yielded such a variety of small finds, many of which, as well as the architectural features of the palace, are new and of the first interest. It is evident that at Knossos also we find the true solution of all legends about the Minotaur and the Labyrinth of Crete. The date of the existing palace stretches from about 2000 to 1500 B.C., as important evidence of Egyptian influence has corroborated. An earlier and a later palace can be traced, the first having connections with the Egyptian Hyksos, or Shepherd dynasties; the latter broadly contemporary with the Egypt of Thothmes III. It is highly probable that the Minoan races were the Keftid, or "People of the isles of the sea," represented as bringing tribute on an eighteenth dynasty wall-painting in a tomb at Thebes. Many of the other finds are of extraordinary interest. Some 1,600 clay tablets show a highly-developed system of writing in a hitherto unknown style. Vases and other utensils have been found in pottery and fine stone, exhibiting the most beautiful workmanship and design. An almost complete ivory statuette of a leaping youth, a lioness's head in alabaster and a life-size bull's head and foot in painted "gesso-duro" relief are among the most perfect specimens of ancient art, and can hold their own with Greek work. A capability of working to great perfection in almost any material is evident, such materials as ivory, crystal, gold, enamelled porcelain, pottery and fine stone, and the sum total of the discoveries enables us to know much that is interesting about life in a Minoan palace. The lecture was illustrated by a number of highly-interesting slides. A discussion followed the reading of the paper, in which Mr. Newbery, Mr. Bromhead and others took part.

THE CAERWENT EXPLORATIONS.

A SECOND tessellated pavement from the Roman excavations at Caerwent, near Newport (Mon), has been fixed in position in the museum of the Newport Free Library. It was found in what is known as House No. 7, from which the first was taken, and the two together form one of the most important discoveries of the kind yet made in Roman remains in England. Each is a very large example of tessellated floor-work, and the second is distinctly the finer and more perfect of the two. Busts of the seasons and figures of animals and cupids are conspicuous objects in the pavements. The chief features of House No. 7 were a small, partially-detached building, which may have been a shrine, and two rooms separated, no doubt, only by a curtain when the house was in use. It was these rooms that contained the tessellated pavements. One underlay the other, and the upper one was of later date and of inferior workmanship to the other, the latter being constructed with far more care as to detail and finish. Careful drawings and tracings of both pavements were made, and both have been removed in sections and admirably and successfully put together again in the museum, embedded on

cement so durable that they will probably remain in as good a condition as they are now for hundreds of years. In both the rooms of House No. 7 the walls were standing to a height of 3 feet above the floor level, and the plaster on them was nearly intact. It was therefore possible to recover to a considerable extent the colour and design of the wall decoration. It has been determined that the remains removed shall be housed at Newport, but so far the question of a separate building for their reception has not been decided, although there will in time be ample material to form a distinct Caerwent museum.

CONCRETE REINFORCEMENT.*

SO much actual work is being done at the present time with reinforced concrete, and in general the subject is receiving such universal attention from the engineering world, that the method of reinforcement described in this article, it is believed, will be of interest.

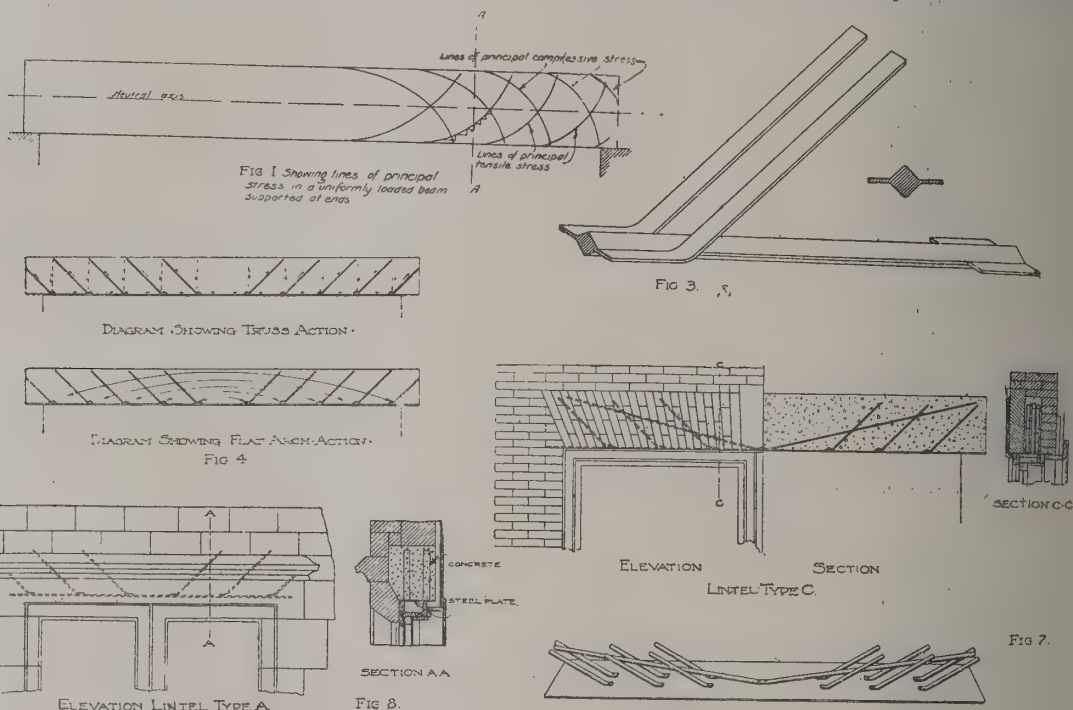
It is fairly well recognised among engineers that vertical reinforcement for concrete beams is quite as essential as the horizontal reinforcement, and in many cases the horizontal rods are surrounded by U-shaped stirrups of band-iron or twisted rods. It was noticed at first by European engineers that a concrete beam when tested to destruction under uniform loading invariably failed by shear at the ends, the lines of rupture corresponding closely to the lines of principal compressive stress for such a beam.

The writer also made a number of tests on beams rein-

granular composition was, of course, advanced by Rankine many years ago, and to the writer's knowledge, Captain Sewell was the first to make public the very close relation between theory and actual tests in reinforced concrete beams, when these were loaded to destruction. It is true that the article by Captain Sewell was severely criticised by other engineers. This was done, however, without bringing forward substantial tests to prove differently. In fact, the attempts to prove the contrary seemed to the writer very weak indeed. In one case a number of tests were cited, which, upon investigation, proved to have been centrally loaded beams. In another case beams of such proportions were tested as would be absolutely impracticable in the ordinary run of building construction.

If, then, lines of principal tensile stress exist throughout a beam, it is most natural that the concrete, being weak in tension, should open up at right angles to these lines, and this is what has occurred in all the tests which the writer has observed in well-proportioned concrete steel beams when tested to destruction under uniform load, and where the reinforcement was horizontal only.

As has already been noted, European engineers endeavoured to overcome the difficulty by placing stirrups throughout the beam, their distances apart varying, of course, in the inverse ratio of the shear. There seems no doubt whatever in the writer's mind that such stirrups accomplish a great deal of good, as they cross the lines of rupture at an angle and tend to hold the material together. If, however, they are placed in a beam, they should be placed in a direction inclin-



forced with plain and deformed rods on the bottom, and without one exception, all such beams when tested to destruction under uniform loading failed by vertical or longitudinal shear in exactly the same manner as originally pointed out by Captain John S. Sewell.

The matter of vertical reinforcement is certainly of more importance than some American engineers have been willing to grant to it. To the writer it seems most natural that rupture should occur in this manner; in fact, he can hardly conceive of its occurring in any other way. It must, of course, be remembered that a beam, when tested for both shear and bending moment, should be subjected to a uniformly distributed load, not to a concentrated centre load; for a beam loaded according to this latter method would only develop one-half the shear which exists in a uniformly loaded beam for a given bending moment.

Take, for example, a certain beam, as shown in fig. 1, and consider the cross-section AA. The tension strain on each fibre below the neutral axis varies in proportion to its distance therefrom. The vertical shearing strain is, however, practically constant. The resultant strain on any particle should therefore be a combination of these two components, producing a line of principal tensile stress, which is one of variable curvature from the bottom of the beam to the top.

This theory of lines of principal tensile stress in a beam of

to the horizontal, so as to lie more closely along the line of principal tensile stress, for if they lie in exactly this line they also cut the actual line of rupture at right angles, and are therefore of maximum efficiency in holding together the concrete where its natural tendency is to open up.

Furthermore, if such stirrups are to carry stress, they should carry it into some member capable of receiving it, and the bottom chord member or the horizontal reinforcement is there for that purpose.

In the first place, then, it seems to the writer that stirrups should be inclined to the vertical and preferably bent to a curvature to approximate the line of principal tensile stress, and secondly, these stirrups should be rigidly connected to the main horizontal reinforcing bar.

There is still another matter in connection with the steel reinforcement for concrete beams which is also of great importance, in so far as it affects economy in the use of steel. In a uniformly loaded beam the maximum bending moment occurs at the centre, whereas the maximum shear occurs at the ends, and if the same quantity of steel reinforcement is therefore placed along the bottom of the beam and extends the full length of it, it does seem to the writer that steel has been wasted so far as bending moment alone is concerned, and certainly the beam has been neglected so far as shear is concerned.

A steel I-beam for the same reason is not an economical construction for uniform loading; its top and bottom flanges are only required at the centre, and at this place only a very thin web whereas at the ends the stress is almost altogether

* From a paper by Julius Kahn, C.E., published in *The Engineering Record*.

hear, and web alone is required with very little top and bottom angles.

In the system of concrete reinforcement which it is the purpose of this paper to describe, these two matters have been carefully considered. The fundamental principles of this type of reinforcement are:—

1. Concrete should be reinforced in a vertical plane as well as a horizontal one.
2. The reinforcement should be inclined to the vertical, preferably with varying upward curvature, approximating the line of principal tensile stress.
3. The metal should be distributed in proportion to the strains existing at any place.
4. The shear members should be rigidly connected to the horizontal reinforcement steel.

It has been endeavoured to accomplish all of these results by taking a bar of cross-section, as shown in fig. 3, and shearing upwards into an inclined position the web on both sides of the main body bar, thereby forming substantially the tension members of the ordinary Pratt truss.

When such a structural member is embedded within a body of concrete, the latter unites firmly to the steel, and the combination of the two forms a trussed beam wherein the tensional members are made up of steel, and the missing compression members supplied by the concrete.

Concrete is excellent in compression, steel in tension, and thanks to the property of strong adhesion between the two, their combination makes a most ideal beam.

Neglecting for a moment the matter of vertical reinforcement, it is very evident that a bar sheared up as above described cannot possibly slip through the concrete. The writer has actually taken blocks of concrete, moulded to form the voussoirs of a flat arch, and then set them between the prongs. Such a beam, though set up without a particle of mortar between the joints, will carry a very large weight, and were it not for the large deflection which is caused by the poorly-fitting surfaces between the prongs and the blocks, such a beam would carry weights to the same extent and on the same principle as when steel and concrete are actually united together.

And this presents another way of looking at the reasons why this method of reinforcement is so efficient. As soon as a load is applied on top of the beam the concrete tends to arch itself, and a series of internal arches immediately set themselves up within the material, each arch finding its abutment in a set of prongs for which the bottom chord acts as a tie. The prongs receive the weight and carry it upwards, distributing it on the other arches of larger span, the horizontal reinforcement serving as a common tensional member, fig. 4.

It is plainly evident that with this construction the horizontal member might actually be placed outside of the concrete entirely, and the adhesion of the concrete to it entirely neglected, the strains coming into it being so largely the horizontal components of the inclined members.

Of course, for fireproofing purposes and to prevent rusting it is more advisable to embed the steel within the concrete, and when this is done advantage may be taken of both the adhesion of the concrete to the main bar and to the sheared-up members. In fact, with a given amount of concrete a maximum amount of steel may be used, since the strains which it takes up are due to the direct adhesion of the concrete to it, plus the horizontal component of the inclined members. When such a beam fails, assuming that good material has been used for its construction, one of two things must happen, either the steel pull in two, or the concrete crush on top. The top portion of a concrete beam when used in floor construction is largely the floor itself, and it is generally impossible for this to fail in compression. It would seem, therefore, that a very large quantity of steel could be placed in the bottom of the beam to balance the compression. In fact, in all tests which the writer has made up to date he has pulled the steel in two at the centre of the beam.

Another point of great advantage in this construction is the fact that a beam need not necessarily be very wide to carry a given load; depth alone counts to advantage. The steel reinforcement, depending entirely upon the stresses coming into it from the sheared-up members, may be one large bar. This is practically impossible with constructions wherein the stresses coming into the steel are due to adhesion only of the concrete to it. Where such adhesion is depended upon, a large body of concrete must surround the steel to be able to transmit all of the strain which the bar is capable of taking. Whatever strain exists in the steel must be transmitted into the upper portion of the concrete through the medium of the concrete immediately surrounding it, and any one can readily perceive the magnitude of the horizontal shear which must therefore exist throughout the body of the concrete and the necessity of giving this great width. With this new method of concrete reinforcement, however, the beam may be comparatively narrow; in fact, at the bottom it needs only to be sufficiently wide to encase the steel. It should taper upwards, however,

widening towards the top, so that sufficient area may be given to the concrete to receive the compression. This of course makes a remarkable saving in the amount of this material used.

The strength of steel is of course a definitely determined matter. As for the concrete, it is not very expensive, and it would be advisable in all cases to give a small surplus of this material on the top of a beam, so that it will not fail by compression. With shear thus properly cared for there is only one way in which the beam can possibly fail, and that is by the parting of the steel.

Where this result can be assured with certainty a concrete beam need no longer be subjected to a factor of safety of ten; the ordinarily adopted factor for steel, four, is sufficient, as such a beam is entirely dependent upon the steel and should be subject to close calculation in the same manner as a steel I-beam or truss. When a concrete beam fails by shear, as has occurred almost without exception in tests up to date, then, indeed, the engineer stands more or less in mystery.

In general it seems to the writer that whenever concrete is depended upon to carry other strains than direct compression, more or less risk is being assumed by the designing engineer, and a large factor of safety is strongly recommended.

TESSERÆ.

London's Triumphal Arches in 1603.

ACCORDING to Walpole, "Stephen Harrison, who calls himself joiner and architect, invented the triumphal arches erected in London for the reception of James I. They were engraved by Kip on a few leaves in folio: a work I never saw but in the library Chatsworth." In Nichols's "Progresses of King James I.," vol. i. p. 328, is mentioned Harrison's "Seven Arches of Triumph, 1603-4." These are prefaced by the remark that this King James I.'s memorable passage from the Tower to Whitehall was described in many contemporary publications, amongst the foremost of which should be noted "The Arches of Triumph erected in honor of the high and mighty Prince James, the First of that name King of England, and the Sixth of Scotland, at His Majesties entrance and passage through his honorable Cittie and Chamber of London upon the 15th day of March 1603; invented and published by Stephen Harrison, joyner and architect, and graven by William Kip, folio." The arches were seven in number, though only five were originally intended; the whole of these were devised by Harrison, and the workmen were employed on them from April 1603 till the end of August, when the exhibition was postponed. The work was recommenced in February 1603-4, and the arches at West Cheap and Temple Bar were then added and completed in six weeks. The publication alluded to above is the same mentioned by Walpole, and consists of the following nine plates very neatly engraved:—1. The title-page, at the top of which is "Exercitationes virtutum in omni ætate mirificos afferunt fructus," and at the bottom "Monumentum ære perennius." 2. A portrait of the King in his full robes of state, engraved by Lawrence Johnson. In one hand is the sceptre, in the other the regal orb. He has a large ruff, and his hat is ornamented with a circlet of flowers, and surmounted by waving feathers (wanting in Gough's copy in the Bodleian). At top in one corner of the plate are the royal arms; at the bottom "The High and Mighty Prince James, by the Grace of God, King of England, Scotland, Fraunce and Ireland, Defender of the Faith." 3. The arch at the east end of Fenchurch Street. 4. The arch in Gracechurch Street, by Italians. 5. One near the Royal Exchange on Cornhill, by the Dutch. 6. Above the great conduit, Cheape (at the end of Soper Lane, near Queen Street). 7. An arch close to the little conduit in Cheape. 8. One above the conduit in Fleet Street. 9. One at Temple Bar, representing the Temple of Janus. The engravings are accompanied with descriptive letterpress, over which are the royal arms and those of the City of London. The remaining arches may be found in Dekker, who has also given an abridgment of Jonson's share of the pageant. Many of the platforms were of an enormous bulk and height, as were several of the arches. It appears that the citizens began their preparations immediately on the decease of Elizabeth; they were interrupted by the plague, but resumed as soon as the danger was over and continued to the period of the royal entry. Exclusive of the moulders, plumbers, painters, smiths, &c., who were very numerous, there were employed eighty joiners, sixty carpenters, thirty sawyers and about seventy common labourers, who wrought without intermission. The whole of the machinery was under the direction of Stephen Harrison, the chief joiner as he is called. The name of Inigo Jones does not occur in the list of the architects given by Dekker.

Rubens, Vandyke and Reynolds.

An eminent physician of Charles I.'s time, Theodore de Mayerne, has particularly recorded many of the recipes which he obtained from Rubens and other artists of his own day; the

MS. is in the British Museum. Descamps has pointed out that the transparency of the shadows and the absence of all loading in these portions of the picture is one of the characteristic differences between the genuine works of Rubens and those of his scholars. The advice of this great master caused David Teniers to return to his original habit of painting his shadows thin and transparent. Rubens himself "painted in varnish," as Sir Joshua says of his "Battle of the Amazons." Eastlake observes:—"The employment of such a medium by Rubens was almost a necessary consequence of his adopting the original method of showing the ground through the deep colours, for in proportion as the pigment is thin the vehicle requires to be substantial. But the durability which the oleo-resinous medium insured, and the possibility of dispensing with a final varnish by its means, appear to have recommended it to Rubens in the execution of his work generally." Such a varnish, composed of some hard resin, admitted, of course, of being thinned and diluted with a rectified essential oil. "But this adjunct, if used at all in the earlier ages of the Flemish school, was not intended, as it afterwards was, to do away altogether with the gloss of the vehicle; for, had this been the case, the work would have required a varnish at last; and one of the recorded peculiarities of the early Flemish pictures was that the surface bore out without varnish." Rubens's works, when first executed, would not require varnish at all, but the gloss arising from the medium in which the colours were originally mixed disappears after a time, and a superficial varnish, such as mastic varnish, may become requisite. Vandyke's practice differed from that of Rubens; he employed a more liquid vehicle for his colours. We in England have to regret that our own great portrait-painter tried all sorts of experiments with reference to this matter, and that so many of his finest works have accordingly faded or perished. At the latter end of the eighteenth century an attempt was made to revive the ancient encaustic painting; this probably suggested the use of wax, which we find so often mentioned in Sir Joshua's notes of the materials which he employed. Sometimes it is wax dissolved in Venice turpentine, sometimes megilp (that is, drying oil and mastic varnish), sometimes a balsam such as copaiba, sometimes white of egg and gum tragacanth, which holds the prominent place in his own account of what he used. The beautiful picture of the "Strawberry Girl" appears to have been painted with a solution of wax. Cracks are sure to occur when the under layers of colour harden more slowly than the outer surface, and on the other hand, when the softer colour is outside, the picture becomes wrinkled or shrivelled, as is the case with the "Christ in the Garden" of Correggio, belonging to the Duke of Wellington.

The Coins of Athens.

If all ancient Athenian coins had been lost we should never have supposed that they were remarkable both for an extreme coarseness of engraving and the most hideous of all devices. The figure of a screech owl was generally chosen for such purposes, as if it had been intended to select the least graceful of animated forms; like those barbarous and gothic hieroglyphics, called arms by the nobility of Europe. The ancients were no less sensible than we of the bad taste which prevailed in the fabrication of Athenian money; for the philosopher Zeno has compared it to a discourse composed of rustic phrases and coarse expressions. What Spanheim and other modern authors have written on this subject is founded on no kind of probability. It appears that from a spirit of parsimony, very consistent in republics, the treasurers of the State allowed such trifling wages for coining that no capital artists ever offered their services. Although the Athenians possessed mines of copper at Colonos, yet they were so unwilling to employ this metal as specie, that they preferred gratifying their taste or vanity by cutting silver into such small portions that they were sometimes mistaken, as Aristophanes says, for scales of fishes. Money of that quality was very unfit for the purposes of commerce; it had the inconvenience of being easily mislaid, and could not be found without difficulty; besides, the expense of manufacturing such diminutive pieces by the hands of celebrated artists would have amounted to more than their intrinsic value. Among the monuments of Grecian numismatography we find still some spangles of silver representing the half of an Athenian obolus, and others of still less value must probably have circulated when the use of copper was exploded. Different demagogues who endeavoured to introduce that metal were forced by satyrs and epigrams to desist from their enterprise. Dionysius the orator was all his life surnamed the man of brass, because he made a long, and perhaps a good, discourse demonstrating the necessity of copper money. Gold was seldom brought into circulation by the republic, and then in small quantities, either for the commemoration of a victory or some such glorious event. It is even pretended that in all the memoirs of the Academy of Inscriptions, no golden medal of Athens now exists which can be considered as authentic. The Athenian golden medals which Winckelmann pretends to have seen in Italy, appear

to have been as false as that tetradrachma bearing the pretended effigy of Themistocles, the absurdity of which is evident from the barbarous inscription it contains, were we not well assured that no money was ever coined with the image of Themistocles. The false golden medals of Athens were cast in moulds taken from the silver medals, of which likewise a great number were forgeries, like that one said to be of the canton of the Scambonidæ cited by Goltzius.

GENERAL.

Sir Laurence Alma-Tadema, Sir E. J. Poynter and others have formed a committee with the object of inviting the scene-painters of the London theatres to an informal banquet on January 31, as a mark of appreciation for their admirable work.

Mr. H. F. Donaldson, M.I.C.E., chief mechanical engineer, has been officially announced by the War Office to be the chief superintendent of Ordnance Factories, *vice* Colonel Sir E. Bainbridge.

The Dean and Chapter of Winchester Cathedral are endeavouring to improve the acoustic properties of the nave to allow of it being used more frequently. The Jacobean pulpit has been changed from the south to the north side of the nave. It is at such an angle that the preacher will face William of Wykeham's chantry. Above the pulpit will be suspended a shell-shaped American made sounding-board, so hung that it can be tilted to direct the sound of the voice in any direction.

Signor E. Bondi has completed his design for the memorial statue of Pope Leo XIII. to be erected on the loftiest part of the Lepini hills overlooking Carpineto, where the late Pope was born. On a massive granite pedestal, with his face turned towards the sea, Leo XIII. will be represented in the act of blessing the world.

Mr. J. B. Yeats, R.H.A., is painting the portrait of Earl Dudley, the Lord-Lieutenant of Ireland. The picture will form part of a series commissioned by an Irish gentleman to illustrate the present epoch in Irish history. It is understood that the series will be presented to the nation.

The East Ham Technical College, of which the foundation-stone was laid last week, will cost 20,000*l.*, which includes the purchase of the site and furniture. It adjoins the Council's public offices, with which architecturally it will be in character. Above the basement will be rooms for building construction and kindred crafts and electrical laboratories; on the ground-floor there will be an assembly-room 35 feet by 30 feet, with the offices of the secretary and class, reference, study and common rooms; on the first-floor will be the headmaster's rooms, demonstration apartments and chemical laboratories.

The Will of Mr. Edward James Martin, M.Inst.C.E., F.R.I.B.A., late Secretary to the Government of Bengal in the Public Works Department, has been proved. The value of the estate is returned at 485*l.*

The Authorities of the Inner Temple are contemplating the substitution of the incandescent system for the present mode of lighting the staircases and thoroughfares of their Society. The Middle Temple might well adopt a similar plan, as the lighting of some of the staircases of their chambers is of the most primitive character.

Archdeacon Madden stated last week that the Liverpool Cathedral will be larger than York Minster and loftier from floor to ceiling than Westminster Abbey. Its twin towers would be 260 feet high, and on the Mount they would stand 400 feet above the level of the sea.

The Excavations at the prehistoric sites of Tinnivelli have produced during the past year over 4,000 objects, including twelve oval gold ornaments, 180 bronzes, and about 500 iron weapons and implements. Skulls and bones, some cornelian beads and bronze beads and necklaces were also collected. But most of the objects found in the excavations were pottery, including large urns with the skeletons inside. The archaeological reserve at one of the sites is 114 acres in extent, but only 5 acres have been touched. The smaller objects recovered have all been removed to the Government museum at Madras.

A Marble Panel was unveiled on Wednesday in the north transept of St. Paul's Cathedral as a memorial of Sir John Stainer. On the upper part is a representation of Christian Glory, and on the lower a portrait of the late organist of the cathedral. The panel is the work of Mr H. Pegram.

The New Roadway in the Mall, which is being formed in connection with the Queen Victoria Memorial, is making satisfactory progress; a portion was opened for traffic on Wednesday morning. It is confidently anticipated that the whole will be completed and ready for use by the King when His Majesty proceeds to open Parliament on February 2.

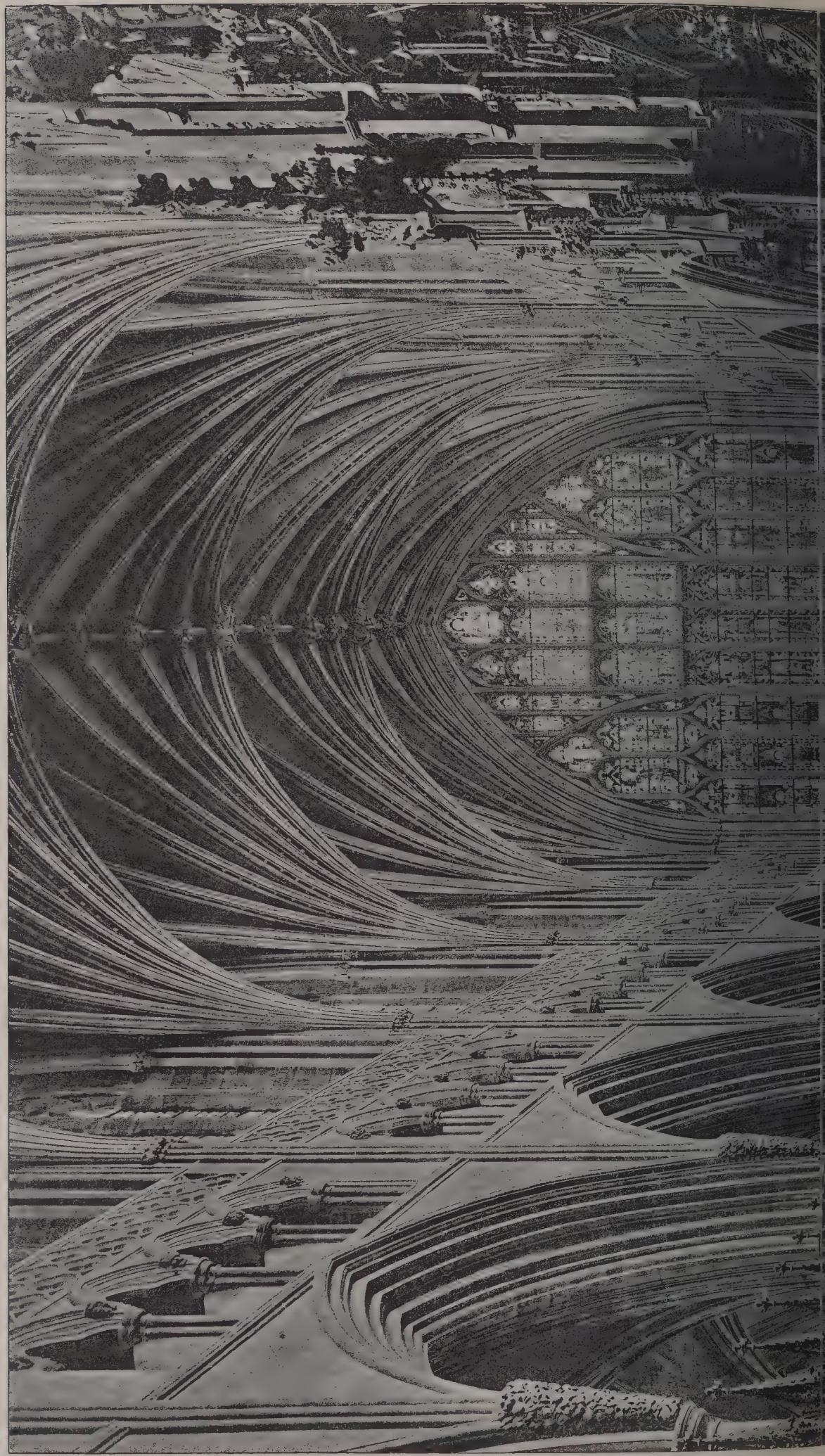
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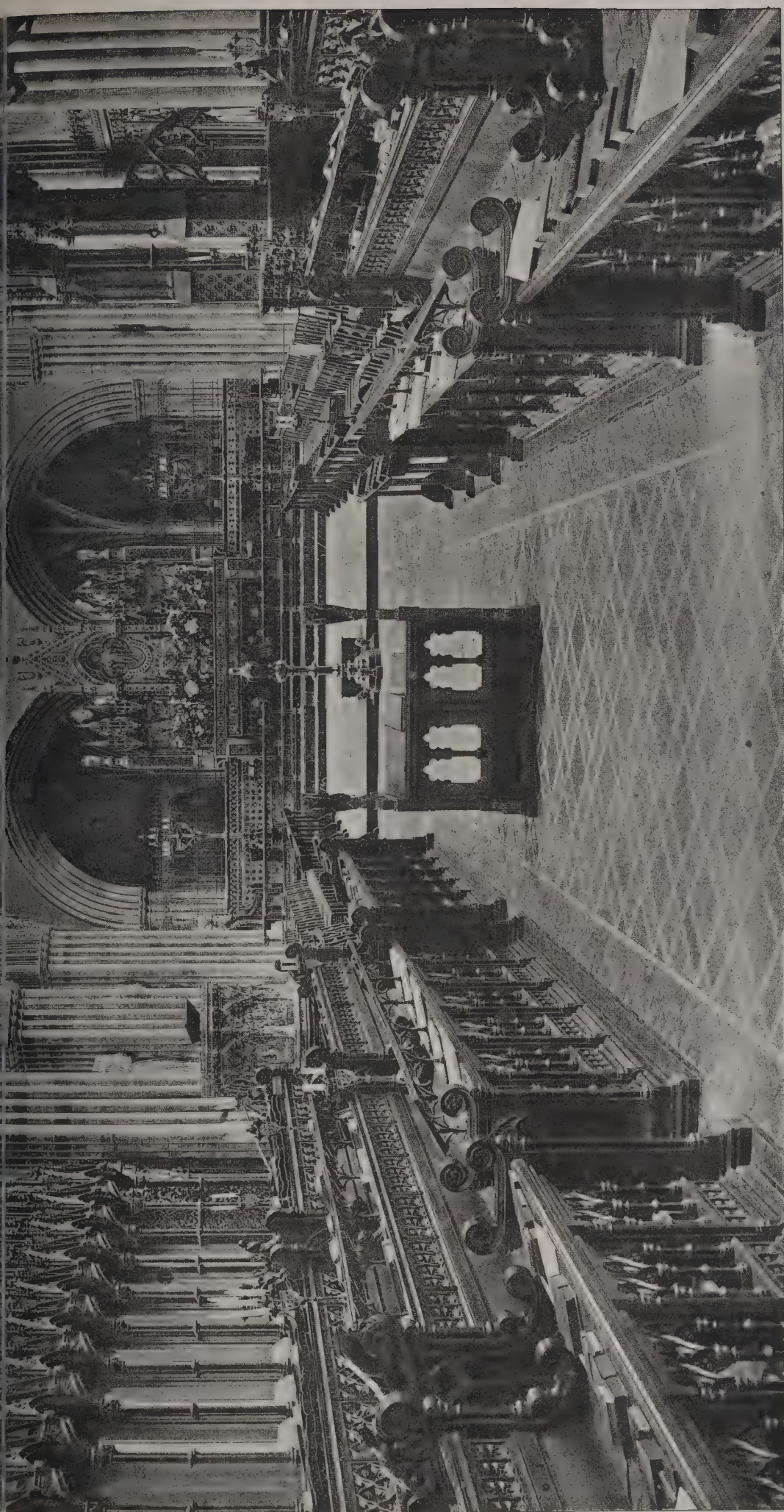
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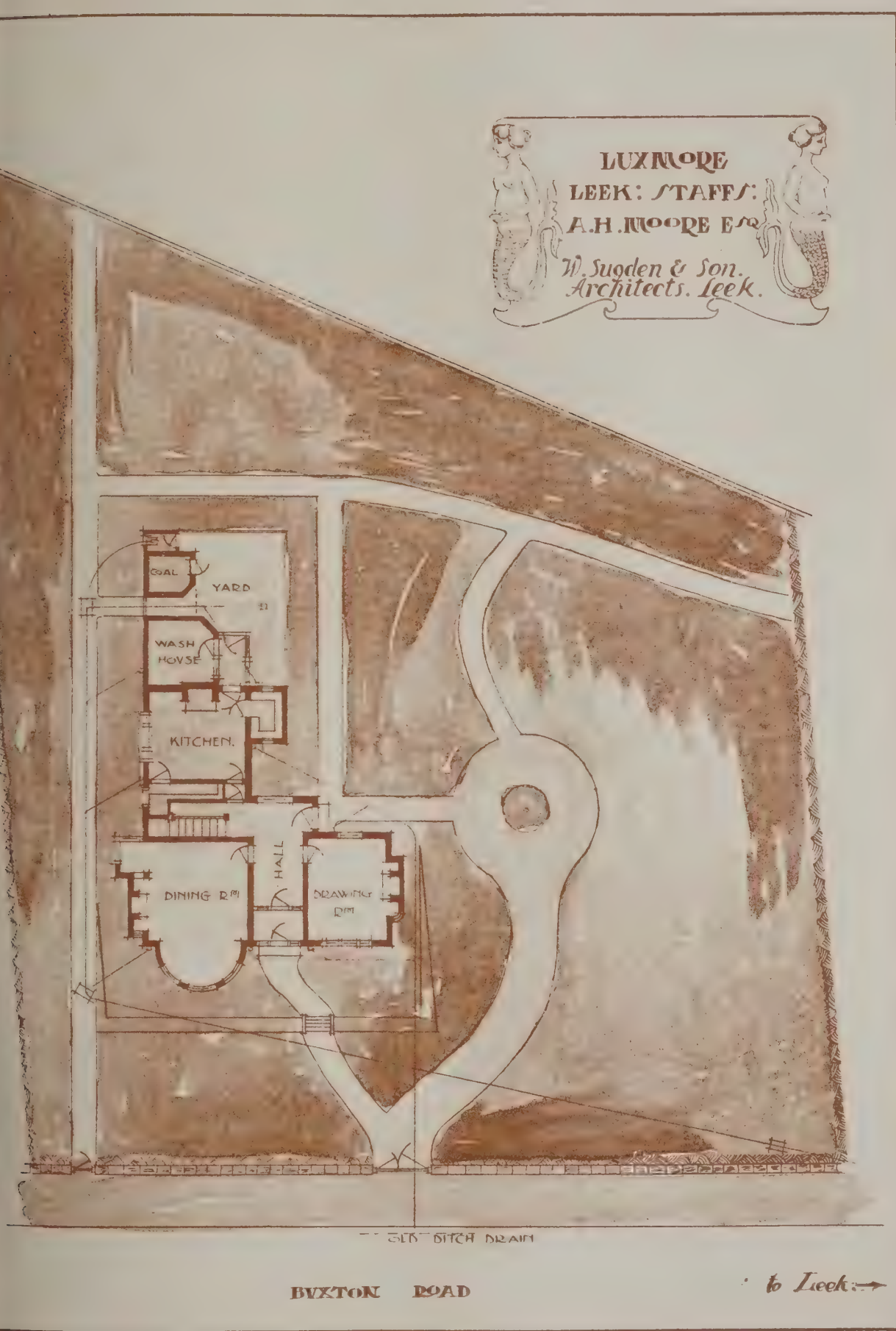
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Architect and Contract Reporter.**EDITORIAL NOTICES.**

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

ELLESMERE—Dec. 30.—Plans and estimates are invited for a scheme for the disposal of the sewage of the town of Ellesmere. Mr. R. E. Lloyd, clerk, Urban District Council, Ellesmere.

ERDINGTON—Feb. 1.—The Urban District Council general purposes committee invite designs for new council house and free library buildings, to be erected at the junction of Mason and Orphanage Roads, Erdington. Premiums of 50*l.*, 30*l.* and 20*l.* will be awarded for the designs placed first, second and third respectively. Mr. Herbert H. Humphries, district engineer and surveyor, Public Hall, Erdington, Birmingham.

ILKLEY—Feb. 1.—Competitive designs are invited for free library, public offices and assembly hall, intended to be erected in Station Road, Ilkley. Premiums of 100*l.*, 50*l.* and 20*l.* respectively are offered for the three best designs sent in by February 1. Mr. Frank Hall, clerk, Council Offices, Ilkley.

ROCHESTER—Jan. 31.—Plans are invited, with approximate estimate, for the addition of chancel, organ-chamber and choir entry to the present church of St. Matthew, Borstal, Rochester. No premium offered. Architects can examine the present building and site at any reasonable hour. Plans must be addressed to Borstal Vicarage.

WINDSOR—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l.* returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

ADWALTON—Dec. 21.—For the erection of three through houses at Moorside, Adwalton, Yorks. Mr. Samuel Rushforth, Adwalton.

ASHBURTON—Dec. 31.—For alterations and additions to Lent Hill, in the parish of Ashburton, Devon. Mr. Fred. Wm. Vanstone, architect, Palace Chambers, Paignton.

BEAUMARIS—Dec. 30.—For the erection of an additional subway and of warehouse and other offices on the pier. Mr. W. O. Griffith, 1 New Street, Beaumaris.

BRADFORD—Dec. 28.—For the erection of shop and work-rooms in Darley Street and Piccadilly. Mr. C. H. Hargreaves, architect, Exchange Buildings, Bradford.

BRADWELL-ON-SEA—Dec. 28.—For the erection of six workmen's cottages (under the Housing of the Working Classes Act) at Bradwell-on-Sea, Essex. Mr. Horace G. Keywood, surveyor, Maldon.

BRIDLINGTON—Dec. 22.—For alterations to St. George's Hall and premises. Mr. J. Earnshaw, architect, Carlton House, Bridlington.

BRIGHTON—Dec. 23.—For the erection of a stand in Tattersall's enclosure, abutting upon the running track of the Brighton racecourse. Mr. Francis J. Tillstone, town clerk, Town Hall, Brighton.

BURY—Dec. 22.—For the erection of a hospital at the workhouse, Jericho, Bury, Lancs. Mr. Alfred Hopkinson, architect, 15 Agur Street, Bury.

CAIRO—Feb. 1.—For the construction of three steel bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CANTERBURY—For the erection of a new ward to be known as the "Blackman" ward, and for alterations and improvements, new flooring, plastering and other works at the Kent and Canterbury hospital. Mr. W. J. Jennings, architect, 4 St. Margaret's Street, Canterbury.

CARLISLE—For the erection of buildings and alteration to premises for the new Brampton branch of the Carlisle South End Co-operative Society, Ltd. Mr. T. Taylor Scott, architect, 43 Lowther Street, Carlisle.

CHERITON—Dec. 28.—For building an underground convenience at the junction of Cheriton Street and Risborough Lane, Cheriton, Kent. Mr. Arthur Atkinson, clerk, Urban District Council Public Offices, Cheriton, Kent.

DEVONPORT—Dec. 31.—For the erection of two small buildings at the gasworks, Devonport. Mr. Sidney E. Stevenson, engineer, Gasworks, Devonport.

EBCHESTER—Dec. 21.—For the erection of reading-room at Ebchester. Mr. W. T. Spence, architect, Shotley Bridge.

FARNHAM—Dec. 30.—For the erection of separation wards at the workhouse. Messrs. Friend & Lloyd, architects, Grosvenor Road, Aldershot.

GILLINGHAM—Dec. 22.—For the erection of a school at Napier Road, Gillingham, Kent, to accommodate 900 children. Mr. E. T. Atchison, secretary, 8 Waterloo Road, New Brompton, Gillingham.

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PROBLEMS

HARROGATE—Dec. 22.—For the erection of a tea-house of ornamental rustic work in Collins Fields. Mr. F. Bagshaw, borough engineer, Municipal Offices, Harrogate.

HORSHAM—Dec. 30.—For the erection of stabling, sheds, mortuary, boundary wall, &c., on land adjoining Stanley Street, Horsham. Mr. S. Mitchell, 14 Market Square, Horsham, Sussex.

HOUNSLOW—Jan. 4.—For the erection of public offices, public swimming-baths, &c., and public library. Messrs. Nowell Parr & A. E. Kates, architects, Brunswick House, Brentford, W.

HUDDERSFIELD—Dec. 24.—For the erection of a dwelling-house in Luck Lane, Marsh. Messrs. P. Taylor & Co., architects, Central Buildings, Milnsbridge.

IRELAND—Dec. 21.—For the erection of Skibbereen new post office. Plans and specification can be seen at the Irish Lights Office, Dublin.

IRELAND—Dec. 21.—For the erection of sixteen artisans' dwellings in the town of Mallow. Mr. Brian E. F. Sheehy, architect, 57 George Street, Limerick.

IRELAND—Dec. 21.—For the erection of a church at Roseyards, co. Antrim. Mr. S. J. M'Fadden, architect, Queen Street, Coleraine.

IRELAND—Dec. 23.—For the erection of labourers' cottages and out-offices in various electoral divisions, Lusk, co. Dublin. Mr. Anthony Scott, 34 Lower Sackville Street, Dublin.

IRELAND—Dec. 31.—For the erection of two detached villas at Hillsborough, co. Down. Mr. Henry Hobart, architect, Dromore, co. Down.

IRELAND—Jan. 1.—For the erection of six dwelling-houses at Castlebrook, Londonderry. Mr. J. M. Robinson, architect, 7 East Wall, Londonderry.

IRELAND—Jan. 4.—For the erection of a free library building at Lurgan. Mr. Henry Hobart, architect, Dromore, co. Down.

KENDAL—Dec. 23.—For the erection of a mission hall, Sandes Avenue, Kendal. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

LANCASTER—Dec. 28.—For the erection of an assembly hall and classrooms for the Society of Friends in Fenton Street, Lancaster. Mr. Spencer E. Barrow, architect, Liverpool Bank Chambers, Lancaster.

LEEDS—Dec. 21.—For constructing and erecting gymnasium fittings at the Moorfield Road recreation ground, Armley, and Western Flatts Park, Lower Wortley. Particulars may be obtained at the City Engineer's Office, Municipal Buildings, Leeds.

LEEDS—Dec. 21.—For constructing and fixing wood benches, fittings, &c., for the new offices and workshops of the street-lighting department, Springwell Street, Leeds. Particulars may be obtained at the City Engineer's Office, Municipal Buildings, Leeds.

LEYTONSTONE—Jan. 6.—For forming lunatic wards under Blocks A and B at the infirmary, Whipps Cross Road, Leytonstone. Mr. F. E. Hilleary, clerk, Workhouse, Leytonstone.

LIVERPOOL—Dec. 22.—For the erection of roofing over loading mound at Bankfield goods depot, Liverpool, for the Lancashire and Yorkshire Railway Company. Mr. R. C. Irwin, secretary, Hunt's Bank, Manchester.

MIDDLESBROUGH—Dec. 23.—For the enlargement of the post office at Middlesbrough. Conditions and form of contract may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

MIDSOMER NORTON—For alterations and additions to the town hall premises, Midsomer Norton, Somerset. Mr. William F. Bird, surveyor, Midsomer Norton.

NEW BARNET—For the erection of detached houses and a pair of semi-detached on the Willenhall Park estate, New Barnet. Particulars at the offices of the London and District Land and Building Company, Ltd., 9 Great Castle Street, Oxford Circus, W.

NEWBURN—Jan. 4.—For the lengthening of a culvert and building retaining and parapet wall necessary to widen the road over the Denton Burn, near the paper mills, at Scotswood-on-Tyne, Newburn, Northumberland. Mr. Thomas Gregory, surveyor, Council Offices, Newburn.

NEW MALDEN—Dec. 28.—For the erection of cottage homes at New Malden, Surrey. Mr. William H. Hope, architect, Seymour Road, Hampton Wick.

RUGELEY—Dec. 24.—For the erection of a galvanised engine-shed at the detritus chambers on the sewage farm, Rugeley, Staffs. Mr. W. E. Rogers, surveyor, Anson Street.

SALFORD—Dec. 29.—For taking-down the westerly house of the pair of houses named Ebor Villas, in Upper Park Road, Higher Broughton, and in building a 4½-inch cavity wall and

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SCOTLAND.—Dec. 21.—For additions to nurses' home and alterations to present buildings at Gartloch asylum. Particulars may be obtained at the Master of Works' Office, Parish Council Chambers, 266 George Street, Glasgow.

SCOTLAND.—Dec. 22.—For additions to the town hall, Stonehaven. Messrs. D. & J. R. McMillan, architects, 211 Union Street, Aberdeen.

SCOTLAND.—Dec. 25.—For the erection of cottage, dairy, manure court and coalhouse, &c., at Inverailort. Messrs. L. & J. Falconer, architects, Fort William.

SCOTLAND.—Dec. 26.—For the erection of a church at the corner of Hodge Street and Cockburn Street, Falkirk. Messrs. A. & W. Black, architects, Falkirk.

SCOTLAND.—Dec. 28.—For alterations to Lochmaddy public school, and the erection of teacher's dwelling-house. Mr. R. F. Matheson, Claddach, Kirkibost, Lochmaddy.

SEASCALE.—Dec. 23.—For the erection of a villa and boundary walls, &c., at Seascale, Cumberland. Messrs. J. Wrigley & Sons, Seascale.

SOUTHAMPTON.—Jan. 4.—For the erection of the new Portswood schools. Particulars may be had at the office of the Borough Engineer, 123 High Street, Southampton.

STAFFORD.—Dec. 31.—For the erection of a nurses' home, married couples' quarters, mortuary, &c., at the workhouse. Mr. H. T. Sandy, architect, Stafford.

STANLEY.—Dec. 28.—For the erection of twenty-four houses at Stanley, Durham. Mr. William Foster, architect, Front Street, Stanley.

ST. AUSTELL.—Dec. 23.—For additions and alterations at the workhouse, St. Austell, Cornwall. Mr. John Stephens, clerk, Cross Lane, St. Austell.

ST. AUSTELL.—Jan. 5.—For the erection of a goods shed at St. Austell station, Cornwall, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

SUNDERLAND.—Feb. 1.—For additions and alterations to Victoria Hall. Mr. John Eltringham, architect, 62 John Street, Sunderland.

WAKEFIELD.—Jan. 20.—Competitive designs are invited for free library buildings. Mr. Charles James Hudson, town clerk, Town Hall, Wakefield.

WALES.—Dec. 21.—For the erection of sixty-four houses at Tylorstown. Mr. D. C. Evans, Duke of York hotel, Tylorstown.

WALES.—Dec. 22.—For the erection of a master's house at Cwmystwyth, for Llanfihangel-y-Croyddin Upper School Board. Mr. J. A. Jones, architect, 7 Queen's Terrace, Aberystwith.

WALES.—Dec. 29.—For the erection of superstructure of the new Government offices at Cardiff. All particulars may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

WALES.—Jan. 4.—For new roofs and supports and sundry alterations to general market, Neath. Mr. D. M. Jenkins, surveyor, Gwyn Hall, Neath.

WALES.—Jan. 4.—For the extension of Trinity Hall, Tonypandy, and for the erection of new classrooms, &c. Mr. R. S. Griffiths, architect, Excelsior Buildings, Tonypandy.

WHITEHAVEN.—Jan. 5.—For taking-down the Presbyterian church and manse, Market Place, Whitehaven, and the erection of a new church. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

WOKING.—Dec. 30.—For construction of an underground convenience near Woking station, Surrey. Mr. G. J. Woolridge, surveyor, Bank Chambers, Woking.

WOMBWELL.—Dec. 21.—For the erection of a villa in Hough Lane, Wombwell, Yorks. Mr. Jno. Robinson, architect, Park Cottage, Wombwell.

THE winter meeting of the British Association of Waterworks Engineers took place on the 12th inst. The thanks of the Association were recorded in the minutes for the reception of the summer meeting at Bolton, and the kindness shown by the waterworks authorities of Manchester and Liverpool on the visitation of their respective works. Mr. Alfred J. Jenkins read a paper on the new reservoir for Hoylake and West Kirby Waterworks. Hoylake, he said, with its golf-links of world-wide renown, and West Kirby, about a mile distant, were now fast becoming populous suburbs of Liverpool, and but for the tardy development of the railway service would have grown even more rapidly, but a new era had been opened with the electrification of the Mersey Tunnel.

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F. Didden	£778	0	0
Light & Son	745	0	0
W. Q. Cole	738	0	0
Wort & Way	699	17	9
T. H. STILES, Southampton (accepted)	527	18	0
Cockerill & Son	444	10	0

BELTON.

For the erection of a house and farm buildings at Belton, Doncaster. Mr. HENRY KELSEY, architect, Queen Street, Epworth.

Basendale & Leggott	£851	0	0
W. Barton	825	0	0
T. Bramford	764	0	0
R. Stewart	734	0	0
A. E. Pearce	640	0	0
Harrison & Leggett	622	0	0
T. DAWSON, Epworth (accepted)	659	0	0

BERWICK-ON-TWEED.

For rebuilding house and shop, 106 High Street. Mr. WM. GRAY, architect, 2 Ivy Place, Berwick-on-Tweed.

Accepted tenders.

Elliot & Son, Berwick-on-Tweed, builder.
Henderson & Bro., Berwick-on-Tweed, joiner.
D. A. Lamb, Berwick-on-Tweed, plumber.
A. Sidey, Tweedmouth, slater and plasterer.

BRADFORD.

For repairs to roof of old car-shed, Thornbury.

Accepted tenders.

A. Polsue-Burrow, Westfield Road, carpenter and joiner's work.

R. S. Abbott & Son, 7 Worthington Street, plumber and glazier's work.

T. Nelson & Son, Midland Yard, Valley Road, slater's work.

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S. Kavanagh	3,705	5	5
T. Free & Sons	3,401	15	3
Lawrence & Thacker	3,382	19	5
London and County Builders	3,362	13	5
E. Iles, jun.	3,005	0	0
W. Martin	2,983	0	0
R. W. Swaker	2,971	10	0
J. B. Potter	2,956	0	0
Mendip Granite Co. (for tar-paving only)	318	7	6

CHESTER-LE-STREET.

For street works in various private streets in the town of Chester-le-Street, Durham. Mr. GEO. W. AYTON, highway surveyor.

R. Gardiner	£3,549	10	5
Hardy & Atkinson	2,562	12	6
J. W. White	1,558	1	2
E. Catherali & Co.	1,409	6	1
C. Groves	1,374	4	4
G. E. Simpson	1,366	4	11
G. Wells	1,349	1	6
J. Carrick	1,304	2	1
J. McLaren	1,298	16	9
THOMPSON & SON, Chester-le-Street (accepted)	1,279	13	11

DEVONPORT.

For alterations to the Half Moon inn, George Street. Mr. E. M. LEEST, architect, 14 St. Aubyn Street, Devonport.

T. Taylor & Son	£490	0	0
J. H. Blackell & Son	421	0	0
Pearn Bros.	397	0	0
G. H. SMITH & SON, Devonport (accepted)	371	15	0

For alterations and additions to the Jubilee inn, Fôrg Street, Torpoint. Mr. E. M. LEEST, architect, 14 St. Aubyn Street, Devonport.

G. H. Smith & Son	£319	15	0
G. F. Kingdom	250	16	7
Snell & Son	230	0	0
R. Kent	227	13	10
S. E. D. OUGH, Saltash (accepted)	214	0	0

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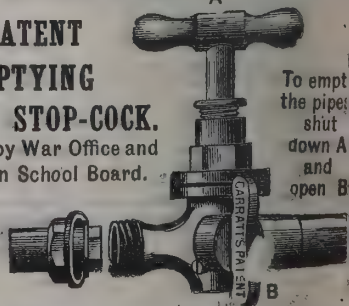
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W. Willett	£30,587	0 0	£610 0 0
Holloway Bros.	29,870	0 0	122 0 0
Leslie & Co.	29,028	0 0	264 0 0
C. Brightman	28,939	17 0	555 0 0
Knight & Son	28,866	0 0	351 0 0
S. J. Scott	28,863	0 0	322 0 0
W. Downs	28,542	0 0	220 0 0
Ferguson & Co.	28,497	0 0	674 10 3
Pattinson & Sons	28,430	0 0	65 10 0
C. Ansell	28,406	0 0	255 0 0
Holliday & Greenwood	28,371	0 0	312 0 0
B. E. Nightingale	28,264	0 0	164 0 0
W. Lawrence & Son	28,149	0 0	316 10 0
Gough & Co.	28,040	0 0	140 0 0
W. Whitehead	27,965	0 0	198 0 0
G. Henson	27,958	15 9	392 10 0
H. Martin	27,777	0 0	369 0 0
J. & M. Patrick	27,470	0 0	227 0 0
Patman & Fotheringham	27,400	0 0	250 0 0
Kerridge & Shaw	27,039	0 0	234 10 0
Perry Bros.	27,021	0 0	237 0 0
GODSON & SONS (accepted)	26,003	0 0	282 0 0

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Schools.

R. Allen	£22,104	0 0
Hughes & Stirling	22,097	0 0
J. Bellis	21,430	0 0
T. Spencer	21,400	0 0
P. Tyson	20,516	0 0
J. H. Vickers	20,472	0 0
J. Gourley	20,030	0 0
Jones & Sons	19,950	0 0
J. Paterson & Son	19,949	0 0
P. Rothwell	19,788	0 0
Dryland & Preston	19,604	0 0
T. Huxley	19,000	0 0
W. H. Forde	18,900	0 0

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J. Gourley	£1,045	0 0
T. Spencer	985	0 0
J. Bellis	975	0 0
T. Huxley	950	0 0
P. Tyson	922	0 0
Hughes & Stirling	914	0 0
J. H. Vickers	910	0 0
J. Paterson & Sons	909	0 0
Dryland & Preston	905	0 0
R. Allen	896	0 0
P. Rothwell	889	0 0
Jones & Sons	875	0 0
W. H. Forde	855	0 0

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For heating apparatus, Fottress Road school, Kentish Town.

Wenham & Waters, Ltd.	£642	0 0
C. Kite & Co.	625	0 0
J. Richmond & Co., Ltd.	603	3 0
J. Grundy	566	0 0
J. Williams & Sons, Ltd.	565	0 0
J. Esson & Son	550	0 0
Paragon Heating Co.	544	0 0
Wippell Bros. & Row	540	0 0
W. Truswell & Son	506	13 0
Werner, Pfeleiderer & Perkins, Ltd.	498	10 0
COMYN CHING & CO., LTD. (accepted)	489	0 0

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F. Bull	2,555	11 0
J. Appleby & Sons	2,460	0 0
G. Parker	2,425	0 0
Lathey Bros.	2,359	0 0
J. & C. Bowyer	2,319	0 0
E. P. Bulled & Co.	2,269	0 0
F. & H. F. Higgs	2,257	0 0
W. Downs	2,233	0 0
H. Groves	2,229	0 0
T. D. Leng	2,207	0 0
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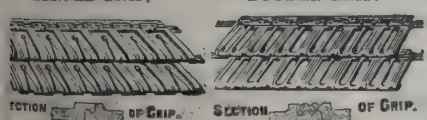
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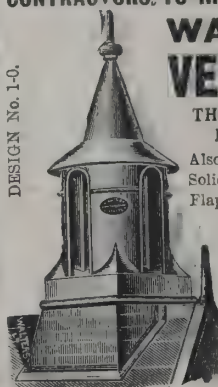
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J. Appleby & Sons	782	0	0
J. Marsland & Sons	770	0	0
J. & C. Bowyer	757	0	0
E. TRIGGS (accepted)	698	0	9

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A. Porter	£382	0	0
W. Martin	375	0	0
G. S. S. Williams & Son	364	0	0
Marchant & Hirst	333	0	0
McCormick & Sons	333	0	0
Barrett & Power	329	0	0
H. Bouneau	328	0	0
General Builders, Ltd.	327	0	0
J. GROVER & SON (accepted)	316	0	0

For dividing room B, accommodating seventy children in each of the boys and girls' departments, into two rooms for thirty and thirty-two respectively, by means of glazed partitions; reversing the stepped flooring in the middle rooms so as to secure left lighting, rearranging the hot-water apparatus and gas pendants and improving the ventilation (loss of eight places in each department), Cormont Road school, West Lambeth.

Belcher & Co., Ltd.	£338	10	0
F. & H. F. Higgs	275	0	0
E. P. Bulled & Co.	245	0	0
T. Hooper & Son	240	0	0
E. Triggs	219	0	0
Rice & Son	209	0	0
Maxwell Bros., Ltd.	203	0	0
W. V. GOAD (accepted)	195	0	0

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For redividing rooms A and B and G and H, infants' department, by altering the position of the existing partitions and providing new partitions; reversing the stepped flooring in the middle rooms so as to secure left lighting, removing gallery in babies' room, rearranging the hot-water pipes and gas pendants and improving the ventilation (loss of thirty-eight places), Halford Road school, Chelsea.

R. S. Ronald	£500	0	0
J. Stones	421	2	0
S. Polden	369	0	0
Rice & Son	361	0	0
W. Hammond	343	0	0
E. B. Tucker	333	0	0
Lathey Bros.	323	0	0
Galbraith Bros.	308	0	0
General Builders, Ltd.	307	0	0
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For forming stock-rooms in boys and girls' departments by partitioning off a portion of room G in each department; reversing stepped flooring in room K, girls' department, so as to secure left lighting; altering position of doorway; providing new stove, brick flue, &c.; rearranging gas-fittings, &c.; and providing new fresh-air inlets (loss of twenty-two places in boys' department and twenty-six in girls' department), Roman Road school, Tower Hamlets.

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F. Bull	345	0	0
F. & F. J. Wood	335	0	0
A. J. Sheffield	317	0	0
H. LINE (accepted)	288	0	0

For enlarging scullery, &c., in connection with housewifery centre, Conway Road school, Plumstead.

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J. Appleby & Sons	166	0	0
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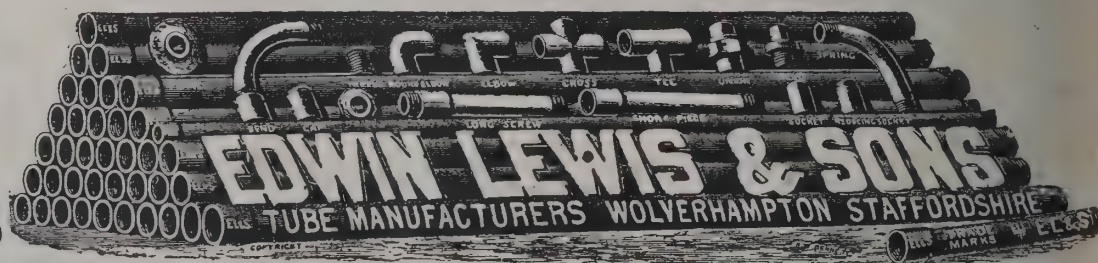
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Stevens & Sons	750	0	0
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Wippell Bros. & Row	450	0	0
R. Clarke	420	0	0
J. Wontner-Smith, Gray & Co.	406	10	0
Bates & Sons	402	0	0
PALOWKAR & SONS (accepted)	374	0	0

For additional heating, Cook's Ground school, Chelsea.

Stevens & Sons	£162	0	0
Werner, Pfeiderer & Perkins, Ltd.	153	5	0
J. Esson & Son	152	0	0
Skinner, Board & Co.	145	0	0
J. Grundy	130	0	0
Brightside Foundry & Engineering Co., Ltd.	129	0	0
G. Davis	125	0	0
Wippell Bros. & Row	125	0	0
BATES & SONS (accepted)	124	0	0

For heating apparatus, Lollard Street school, Lambeth Walk.

Turner & Co.	£1,375	0	0
Wenham & Waters, Ltd.	1,324	0	0
Skinner, Board & Co.	1,235	0	0
W. G. Cannon & Sons	1,179	0	0
T. S. Knight & Sons	1,150	0	0
J. Defries & Sons, Ltd.	997	0	0
J. Williams & Sons, Ltd.	989	0	0
J. GRUNDY (accepted)	915	0	0

LONDON.

For the erection of grand stands and fencing at the Fulham Football Club.

R. ILES, LTD., Broadway, Walham Green, S.W. (accepted)	£1,200	0	0
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For the erection of a Badminton hall, Ealing.

R. ILES, LTD., Broadway, Walham Green, S.W. (accepted)	£350	0	0
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MARGATE.

For the construction of a concrete reservoir (1,000,000 gallons capacity) at Fleete. Mr. A. LATHAM, engineer, 15 Cecil Square, Margate.

Anderson Bros.	£9,565	2	9
H. Shardlow	8,592	0	0
T. Pedrette	7,681	3	7
H. T. Binns	7,080	18	8
W. W. Martin	6,910	0	0
Denne & Co.	6,807	0	0
Castle & Co.	6,585	6	7
W. J. Adcock	6,412	12	6
F. R. Miskin	6,274	0	4
Paramor & Son	6,235	19	6
A. Osenton	6,234	3	7
A. Fasey & Son	5,984	0	0
H. Ashley	5,849	8	6
G. Browning	5,794	0	0
R. Roberts	5,793	8	0
G. Bell	5,689	0	0
J. W. Dean	5,530	13	3
A. E. Nunn	5,487	8	9
DENNE & SON, Walmer (accepted)	5,479	0	0

MIDDLESBROUGH.

For alterations to stables, Local Board yard. Mr. FRANK BAKER, borough engineer.

Allison Bros.	£250	0	0
D. Doughty & Sons	238	0	0
Hudson Bros.	237	0	0
H. Walker	236	0	0
Bastiman Bros.	235	0	0
B. Crisp	226	6	10
VINTER & DAVISON (accepted)	226	0	0

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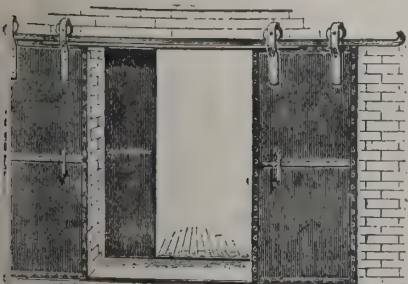
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NEWCASTLE-UNDER-LYME.

For laying about 650 yards of 9-inch main sewers, with man-holes, lamp-holes, &c. Mr. ARTHUR ERNEST JONES, engineer, Brunswick Street, Newcastle-under-Lyme.

Morley & Sons	£395	0	0
C. K. Downing	390	0	0
F. Barke	389	0	0
S. Wilton	328	0	0
W. Williams	318	0	0
SMITH & TAYLOR, Basford Stoke (accepted)	305	0	0

NEW MALDEN.

For sewerage works at Kingston Hill and Kingston Vale, Baring's Hill and Coombe Lane. Mr. T. B. SIMMONS, surveyor, Cambridge Road, New Malden.

Killingback	£1,617	0	0
Adams	1,597	0	0
Soan	1,437	0	0
Ballard	1,377	0	0
Iles	1,333	5	0
Bloomfield	1,249	0	0
Lawrence & Co.	1,195	0	0
Iles, jun.	1,100	0	0
Streeters	1,029	0	0
Davies & Co.	1,000	0	0
Hoffmann	990	4	6
S. KAVANAGH & Co., Surbiton Hill (accepted)	984	0	0
Free	973	0	0
Adamson	939	0	0
Champniss	929	0	0
Wheeler	900	0	0
Jackson	900	0	0
Atkins	880	0	0
Swaker	799	19	0
Prescott	741	13	3
White	633	15	0

NEW HUNSTANTON.

For sewer construction.

F. Southgate	£1,163	0	0
J. Nelson & Co.	1,090	0	0
R. Shanks	1,025	0	0
W. A. LEACH, Hunstanton (accepted)	775	0	0

NORTHALLERTON.

For sewer construction (about 400 yards) in Back Street, Northallerton, and taking out existing sewer.

T. Rowland	£351	4	0
T. Barker	285	9	2
Whittaker Bros.	268	18	4
C. H. Dickinson	268	5	8
T. Willoughby	227	10	0
Parker & Co.	224	0	3
J. Spark	213	18	3
C. Birkill	210	6	3
D. OAKLEY, Romanby Road, Northallerton (accepted)	189	10	0

OLDHAM.

For the construction of pump-house, lodge and tanks in connection with condensing plant, the construction of mains, tunnel, footpath and railings round site at the generating station, Greenhill, Oldham.

E. STEPHENSON, Shield Street (accepted).

SCOTLAND.

For an extension to Haymarket public convenience, Edinburgh.

Beattie & Son	£231	17	0
R. Aitken	168	10	0
J. Angus	166	10	6
A. Calder	151	0	0
Scott & Brown	150	15	5
W. Cowie & Son	148	10	0
Wright & Davie	142	19	10
T. Topping	142	14	2
MELROSE & THOMSON, Albert Street (accepted)	138	16	8

For the erection of a stone lifeboat-house and stone and concrete slip on the quay near the site of the existing lifeboat-house, in the harbour of Anstruther, co. Fife. Mr W. T. DOUGLASS, architect, 15 Victoria Street, London, S.W.

J. Adams & Co.	£1,918	0	0
W. G. Fleet	1,800	0	0
R. Young & Co.	1,794	15	0
M. Dinnie	1,734	5	8
J. Miller	1,666	5	0
W. Fasey	1,599	15	10
J. LAURIE, Anstruther (accepted)	1,484	12	3

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W. HILTON NASH, Hon. Treasurer.
PERCIVALL CURREY, Hon. Secretary.

SHEFFIELD.

For alterations and additions to the Rising Sun inn, Abbey Lane, Ecclesall Messrs. HALL & FENTON, architects, 14 St. James's Row, Sheffield. Quantities by the architects.

W. T. Sharp	£900	0	0
T. Wilkinson & Sons	880	5	0
E. Hart	862	17	0
G. H. Brown	847	4	4
E. Moore	799	11	0
G. Vaughan	750	0	0
Martin & Hughes	740	0	0
G. Allen	715	0	0
J. Masson	710	0	0
E. & W. Oxley	709	10	0
Badger & Appleby	703	0	0
H. Watkinson	690	0	0
H. White	688	0	0
W. W. Needham	687	0	0
T. Margerrison	678	0	0
J. S. Teanby	674	0	0
M. Hancock	670	0	0
J. Reed	665	0	0

THERFIELD.

For erection of a pair of cottages, Rook's Nest Lane, Therfield. Mr. JAS. W. HALL, architect, 13 Prior Park Road, Brondesbury, N.W.

Building.

T. Nevet	£760	0	0
Gemsons	564	0	0
A. Balfour	422	0	0

Well.

T. Nevet	30	0	0
Gemsons	19	0	0
A. Balfour	17	0	0

TROWBRIDGE.

For the construction of about 7,000 lineal yards of 12-inch and 9-inch stoneware pipe sewers (partly in tunnel), with man-holes, &c., at Trowbridge, Wilts. Mr. H. G. NICHOLSON-LAILEY, surveyor.

E. IRELAND, Sandylands, Morecambe (accepted)	£12,500	3	1
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TIPTON.

For asphaltting of playgrounds and alterations to out-offices at Burnt Tree Council schools, Tipton, Staffs. Mr. W. H. JUKES, surveyor.

Thompson & Co.	£285	0	0
J. Hunt	284	10	0
M. Round	280	0	0
G. Holloway	265	0	0
ASPHALTES UNITED, 7 Union Passage, Birmingham (accepted)	248	9	4

WALES.

For the erection of a Baptist chapel and schoolroom at Senghenydd.

D. C. Jones	£2,825	0	0
J. Woods	2,712	0	0
W. T. Morgan	2,500	0	0
G. Heywood	2,414	0	0
R. JONES (accepted)	1,995	0	0

For the erection of a gymnasium in connection with the County school, Bethel Road, Carnarvon. Mr. ROWLAND LLOYD JONES, architect, 14 Market Street, Carnarvon.

G. Roberts & Bro.	£855	0	0
E. Parry	645	0	0
WILLIAMS & ROBERTS, Carnarvon (accepted)	618	0	0

For rebuilding 59 High Street, Merthyr. Mr. C. M. DAVIES, architect, 112 High Street, Merthyr Tydfil.

R. Lloyd	£1,259	0	0
J. Jenkins	1,253	7	4
J. Williams	997	0	0
E. L. Sullivan	955	0	0
S. Hawkins	935	0	0
E. JONES, Dowlais (accepted)	644	0	0

For rebuilding 115 High Street, Merthyr. Mr. C. M. DAVIES, architect, 112 High Street, Merthyr Tydfil.

J. Williams	£2,293	0	0
Shepton & Sons	2,197	0	0
J. JENKINS, Merthyr Tydfil (accepted)	2,130	6	6

WORKINGTON.

For street works at Siddick, near Workington. Mr. J. S. MOFFATT, architect, 53 Church Street, Whitehaven.

A. & T. H. ANDERSON, New Road, Whitehaven (accepted).

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WARLEY.

For the erection of a church at Warley.

R. ILES, LTD., Broadway, Walham Green, S.W.
(accepted). £335 0 0

WATERLOO.

For providing and fixing about 229 yards of wrought-iron railing, gates and stone plinth at the Victoria Park, Waterloo, Lancs. Mr. F. SPENCER YATES, surveyor.

R. ROBERTS, 256 Knowsley Road, Bootle, Liverpool (accepted). £415 0 0

WEDNESBURY.

For the electric lighting of the town hall, municipal offices, art gallery, public baths and public library. Mr. F. J. WARDEN-STEVENS, consulting engineer, 34 Victoria Street, Westminster.

W. Preston, jun.	£657	0	0
Whittaker Bros.	624	0	0
Alliance Electrical Company	567	0	0
Birmingham Installation Company	529	0	0
Arundale & Robottom	492	0	0
Edwards & Armstrong	480	0	0
NATIONAL ELECTRIC CONSTRUCTION COMPANY, LTD., London and Wolverhampton (accepted)	465	0	0

Electricity Sub-Station.

Carpenter & Mayfield	60	0	0
National Electric Construction Company, Ltd.	59	0	0
Ross, Price & Co.	58	0	0
Edwards & Armstrong	52	0	0
Whittaker Bros.	52	0	0
Arundale & Robottom	45	0	0
W. PRESTON, JUN., Wednesbury (accepted)	40	0	0

WEDNESFIELD.

For sewerage works, Vicarage Road, Wednesfield. Mr. R. E. W. BERRINGTON, engineer, Wolverhampton.

R. Moss	£232	15	0
Currall, Lewis & Martin	226	10	0
T. Allsopp	223	0	0
H. Clay & Son	217	12	3
H. Holloway	200	6	0
W. H. Reading	195	0	0
J. OWENS, Wolverhampton (accepted)	191	12	0

BUILDING AND BUILDERS.

THE public health committee of Chelsea have decided in favour of an application being made to the London County Council for sanction to borrow 57,000*l.* for the erection of working-class dwellings in Beaufort Street.

At a meeting of the Eastern District committee of Stirling County Council held at Falkirk on the 11th inst., plans were submitted of the new County Council offices to be erected in West Bridge Street, Falkirk. The plans, which were approved, show a handsome building to cost 8,000*l.*, including the cost of the site and the price paid for the old properties upon it.

A TENDER has been accepted for 5,247*l.* to erect the Missions to Seamen church and institute for sailors of all nations at Wellington, New Zealand. The total cost, including the site, will be 7,805*l.* On the lower floor will be the social hall, library, kitchen, &c., and on the upper floor the church to seat about 450 sailors. The site is a corner one, near the Supreme Court, and not far from the shipping.

At a meeting of the Mossley Town Council on the 9th inst., the mayor (Alderman E. Iredale) presiding, a recommendation from the education committee was presented for the erection of a new Council school for the accommodation of 1,000 scholars, if the land (one acre) could be secured on satisfactory terms from the trustees of the Earl of Stamford and Warrington. The recommendation was accepted by the Council.

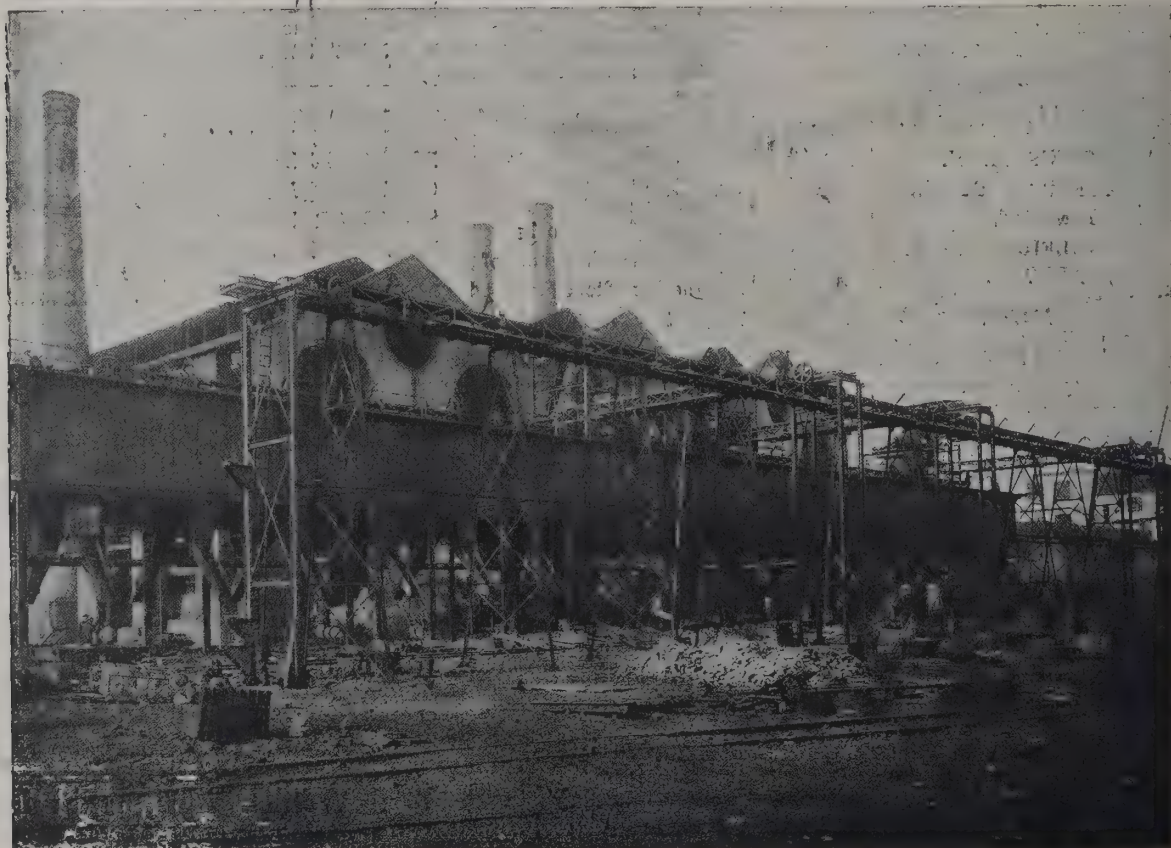
A PUBLIC meeting in support of the scheme for the erection of a consumptive sanatorium for Ayrshire was held on the 11th inst. in the Corn Exchange Hall, Kilmarnock. There was a large and influential attendance. Mr. J. H. Turner presided, and among the speakers were Dr. Chalmers, medical officer of health, Glasgow; Dr. Caverhill, Edinburgh; Mr. J. B. Fergusson, Balgarth, convener of the sanatorium committee; and Sheriff Mackenzie. Patients who had been cured by the new treatment were present with testimony as to its efficacy, and illustrative limelight views were exhibited. On the motion of the Sheriff, seconded by Mr. Frew, the meeting expressed its cordial approval of the proposed sanatorium, and commended it to the support of all classes in the town and country. A site of about 30 acres has been secured at Ashmark, two miles from New Cumnock, 800 feet above the level of the sea, and operations are about to be commenced. About 8,000*l.* of the 14,000*l.* required has already been subscribed.

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VARIETIES.

THE new church of St. Peter, Ilfracombe, which has been
built at a cost of 6,500*l.*, was consecrated on the 9th inst.

THE new schools in Broughton Road for the parish of St.
Matthias, Salford, have been opened by the mayor of Salford
Mr. Alderman Stephens)

THE new church tower which has just been added to St.
Margaret's Church, Arbroath, N.B., was formally dedicated at
a morning service on Sunday last.

A NEW church at Landore was consecrated on the 10th inst.
The edifice, which has cost 10,000*l.*, will accommodate
1,000 worshippers. The design, in the Late Decorated period
Gothic architecture, was by Mr. E. M. Bruce Vaughan, of
Cardiff, and Messrs. J. & F. Weaver were the contractors.

A CONCERT was held on the 11th inst. in the St. Matthias's
new schools, Blackfriars Road, Salford, to celebrate the com-
pletion of the premises. The schools, which have been
erected to replace the old building at a cost of 6,500*l.*, contain
all the modern requirements for elementary education, and
will provide accommodation for 530 scholars.

At Littleborough, Lancs, the opening ceremony recently
took place of the free public library, which has been built at a
cost of 2,500*l.* by Mr. Carnegie. It is a massive stone building,
and adjoins the offices of the Littleborough Urban District
Council, and is pleasantly situated. It already contains 3,000
volumes, and there is shelf accommodation for 4,500 more.

THE First Garden City is commencing operations by
boring an artesian well in search of an ample supply of pure
water, which is of primary importance for such an undertaking.
The founders have placed this work in the hands of Messrs.

Le Grand & Sutcliff, of London, who started boring last week,
commencing with 16-inch tubes, at a high elevation on the
estate on the road between Baldock and Hitchin. A depth of
over 100 feet has already been penetrated into the lower chalk
formation, from which a copious supply is expected.

MR. BATSFORD has for some time had in preparation an
important folio volume entitled "Old Silver Work, chiefly
English, from the Fifteenth to the Eighteenth Centuries,"
edited by Mr. Starkie Gardner, F.S.A., with 120 collotype
plates, which he was about to issue to subscribers on the
12th inst. The edition was, however, so seriously damaged in
the recent fire at Messrs. Leighton's, the bookbinders, that he
is obliged to defer the issue on account of the reprinting which
has become necessary. The subscription price is five guineas,
but by some curious error it was mentioned in several news-
papers as fifty-four guineas.

AN open competitive examination for the appointment of
four assistant civil engineers in the Works Department of His
Majesty's naval establishments at home and abroad will be
held in London, commencing on January 26, 1904. The limit
of age for candidates is twenty-three to twenty-eight. The
salary commences at 200*l.* per annum, and rises by 15*l.* a year
to 300*l.* per annum. Assistant civil engineers will, on first
appointment, be on probation for two years, and will be eligible
for promotion (by selection without further examination) as
vacancies occur to the appointment of:—Civil engineer (mini-
mum 300*l.*; annual increment 20*l.*; maximum 550*l.*). Superin-
tending civil engineer (a) (minimum 600*l.*; annual increment
25*l.*; maximum 750*l.*); (b) (minimum 700*l.*; annual increment
25*l.*; maximum 850*l.*), to that of assistant director of works
(minimum 1,000*l.*; annual increment 50*l.*; maximum 1,200*l.*).
Successful candidates will be required to satisfy the medical
director-general of the Navy as to their physical fitness for the
service. The fee for the examination will be 6*l.*

TRADE NOTES.

THE additions to the General Hospital, Rotherham, are
being warmed and ventilated by means of Shorland's patent
double-fronted Manchester stoves encased in richly glazed
faience, by Messrs. E. H. Shorland & Brother, of Manchester.



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175, 176 SLOANE STREET, S.W.

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APROPOS of the illustration of the Six Bells Public-house, King's Road, Chelsea, which we published last week, the Lift and Hoist Company, of Prince Street, Deptford, S.E., write us to the effect that two of their "Premier" service lifts and a cellar hoist were installed in the building, and others at the London County Council's Carrington House, Deptford; London City and Midland Bank's new branches—Richmond, New Cross, Westbourne Grove, Chelsea and Willesden Green; Palmeira Hotel and Mansions, Westcliffe-on-Sea, &c.

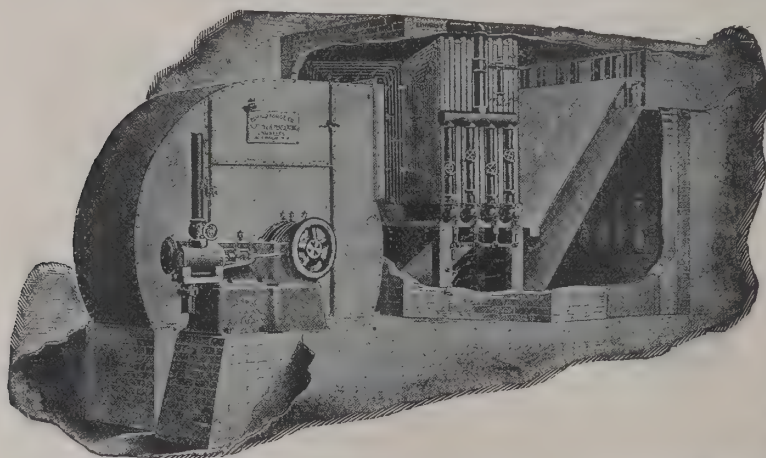
MESSRS. J. H. SANKEY & SON, LTD., merchants, shippers and exporters of cement, lime, bricks, slates, tiles, sanitary and fireclay goods, of Essex Wharf, Canning Town, have just got out a sectional catalogue (F) relating exclusively to the fireclay goods of which they make a great variety. Messrs. J. H. Sankey & Son, having made the firebrick trade a specialty for over forty years, claim to have one of the largest connections in the kingdom, and their practical and personal acquaintance with the experiences of such a variety of consumers, and the numerous purposes for which their fireclay goods are used, places them in a specially favourable position to know the class of fire-bricks, &c., most suited for their clients' particular purpose, and to advise if necessary. They have also had practical experience in the selection of clays and the manufacturing of various fire-resisting materials, and great care is taken by them to insure that the goods they supply shall be the best. Messrs. Sankey will shortly have ready a general catalogue comprising three sections—bricks, &c., sanitary goods, and fireclay goods, which will be forwarded on application.

A WINDOW to the memory of the late Mr. J. W. Stoupe M'Cance, J.P., and his brother, the late Mr. Henry J. M'Cance, D.L., of Larkfield, has recently been placed in Dunmurry Remonstrant Church, in which an admirable effect has been obtained by the skilful use of coloured glass, no colouring matter or paint being used. The subject of the window is based upon the text—"I will lift up mine eyes unto the hills from whence cometh my help." In the distance, at the left-hand side of the window, is shown the crest of a hill piercing the clouds, whilst a little lower is seen a small stream which gradually gathers strength till on reaching the centre it descends in two falls and becomes lost amidst a maze of forest-like growth, to reappear towards the bottom in a broad sheet of water, which flows in a most natural manner apparently over the base of the window.

The glass of different natures and makes, the marking and blending, and the various strengths of leads have all been selected and used with a full knowledge of the technique necessary to produce a mosaic window of such dimensions and from such a subject. The glass used consists of the choicest English antiques, American opalescents and Priors' slabs, while the finished window is undoubtedly one of the finest examples which stained-glass workers have produced. The work has been executed by Messrs. Campbell Brothers, Franklin Street, Belfast, from designs and under the personal supervision of their artist, Mr. R. J. Norman.

WALL DECORATION.

THE Holliston decorative cloths, lately introduced in the English market by Messrs Arthur L. Gibson & Co., will supply a need which has long prevailed. The canvases of coarse texture used hitherto served well on the walls of large halls or staircases, but for spaces of a more confined area a texture of a different kind is desirable. This is met by the Holliston crush and buckram cloths. They all have that manifestation of being a woven fabric, which is not to be imitated in paper. At the same time the surface is sufficiently smooth to prevent the accumulation of dust, which is one of the drawbacks of a coarser material. An immense variety of agreeable colours is available, and the artist and decorator can therefore obtain any kind of ground which he may seek in order to apply stencilling or other decoration. For ceilings and places where a coloured ground is unnecessary there is a white buckram. It should be noted that the colours are not dyed. Pigment colours are employed, and the cloth itself is consequently suitable for covering walls. The hanging is not difficult. The cloths are supplied in rolls 37 inches wide, and containing about 40 yards. A thicker paste than is used in papering is sufficient, but printed directions are given with the material. The new cloths lend themselves to all kinds of mural painting, as well as to stencilling and other processes. They have also the advantage of being effective in themselves, for a wall covered by them becomes pleasing in appearance, although there may be a delay before commencing the artist's work. The surface will, however, be so tempting it will be difficult for an owner to resist the applications of artists to operate upon such desirable grounds.



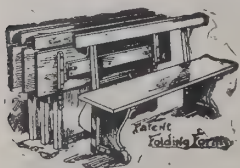
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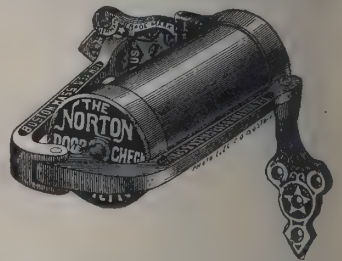
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For Index of Advertisers, see page x.

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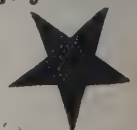
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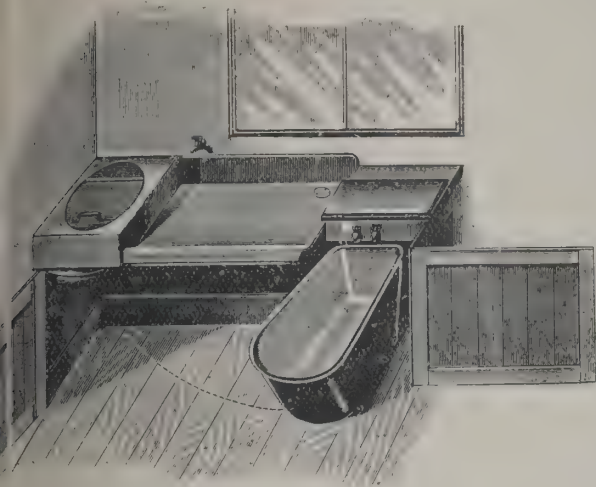


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BATHS FOR SMALL DWELLINGS.

Under this heading we gave a description of, and illustrated a new system, of fitting baths to small houses and artisans' dwellings when it was first brought before general notice at the Sanitary Congress Exhibition of 1902. The favourable reception accorded to it there, solving as it did the problem of supplying a full-size bath with hot and cold water supply to this class of building, with little, if any, extra cost, has proved to be justified through its adoption by numerous corporations and borough councils, as well as property owners and others.



The accompanying illustration shows one of the latest patterns of "The Artisan" combination bath, sink and wash tubs, of which about one hundred sets have just been supplied to a block of artisans' dwellings at Stafford, and clearly shows the method of fixing. The bath is made to turn out in a circular path when wanted, bringing the extreme length into the room, but when not in use it is not only out of sight, but takes up no extra space.

The Kitchen Bath Fitment Company, Queen's Road,

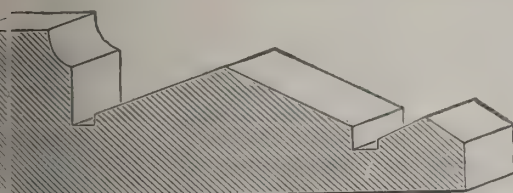
Sheffield, who are the patentees and manufacturers, may be congratulated on the deserved success their system has attained.

EDINBURGH BUILDING EMPLOYERS' ASSOCIATION.

THE first annual dinner of the Edinburgh, Leith and District Building Employers and Allied Association, in conjunction with the Building Trades Exchange of the City and District of Edinburgh, was held on the 10th inst. in the Royal British Hotel, Edinburgh. Councillor Neil McLeod, the chairman of the Association, presided over a company of 160 gentlemen, and the vice-presidents were Messrs. W. Graham-Yooll, James Forrest and Thomas Hume. There was a good representation of the Corporation present, including Bailie McMichael, Bailie Douglas, Bailie Craig, Leith, and Councillors Forrest and McArthy, Edinburgh. Sir Thomas D. Gibson-Carmichael, Bart., hon. president of the Building Trades Exchange, was also present.

At the commencement of his address, the Chairman referred with regret to the death of Councillor Purves, who had been a member of both Societies. He was glad to see such a good representation present of both Societies. That was the first time they had sat down under their new name along with the Building Trades Exchange of the City and District of Edinburgh. They had left behind them the good old name of the Edinburgh and Leith Builders' Association. The reason they had changed their name was because they wanted all associated with the building trades to join with them, including joiners and merchants. In regard to the question of technical education he thought it would not be difficult for them as an Association to advance technical education. They were not advancing in that respect as they should, and he suggested the Association might give four or more bursaries for apprentices attending technical schools. If they advertised for a foreman or leading worker at the present time they would get replies from three or four men qualified for the position, but if they advertised for a clerk they would get from 200 to 300 applications. What they wanted was to induce more young lads to qualify as leading workers, which were more remunerative positions than clerkships.

In replying to the toast of "Our Imperial Forces," proposed by Mr James Miller, Colonel Bennett, Glasgow, said he was in favour of compulsory military training of our young men. If



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they had military training added to the instruction that was given in their commercial life they would have better men, and men who felt more the responsibility they owed to their King and country.

The Corporations of Edinburgh and Leith were toasted on the motion of Mr James Moscrip. Bailie M'Michael, who replied for the Edinburgh Corporation, urged that in the election of their Lord Provost there was something to be said for the English system. He would not limit the term of office to one year, but he would have the election made every year. He suggested this because he thought the honours should go round.

Bailie Craig, who replied for the Leith Corporation, said there was one thing they could boast of in Leith, although they could not explain how it was, and that was that they were one of the healthiest towns in Scotland.

Councillor Forrest, who proposed the toast of "The Architects and Surveyors," regretted that because of the neglect by the Government of the architect in the past they had no national style of architecture of their own. Councillor M'Arthy and Mr. J. C. Hamilton replied.

The prosperity of both Societies was toasted on the motion of Mr. Alexander Webster. Mr. Thomas Hume, who replied for the Association, mentioned that in 1871 583,000 people were engaged in the building trade, while in 1901 the number was 945,000, or nearly double. Mr. W. Graham-Yooll, the president of the Exchange, replied. Other toasts followed.

ENGINES AND IMPLEMENTS AT THE SMITHFIELD CLUB SHOW.

As on former occasions, there was the usual varied display of machinery, implements and accessories at the great annual show which was held last week at the Royal Agricultural Hall, Islington, and those exhibits were interesting not only to the farmer, but to the manufacturer, the municipality, and, in a measure, to the community generally, since all are more or less interdependent upon one another.

Among the many other exhibitors on the ground floor of the large hall may be mentioned *Messrs Aveling & Porter*, of Rochester, who had two compound road locomotives, besides a compound traction-engine for light haulage, mounted on springs, and an 8 horse-power traction engine—the whole being up to the usual high standard.

Messrs. Blackstone & Co., of Stamford, were present with some serviceable-looking oil-engines, including a 14 horse power portable, besides three stationary engines of 2, 6½ and 14 horse-power respectively.

The Campbell Gas Engine Company, of Halifax, had also at their stand several horizontal oil-engines, including one of 13 horse-power and another of 15 horse power, besides capital little engine and pump combined.

Messrs. Clayton & Shuttleworth, of Lincoln, showed Stand 28 a large number of their leading specialties, including excellent specimens of their portable and traction-engines, thrashing machines, &c, also a new pattern horizontal stationary engine and some centrifugal pumps. The portable engine was of 8 nominal horse-power, of the makers' latest design, and formed a duplicate of that which they exhibited to the first time at the Paris Exhibition, where they were awarded the Grand Prix. The 7 horse-power single cylinder agricultural locomotive was a splendid example of *Messrs. Clayton & Shuttleworth's* new pattern engine of this type, embodying the most modern practice in its construction. The new horizontal fixed engine represented a novelty with this well-known firm whose object has been to combine in its construction high efficiency with simplicity. It was entirely self-contained, and eminently suitable for driving dairy machinery, small electrical installations and other similar plant. The thrashing machine upheld in every respect the high reputation which the firm enjoys in the manufacture of this class of machinery. The oil engine of the new patent safety class and having automatic ignition was of 6 brake-horse-power, and appeared admirably suited to the light work of a farm, or for a small electric-lighting installation.

Messrs J & F. Howard, of Bedford, had a steam waggon carrying 5 tons, with boiler of the water tube type, and having a compound engine, which can be converted into a high-pressure engine working at a pressure of 200 lbs. to the square inch, with two speeds (eight and five miles an hour), chain driven. This firm also showed an oil-engine of 12 h.p., using ordinary petroleum, and working on the Otto principle.

Messrs. E. S. Hindley & Sons, of Bourton, occupied their usual position with several horizontal as well as vertical engines well adapted for the work incidental to building operations and for electric lighting. *Messrs. Crossley Bros., Ltd.*, displayed not less than five of their well-known stationary oil-engines, one of them being combined with a dynamo; while *Messrs.*

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SUPERFINE FLAX LINE.

The above article is now being manufactured and sold in large quantities for Greenhouse Sashes, Public-house Shutters, and other heavy work. The Manufacturers would recommend it for its strength, and the large amount of wear in it, consequent on its peculiar manufacture.

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They also invite the particular attention of the trade to their IMPERIAL PATENT BLIND LINES, which are very superior to anything yet offered.

They can be obtained of all Rope-makers, Ironmongers, Merchants, Factors and Wholesale Houses in town and country.

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FULL LIST, and dates when they appeared, of **THE CATHEDRALS** which have been published on Application to The Publisher.

ing & Platt, Ltd., had also at their stand several petrol engines, including a 2½, 4, and 7½ brake h p., besides a 4 brake h p. petrol engine.

Messrs. Marshall, Sons & Co., Ltd., of Gainsborough, had and in their usual position with a various assortment of leading specialties. Foremost amongst their exhibits was a long-stroke horizontal engine fitted with Proell's patent governor and trip gear and of ample strength for 100 lbs. working pressure. Next there was a 10 horse-power independent compound engine fitted with Hartnell's governor and automatic expansion gear. Traction-engines have now come into extensive use, not only for agricultural work, but for general haulage purposes, and the 6 horse-power compound traction-engine shown this year was of their new type, constructed to work with economy in steam consumption and fuel, and embodies many important improvements. Messrs. Marshall also exhibited an open-fronted high-speed vertical engine fitted with Pickering governor. This is one of the new series of engines specially designed for direct coupling, or for driving belt-running machinery, such as electric lighting and similar work. The 10 horse-power single-cylinder portable engine of the firm's type, with cylinder having flat base bolted on to steel girders, and a stay between the cylinder and the crank-shaft carriage on the pump side.

Messrs. Ransomes, Sims & Jefferies, Ltd., of the Orwell Works, Ipswich, were present with a very serviceable 10 horse-power long-stroke engine, a 8 horse-power portable engine, a high-speed vertical engine, and a 8 horse-power road locomotive, the whole of which presented a very fine appearance.

Messrs. W. Tasker & Sons exhibited the "Little Giant" steam motor, capable of hauling a gross load of 5½ tons; while Messrs. Wallis & Steevens were present with their patent steam motor for general haulage, with users' own or with special trucks or trolleys.

In the gallery Messrs. John Bellamy, of Byng Street, Liverpool, had a good display of their well-known manufactures in the shape of galvanised and wrought-iron corn bins, as well as cisterns with a capacity ranging from 100 to 600 gallons, besides a safety tank for spirit or paraffin to hold 40 gallons, a wrought-iron barrel with a capacity of 200 gallons for oil or kerosene, a water-cart body holding 200 gallons, and several other things, &c.

Messrs. Barford & Perkins showed a 3 horse-power vertical steam-engine and boiler fitted with wheels and shafts

so that it can be easily removed from one place to another, besides a patent lever hay press, a patent combined crushing mill, and a steam food-preparing apparatus that is self-contained and easily fixed in a few minutes.

The Carron Co., of 15 Upper Thames Street, E.C., exhibited a set of stalls and loose boxes elaborately fitted in solid gun-metal, and a special feature was their patent manger with silent tying apparatus. The backs of the stalls were neatly tiled, and the woodwork was of teak and pitch-pine, while the flooring was made to represent Adamantine pavement with metal guttering and drainage. The stable fittings of various kinds had an attractive appearance, and it may be mentioned that the company, which is a very old established one, have show-rooms not only in London, but at Glasgow, Liverpool, Newcastle-on-Tyne, Bristol and Birmingham, with works at Carron in Stirlingshire.

Other exhibits of a miscellaneous character comprised the Economic Fencing Co., Ltd., the Cranstone Engineering Works, Ltd. (hoists, pulley blocks, &c.), Messrs. R. Haggie & Sons, Ltd. (wire rope), Messrs. T. W. Palmer & Co. (iron fencing, &c.), Messrs. Smith & Grace Screw Boss Pulley Co., Ltd., H. C. Slingsby (patent trucks), Jeyes's Sanitary Compounds Co., Ltd. (disinfectants).

THE DUBLIN MUSEUM.

A LECTURE was given by Colonel Plunkett, C.B., Director of the Dublin Museum, on the additions made during the past year to the collection in the Institution. Amongst other objects pointed out were a model of the famous Irish cross at Monasterboice and a copy of a well-known piece of sculpture by Michel Angelo. Also copies of two statues by Donatello in plaster, and imitations of various works of art from churches in Italy. He further showed examples of the Tuscan art, including a copy of an Etruscan arm-chair of sculptured marble from the Villa del Principe, Corsini, at Rome; also an interesting collection of objects from West Africa, including implements used by the natives for making fire and for purposes of war and hunting. He also referred to new specimens obtained of Irish book-binding, and remarked the beauty of style of some work executed in Dublin, and a collection of old Irish silver made formerly in Dublin and Cork, and for which there was now a brisk demand. The Irish gold ornaments were next pointed out, and Colonel Plunkett mentioned that Mr.

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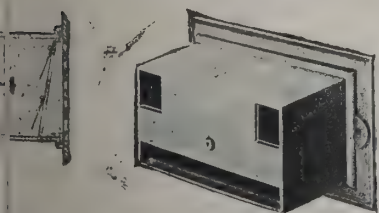
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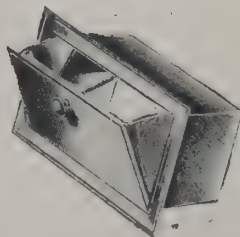
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4/58 CASTLE ST., LONG ACRE, W.C.

Coffey would deliver a lecture upon them in a few weeks. In the porcelain department were seen specimens of old Waterford cut glass, and also a small cup recently made at the Cork Exhibition, and the lecturer referred to the possibility of a revival of this industry in Ireland. Before concluding Colonel Plunkett showed the audience some magnificent specimens of Italian and fine point laces.

DUNFERMLINE OLD BUILDINGS.

AN interesting article by Mr. Thomas Ross recently appeared in the *Dunfermline Journal*, in which he dealt in an attractive manner with the ancient buildings of Dunfermline. The writer affirms that Dunfermline probably retains as much in its surviving architecture illustrative of its long history as any other town in Scotland. In the abbey church every century is represented since the eleventh. The palace front, he declares, has an overpowering and lordly effect, and is probably the grandest front of all the royal palaces in Scotland. Formerly the building could not be properly seen from the narrow path that skirts its base, but now it can be seen to great advantage from the opposite side of the glen, which has been handed over to the community. It is a very generally received opinion that the nave of the abbey church was the actual church built by Malcolm III. and Queen Margaret after their marriage in 1070, but Mr. Ross doubts if there was in the eleventh century in Scotland either the learning or mechanical skill necessary for the erection of such a building. Mr. Ross points out that it has been said that Malcolm was present at the laying of the foundation of Durham Cathedral in 1093, the last year of his life, and he adds that the resemblances between the abbey church and that building are many. He thinks it quite probable that the entire nave is the work of David I. Great churches were always commenced at the east end, and this nave in that case could never have been the east end of an abbey church. He thinks the view that the church built by Malcolm and Queen Margaret stood on the site of the present parish church is the only one that has any probability. Mr. Ross deals also with the re-exposed Norman doorway and the group of old houses opposite the west end of the abbey. The abbot's house, to the north of the graveyard gate, is described as a house built on the Z plan prevailing in Scotland during the latter half of the sixteenth century. It is the house of a

moderate well-to-do citizen, a class of which few examples remain. The inscription over the doorway caught the eye of Sir Walter Scott, and it is given in "The Fair Maid of Perth":—"Sen vord is thrall and thoct is fre, keip veill to tonge, I coinsel the."

INSTITUTION OF ELECTRICAL ENGINEERS.

THE Institution of Electrical Engineers, at its ordinary meeting on the 10th inst., which was held under the presidency of Mr. Robert Kaye Gray, the president of the year, celebrated the tercentenary of "Gilbert of Colchester," described by Dr. Sylvanus Thompson as the father of electrical science. Dr. William Gilbert, who was a physician to Queen Elizabeth, was born in Colchester in 1544, and died in the same town in 1603. He was the founder of the twin sciences of electricity and magnetism, and the celebration of the three hundred anniversary of his death took the form of the presentation to the Corporation of Colchester of a picture painted by Mr. Ackland Hunt representing Dr. Gilbert showing to Queen Elizabeth and her Court his electrical experiments. Mr. Ackland Hunt is himself a member of the Institution, and the picture, which is full of life and character, was displayed in a prominent place in the great hall of the Institution of Civil Engineers, where, by the kindness of the Council, the electrical engineers for the present hold their meetings. The borough of Colchester was represented by the mayor, Mr. E. H. Barnard, the ex-mayor, Mr. Wilson Marriage, Dr. Laver, Mr. V. Gurney Benham and the town clerk, Mr. Wanklyn. Among others present were the mayor of Westminster (Mr. Walter Emden), the president of the Royal Society (Sir William Huggins), the president of the Société Internationale des Electriciens (M. E. Hospitaller), the treasurer of the Royal College of Physicians (Sir Dyce Duckworth), Dr. J. Larmor representing St. John's College, Cambridge, Mr. Conrad Cooke and a large number of the leading members of the Institution.

The President briefly opened the proceedings by asking the Mayor of Colchester to accept the picture as a gift from the Institution, and requesting Dr. Sylvanus Thompson to say a few words about the man whose memory they had met with honour. Dr. Thompson and Mr. Conrad Cooke had worked hard to bring before them the memorial of Dr. Gilbert.

Dr. Sylvanus Thompson said a letter had been received from Lord Kelvin expressing his regret that he was unable to

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Fire-resisting Wood Joinery is indistinguishable in appearance from ordinary wood, and when furnished by us does not differ in any respect from ordinary wood, except in the one feature, that it will not by itself sustain or spread flame.

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represent that night, and his pleasure at knowing that it had decided in the way it had been to celebrate the tercentenary of Gilbert. He also said that the painter of the picture desired it might be mentioned that though he had spent a good many years over the picture, and had given the details a great deal of study, it was all to him a labour of love, and that he had been incited to the work by the late Sir B. Richardson, who was a great admirer of Gilbert and his works. The electricians owed an enormous debt of gratitude to Dr. Gilbert. Among all the famous men of the time of Queen Elizabeth, there were few whose names now stood out more pre-eminently. There were, no doubt, many others, for there were Cecil, Drake, Raleigh, Shakespeare, Spenser and Bacon. There were, however, no men before Cecil, naval heroes before Blake, explorers before Raleigh, poets before Shakespeare and philosophers before Bacon, but before Dr. Gilbert there was no electrician, and he also claimed their admiration as the founder of the science of terrestrial magnetism. They knew of him that he was in his time a busy physician, and that for thirty years he took a leading part in his profession, being at one time President of the College of Physicians, but he devoted a great part of his activity and his money (a sum of 5,000*l.*) to the experiments which resulted in the production of the book the critical copy of which he held in his hand, and which was described by his autograph to his friend and successor, Michael Browne, the book being now the property of the Society of Arts. In that book he laid the foundations of the science of terrestrial magnetism. But Gilbert not only laid the foundations of that science; he also dealt with astronomy, and he was the first to advocate in this country the views of Copernicus, and to him was due the first observation of the circumstance that the fixed stars could not all be at one distance away, while he also produced before the invention of the telescope the first known map of the moon. In addition to all this, he did much to advance the science of navigation, and he died on the three hundredth anniversary of his death, they gathered the various distinguished representatives of science to join them in doing honour to his memory. The house at Colchester where he was born and where he died was still standing, and should be the Mecca to which all electricians should go. His bones lay in the church of Holy Trinity, opposite to the house, and in that church was a heraldic monument recording his virtues and his career. He hoped in the near future many of them might go to Colchester to worship at his tomb.

The Mayor of Colchester, in accepting the gift on behalf of Gilbert's native town, said it would be treasured and prized by them. He also mentioned the fact, as a coincidence, that he (the Mayor) was the chairman of the electrical committee of the Corporation, and that from his boyhood he had been a student and admirer of Dr. Gilbert.

The Mayor of Westminster and Sir Dyce Duckworth, treasurer of the College of Physicians, added a few words expressive of their pleasure at being present and in appreciation of the memory of Dr. Gilbert.

The ordinary business of the evening was then proceeded with, a paper by M. E. Hospitallier, on "The Slow Registration of Rapid Phenomena by Strobographic Methods," being read and discussed.

BASINGSTOKE NEW RAILWAY STATION.

EXTENSIVE alterations amounting, in fact, to the rebuilding of their railway station at Basingstoke are being effected by the London and South-Western Railway Company. The new buildings are situated nearer the town and a little to the east of the old offices. The ground floors are on a lower level, necessitating the removal of an immense quantity of soil from the brow of the hill. The approach from the town will be as follows:—To the right will be the main block of buildings, some 80 yards long, comprising, on the ground floor, booking-hall and offices, subways and luggage entrance, &c. The booking-hall will give access by large doors to the subway, which is very spacious, lined with enamelled brick and divided down the middle for luggage or passengers. Lifts are provided to raise the luggage to the platform, while wide flights of steps lead the passenger on to the platform he or she wishes to reach. On the platform level are the waiting-rooms, stationmaster's, officials' and telegraph offices, cloak-room, lavatories, porters' and lamp-rooms, &c. Above them, again, is another range of offices and stores, and a clock turret facing the town. This will be illuminated at night, but it is unfortunately somewhat obscured by the chimneys of Messrs. Raynbird's auction offices, which adjoin. A broad open space on the same level as the booking-office will be left between this block and the refreshment block, and this will be roofed with glass, so that carriages, cabs or 'buses can take up or set down their fares in shelter. The refreshment block, which

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forms the left wing, is equally complete. Kitchens, stores and other offices occupy the ground floor, spacious luncheon bars and dining-rooms the platform level, and the waitresses' apartments are above. There are six bedrooms, a sitting-room, bath-room and lavatory at their disposal. A little further to the left has been erected the station-master's house—a most commodious and perfectly equipped dwelling—and in the open space between the Junction hotel and the refreshment block will be arranged a cab rank. The present down platform will be swept entirely clear of the buildings now upon it, and converted into an "island" platform, with the necessary shelters, waiting-rooms and other offices. There will be two pairs of rails on either side of it. The new down platform will be of great length—about 300 yards—and entirely under shelter. On the up side there has not been so much to do, beyond providing exits and entrances to the subway, and the erection of some additional offices. The whole of the new premises will be heated with steam—a novelty tried for the first time by the London and South-Western Company—and fireplaces are therefore for the most part absent. It is intended eventually to light the whole by electricity. The old subway, which extends right under both the railway lines, has been rebuilt and renovated on the South-Western Railway side, and will be retained exclusively for pedestrians wishing to cross the two railways to the upper portion of the town.

The contract for the passenger station was given to Messrs. Kirk & Randall, of Woolwich, the amount, it is rumoured, being over 30,000*l*. The time limit for completion was eighteen months. They commenced work in March last, and appear to be progressing expeditiously and well, though they are now approaching that stage of the operations when the necessary duties of the railway officials have to be provided for, and the progress of the work may be difficult to arrange.

LIVERPOOL ENGINEERING SOCIETY.

The Liverpool Engineering Society held its annual dinner on Saturday evening, the 12th inst., at the Exchange Station hotel, Liverpool. The chair was occupied by Professor Hele-Shaw, and others present included Sir Charles Petrie, Vice-Chancellor Dale, Professor J. A. F. Aspinall, Mr. T. L. Miller (chairman of the Engineering Society), Professor Carey (chairman of the Engineering Faculty), Dr. Davidson, Dr.

Nathan Raw, Professor Strong, Mr. C. Ramsey, Dr. Pernew, Mr. Murray Bligh and Mr. Lloyd Barnes.

The loyal toasts having been honoured, Sir Charles Petrie submitted "The Faculty of Engineering." He believed that the Liverpool University was the first to possess such a faculty, and he hoped they would set an example worthy to be followed throughout the country. If they were not for the engineering profession, he remarked, and help it gave to sanitary science, the health of a great city like Liverpool would not be able to reach the high standard it did. He himself had had some hand in obtaining that faculty, and he looked back with pleasure to the time when he, as Lord Mayor, used to preside over the executive committee of the university. He was very much interested in the movement from the first, and he was glad of the success it had attained.

Professor Carey, in responding to the toast, spoke in terms of warm recognition of the assistance given to the faculty by the associate professors. He was not sure that the very existence of the faculty was not due to the support which Professor Hele-Shaw had obtained from those gentlemen. Their presence there that evening was a guarantee that the faculty of engineering would have a close connection with the profession of engineering, and engineers would know that as long as the associate professors were connected with the faculty its work would be directed to a very practical end. As to Professor Hele-Shaw he trusted that he would return to them from his labours in the Transvaal more earnest than ever to advance the cause in which they were so deeply interested. The success of the faculty depended not only upon the teachers, not only upon the associate professors, but upon the co-operation and support of the engineering students themselves.

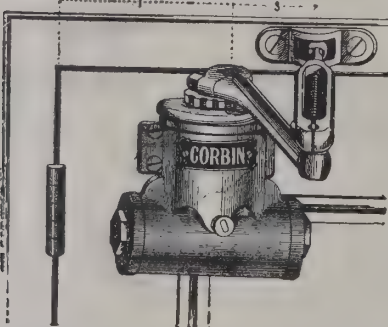
Mr. Rimmer gave the toast of Professor Hele-Shaw. He said that the occasion marked the inauguration of the new faculty, and it was the first time that Professor Hele-Shaw had presided over the annual dinner as Dean of the Faculty of Engineering. He voiced the sentiments of the students who he thanked the dean for the strenuous efforts he had made to found the faculty; it was only one of the many honours which the Professor had brought to the university of which they were so proud. When they heard that he had been appointed the director of technical education in South Africa they felt that the honour done him was reflected back upon the university and upon that department in particular. On behalf of the students he had great pleasure in presenting to their dean a silver cigar-case as a memento of that occasion, and in wishing



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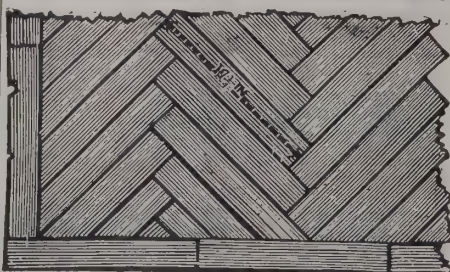
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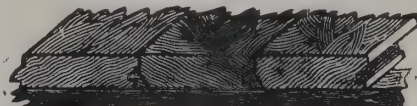
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and his family God-speed on their journey, a happy and prosperous season of work, and above all, a safe and speedy return to his students and the faculty.

The toast was drunk with enthusiasm. Professor Hele-Shaw, in acknowledging the compliment, remarked that he was thankful to say that his leavetaking was *adieu*, but only *au revoir*. When he looked back upon the years he had been in Liverpool, and remembered the first students with whom he began the work of the engineering department, and when he thought how the students had increased and multiplied, he could not but feel gratified at the number of friends he had had, and at the loyal way in which they had stood by him. He thanked Sir Charles Petrie especially for his kindness, and the able and sagacious way in which he had responded to the plea for that faculty. When he had come to consider the question of an assistant in the work in the Transvaal, his thoughts turned to his own country, and he could tell them that evening that Mr. J. H. Dobson had accepted the post of assistant lecturer in the new university of the Transvaal. Mr. Dobson, from an apprentice engineer, had fought his way upwards, and was some time ago appointed lecturer at St. Helen's. It was with great difficulty he persuaded the technical committee at that place to allow Mr. Dobson to accompany him. In conclusion, Professor Hele-Shaw expressed his heartfelt gratitude to them all, especially to the students, whose kind presence, he assured them, would always be treasured by him.

Mr. Mackenzie proposed the toast of "Our Guests." Mr. T. L. Miller replied, and emphasised the cultivation of observation, reason and imagination as important studies in the engineering profession.

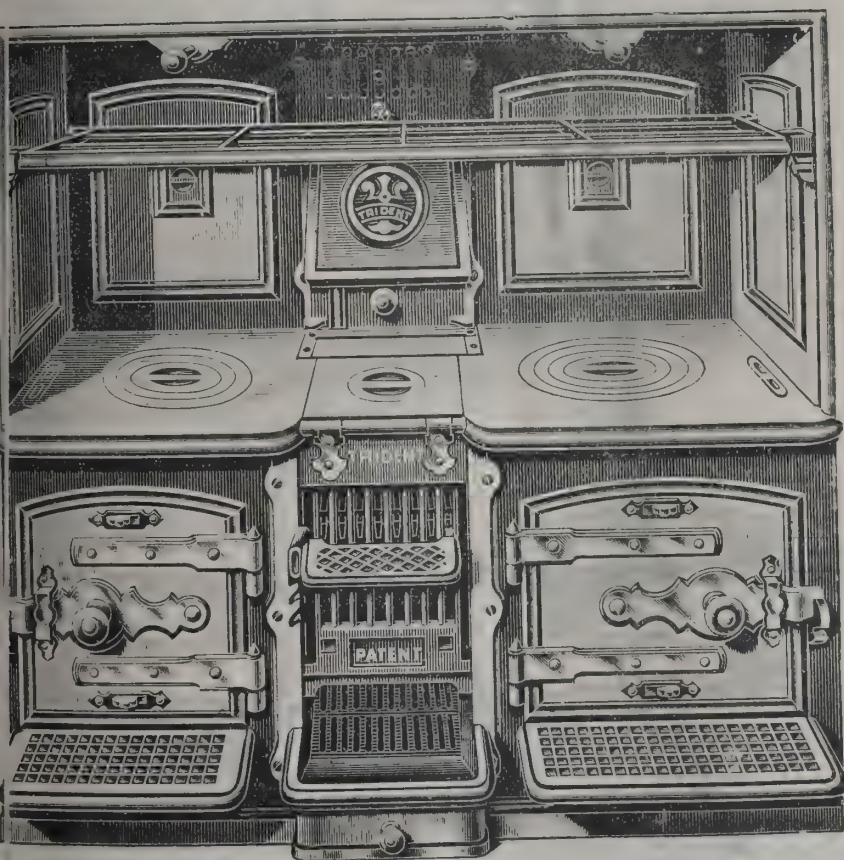
Vice-Chancellor Dale, in also responding, re-echoed the wishes which had been bestowed upon Professor Hele-Shaw, and congratulated the faculty upon coming into existence. Divisions in the university, however expedient, were in his mind to be avoided beyond the point of absolute necessity. Of one thing he felt persuaded, that every member of that faculty, though recognising its existence as essential for the work of activity and development of those cities which it had to serve, recognised also that independence was not a question, and that throughout the years to come the faculty of engineering would always be distinguished by that large and generous public spirit of devotion to common ends which had characterised the school of engineering from its origin until

BELGIAN V. BRITISH RAILS.

WHEN the Belgians were asked to furnish an explanation for the undoubted fact that they are enabled to supply the London County Council with steel tram rails cheaper than they can be manufactured in England, one of the chief reasons given, says the *Daily Telegraph*, was that in Belgium basic, and not Bessemer, steel was employed. In reply to this contention, British makers of steel say that while the Belgians and the Germans have an advantage in respect of paying their men lower wages for longer hours, they have no monopoly of basic steel, as it is also made in quantities here, particularly in the districts in the north-east part of England, where low-grade ores are found, similar to those that are being turned to account by the Germans in Lorraine and in the Grand Duchy of Luxembourg. Figures are not forthcoming as to the present consumption of basic steel in making tram rails in this country, but inquiring of the largest customers for tram rails for electrical installations, it seems that when first the demand for them was created the British manufacturers, who had been turning out railway rails by the Bessemer process for years, would not readily adapt themselves to the requirements of the tram companies. They said, in effect, "You can take our Bessemer steel rails, or go elsewhere." The Germans, followed by the Belgians, saw their opportunity, and they set up works for the making of steel by the basic process—a system which was invented in England, but which had to live down a great deal of discredit excited by the prejudice of those who disbelieved in the utilisation of impure ores. These establishments in the neighbourhood of Liège, in Belgium, and at Düsseldorf, in Germany, have not been long established. Their methods are new to the district. The leading Belgian works—those of Messrs. Cockerill, at Seraing—on the eve of change, as yet procure all the basic steel they need of their neighbours. These firms owe their existence to the adoption of the basic process, and it is from their works that not only England, but America, is being supplied. No doubt the English makers are at length realising the virtues of basic steel for certain purposes, but they have nevertheless allowed the foreigners to compete in our home markets, to the extent that probably 50 per cent. of the tram lines now being laid have been imported.

A tram rail is very different from a railway rail. A section of the rail laid in the streets for the cars—electrically propelled

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or horse-drawn—shows that the head of the rail, instead of being flat and simple, has a groove in which the flange of the wheel runs and a lip. This lip has to be rolled out flat and then turned up to form the groove. In the process of rolling the metal into this desired form the strain to which it is subjected is such that basic steel supports it better than Bessemer. The basic is much easier to handle. That is to the manufacturers' advantage. Then with regard to the wear and tear of it, the head of the basic steel rail is harder. It is not calculated to stand the shock which the Bessemer railway rail must bear; but the conditions applying to a tram and those applying to a railway rail are altogether different. On the railway line the metals have to be supported on "sleepers" at intervals, and there must be no risk of fracture. But on the tramway the rails are continuously laid on cement; they sustain no jolt or jar, and some of them which have been down for ten years show hardly any signs of wear. The Germans and the Belgians were prompt to satisfy themselves that basic steel was good enough for the purpose, and even better than Bessemer. Their interest was altogether in the direction of developing the mineral resources at their own doors of too low a grade to serve for Bessemer steel, whereas in this country the importers of Spanish ore and the users of Cumberland ore, who are chiefly to be found on the West Coast, have not had the inducements to take up the basic process. The steelworks of Yorkshire, with low-grade ore at local command, are in a different position, and it is from them that English rails, if they are to compete with the Belgian, must come, though at present prices buyers of rails assert that the foreigner holds the market to a considerable extent, having made good his foothold during the last four or five years.

A belief exists in some quarters that the engineer of the London County Council insists upon Bessemer steel. It is impossible to verify this statement at first hand, as the clerk to the Council courteously declines to divulge the terms of the specification in contracts for rails. Whenever a question becomes controversial the rule of the officials at Spring Gardens is to withhold all information. But in other quarters a specification was produced, and it did not appear to provide for none other than Bessemer steel, as the chemical constituents set forth would allow of the supply of basic steel. There is not much room for doubt, because during the present year the Council placed a further order with Messrs. Maclellan, of Glasgow, whose tender in March 1902 was accepted for a

portion of the rails required for the New Cross and Greenwich tramways. The necessary permission was given by the Council to the rails being obtained from the sub-contractors the Société Anonyme des Aciéries d'Angleur. This is one of the works in the vicinity of Liège, using basic steel of its own manufacture. The nuts and bolts are made at Sheffield. As regards track rails, no difference whatever exists between the conduit—the London County Council—and the overhead systems, but the conduit requires, in addition to the rails upon which the car runs slot rails and conductor rails, or "tees." Two slot rails form the slot between each pair of track rails, the slot being $\frac{3}{4}$ -inch width, through which the plough works. All three descriptions of rails were included in the same contract. Something of interest is to be learned by referring to the proceedings of March, 1902, when the contract was placed with Messrs. Maclellan, with permission to sub-let in Belgium. That firm put in two tenders; the one, which was accepted with the rails to be made by the present sub-contractors at Tilleur, near Liège, being nearly 8,000% less than the price quoted for rails to be made at the Barrow Hematite Company's works, for which 50,463% was asked. Presumably these were Bessemer steel rails. The Belgian works at Ougrée also competed, being third on the list; and the Phoenix Works at Ruhrort, Westphalia, Germany, were second. On that occasion the difference between the lowest British and foreign tenders was equal to about 18 per cent.

When the permanent way of the first completed section of the London United Tramways Company was opened in 1901 it was stated that the rails are of steel of the very best quality, made from first-class ores. The weight of the rails is 92½ lbs per lineal yard, and they are rolled in 36 feet lengths. The bed on which the rails are laid consists of concrete, 6 inches thick, covered with sand and cement, on which are laid wood blocks. The fish-plates are made from steel of the very best quality, and are very tough, with no brittleness, the bars being rolled from "blooms" of sufficient sectional area to secure this. No Bessemer steel rails are being used on the extensions of the overhead system. It may be noted that the London County Council's rails, of the girder type, are heavier, weighing 102 lbs. per yard; but the slot rails, also of steel, are only 62½ lbs. per yard in weight. The electric current is conveyed by conductors, which are T-shaped rails of soft steel, with specially high conductivity, carried within the concrete conduit. They are comparatively slight, for their weight is only 22 lbs. per yard.

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The Architect.

THE WEEK.

THE death is announced of Mr. CHARLES MCBRIDE, who was one of the few Scottish sculptors. Edinburgh possesses a collection of casts which were made by a landscape-painter in the beginning of the nineteenth century, as well as a remarkable assemblage of copies of busts. But their neglected condition reveals the general indifference to the sculptor's art. Anyone who follows it is therefore likely to possess enthusiasm which, under fostering conditions, might produce excellent work. The busts in which CHARLES MCBRIDE was engaged are not to be taken as the full measure of his ability. *The Murmur of the Shell*, a statue of a young girl, which now belongs to Mr. CARNEGIE, would by itself be sufficient to indicate that he was endowed with a sense of beauty aspiring towards the ideal. In Mr. CARNEGIE he discovered a patron who believed in his genius, but his delicate health prevented him from producing examples of art unless on rare occasions.

An ingenious effort at self-advertisement is seen in the small brochure entitled "Moot Points: Friendly Disputes in Art and Industry between WALTER CRANE and LEWIS DAY." (London: B. T. BATSFORD.) The disputes are not unlike the friendly sparring and wrestling bouts of professional entertainers. They amuse, but victory generally goes by turns and is prearranged. However, the confidence of the supporters suffers no change. Mr. DAY shows how he is quite willing to aid with his skill those manufacturers who employ machinery, believe in the advantages of a division of labour, and are indifferent whether their products are considered art or trade so long as they are purchased at a profitable rate. Mr. WALTER CRANE professes to cater for those who stand aloof from the tradesmen, and believe that everything they buy has a special character which is absent from similar things belonging to their neighbours. Suppose you want to obtain a carpet in Anglo-Persian style with an abundance of lions such as NICK BOTTOM, the weaver, would admire, and which suggest roaring like a sucking dove or a nightingale. Mr. DAY, with charming humility, professes that he does not aspire beyond "ornament." Mr. CRANE is willing to produce them in a style which would satisfy the keeper of a menagerie. The figure of the manufacturer which Mr. CRANE introduces as enjoying the "mill" between the two artists appears to be perfectly amicable; for whatever kind of product is needed, CRANE or DAY, DAY or CRANE, will co-operate with him. The new system is many possibilities. Why should not the makers of medicines, soaps, oatmeals and other things appear to differ the same way? An ordinary trade tract is wearisome reading, but some in the "friendly disputes" style might be more attractive, and who knows whether the public could not purchase both classes of articles? Art and commercialism can still join in the cry, "Quis separabit?" for the two designers have brought them more closely together.

ANYONE who consulted ROBERT ETHERIDGE about questions in connection with building stones will be relieved to learn of his death on Friday last. He was one of the few men of science who never appeared to suggest that matters relating to ordinary business were beneath his notice. It seemed to him to be a pleasure that he could bring his knowledge to bear on questions which to others were obscure. His manner was no doubt due to the fact that at one time he was curator of the Bristol Museum, and at another he lectured on vegetable physiology and botany in the Bristol Medical School. He was therefore early initiated into the practice of answering questions and clearing doubts. The public in general heard more about other geologists who were connected with the Geological Survey, and he never startled the world by colossal theories. But it is doubtful whether he was not equal to the greatest of

his contemporaries in his knowledge of the history of the earth's surface and especially of palæontology. As he was born in 1818 he would generally be considered an old man. But, as commonly happens with students of national science, he was as ardent in the pursuit and application of knowledge as younger men. The Museum of Practical Geology owes much to him. He was assistant keeper, and he not only classified many varieties of the fossils, but he prepared sections and maps which are invaluable to those investigating engineering questions in which geology is concerned. His great ambition was to collect data which could be used by other students, for as to fame, he was indifferent. Hence it is that his most important investigations are only to be found in the Journal of the Geological Society and the Memoirs of the Geological Survey. A slight acquaintance with him was almost enough to reform those ill-taught theorists who were indifferent to anything less than the creation of worlds. He received several medals, but his unobtrusive manner made him unknown to the distributors of other honours; and thus one of the greatest geologists in the world had no higher position than belongs to a Fellow of the Royal and Geological Societies.

ACCORDING to Dr. JOHNSON, a warehouse is "a storehouse of merchandise." Ware he describes as "commonly something to be sold." In other words, a warehouse is only temporarily occupied by its contents. Under the Workmen's Compensation Act the word "factory" includes any dock, quay or warehouse. The question then has been raised, For what length of time must the goods be deposited in order to constitute a warehouse? The Great Western Railway Company have premises in the Minories where the goods may only be a few hours on the platform, and only in special cases are allowed to remain a few nights. Is that extent of use sufficient to constitute a warehouse? The question arose out of an action brought by a labourer whose hand was injured through being struck by the handle of a crane which was accidentally released by the man working it. The case was heard at the Marylebone County Court by Judge STONOR. In his judgment he acknowledged that there was some doubt in his mind on the subject, but he came to the conclusion that the railway premises formed a warehouse, and the applicant was therefore entitled to compensation. The association in the Act with docks, wharves and quays would appear to support His Honour's conclusion. But in the Factory and Workshop Act there is a more restricted meaning given to the word, although there is no precise definition of its signification. Lord Justice COLLINS once said that if a timber yard were roofed over it would become a warehouse, from which it might be inferred that a platform which is unprotected from the rain is not a warehouse.

THE Council of the Upper Norwood Athenæum have lost no time in producing the small volume which is the record of excursions during the past season. The places within convenient distances of the Metropolis which possess historic interest have not been exhausted by the visits of preceding years. This year the subjects are Clandon and Merrow, Warnham Court and Christ's Hospital, Holmbury St Mary, Bexley Heath and Crayford, Christ Church and Oxford Castle, Roydon and Nether Hall, Redbourne and Hemel Hempstead, Alberty, Gatton and Merstham and Selsdon Park. We have printed the papers which were read by the guides, but it is advantageous to have so much information in a more suitable form for the benefit of tourists. Indeed the small volumes will form a series of guide-books of a unique kind. So much gratification has been derived by the members, it is surprising similar societies have not been established not only in other parts of suburban London, but throughout England. The Norwood Society has none of the cumbrousness of the ordinary archaeological bodies, which can only be set in motion for two or three days in the year.

ARCHITECTS AND ANATOMY.

THE necessity of education for architects is so often urged, and there is so much vagueness concerning what should be comprehended in that term, it is excusable if outsiders who are without the least knowledge of construction or design should out of pity come forward with advice about the varieties of knowledge desirable. Among one class of architects, as well as among laymen, there would appear to be an illusion that a man has only to speak on the subject of education and he will be forthwith recognised as an authority who is inspired by personal experience of its advantages. To insinuate that a great many if not the majority of practising architects are unacquainted with the elementary principles of architecture, and are obtaining fees under false pretences, is now becoming an almost exhausted method of advertisement, but it is still persisted in by those who find some strange fascination if not profit in posing as the champions and truest representatives of the art. Architecture alone can claim to have such peculiar advocates. There are differences of opinion in other professions as to the skill of members. Lawyers and physicians are not always unanimous in upholding the superiority of their successful brethren, but they have a manner of expressing their judgments which is unlike that adopted by architects. There is no endeavour to convince the public that they have been wasting their money in paying fees to charlatans. When architects describe architects as incompetent, it is allowable for others to suggest in their innocence the kind of remedy which would serve to overcome the evil and enable people to obtain handsome, substantial, healthy and economical dwellings and other buildings.

It is only by supposing philanthropic motives which were the result of the dismal pictures of the state of their profession drawn by architects that we can understand the "distinguished professor of the Queen's College," Professor SYMINGTON, rising at the annual dinner of the Ulster Society of Architects and gravely informing the company "that a man to be a successful architect should be first of all an anatomist." The reasons given were as follows:—"They found in the human body the application of the principle of the best use of the best materials for the best purpose. There was a maximum of strength with a minimum of material. However high an architect might attain in his profession, however complicated the buildings he undertook, he would never construct anything at all equal in perplexity to the structure of his own body." After-dinner oratory should not usually be rigorously criticised, but in this case the remarks are so unlike a professor's, much less a distinguished one, we are inclined to presume they were incorrectly reported. The absence of censure by the chairman or any of the architects present would support that conclusion. But as young architects are now rather credulous about the extent of the knowledge which should be acquired, there may be no harm in considering the statements.

First, we may say Professor SYMINGTON'S discovery is more venerable than any of the "chestnuts" which will be revived during the present season. The necessity of anatomical knowledge was one of the marvellous pieces of advice through which VITRUVIUS has gained renown. He was unable to point to any instance in his own practice (assuming him to be entrusted with buildings) which was improved by means of anatomy. We doubt whether at any period the wisdom of VITRUVIUS was esteemed as more applicable to ordinary work than Mr. PECKSNIFF'S. But in the nineteen or twenty centuries which have passed since he lived not one architect has been known who testified to the least benefit which anatomical knowledge gained for him. Cases might perhaps be cited of Renaissance architects who studied the human body, but as they were also painters and sculptors, it was for those arts the science was needed rather than for the planning of buildings. It is still possible to hear a study of the figure recommended to students of architecture in order to acquire a canon of proportion. An eye that is familiar with the relations between the parts of a well formed human body or a fine statue and the whole is not likely to be satisfied with details which are larger or smaller than is necessary for effect. As an aid towards knowledge of the exterior of the figure anatomy is unquestionably of use.

But anyone who maintains the human body is to be

likewise taken as a model for building construction cannot have realised fully either the essential character of that body or of a building. The two are so unlike in principle and in purpose, it is ridiculous to enter into a comparison between them. Evidently, however, other men, besides poets, fancy there is some affinity, as if they came under one occult law. EMERSON, for instance, rejoices over the words of VITRUVIUS as if they embodied supreme wisdom.

Is it not sufficient to show the gulf which separates man from building when we say one is organic and the other a combination of things which, if they were organic, ceased to be so before they were utilised by a builder? We cannot discover why the stone or the man exists. But we know that man, when he appears in the world, is an imperfect being, that several years are needed before he attains his full growth, and then after a period of vigour he declines. It does not matter whether like SHAKESPEARE and some of his predecessors we say there are seven ages, or, like some physiologists, determine the periods of life by changes in teeth or bones; the result is the same. With the longest lives it is a succession of variations from the mewling and puking infant to a state of "mere oblivion, sans teeth, sans eyes, sans taste, sans everything." The materials of which so marvellous an organism is composed are adapted to facilitate the succession of changes. All bones were originally so very soft and gelatinous as to be almost in a fluid state. We cannot consider the constituents of the body in the same way as we do building materials, for there are internal forces acting on them which, when the time arrives, are more deteriorating than any to which wood, stone or steel are subjected under ordinary circumstances. The "maximum of strength with a minimum of material," as Professor SYMINGTON describes the body, is not to be taken in the statical or constructive sense the words would have if used by an architect or builder.

We cannot regard the human body rightly unless we accept it as under the influences of dynamic forces. It is a machine rather than a fixed structure. The least vibration in a building is prevented, but that is impossible with animals, for even when we appear quiescent some organs of the body are in action. A labourer would never compare a mortar mill or a steam hoist or trolley with the building which they aid in constructing, and it is no less irrational to identify a building with a being that encloses different kinds of apparatus which only cease from working when life is extinct. A real grasp of one of the truths of animal mechanics was expressed by EDWIN CLARK in his deductions from the experiments in connection with the Britannia Bridge when he said:—"The more special province of the bones appears to be their action as pillars or struts, in forming immovable fulcra for the reaction of the muscles, and since any yielding would involve a great increase of motion in the muscle itself, we find bone among the most incompressible of known substances." As there could be no such reaction in bronze or marble, it was considered almost an impossibility at one time to have a statue which could stand on the feet, and pedestals, smaller figures, drapery or other devices were introduced to give the desired steadiness. But a human being can generally stand in such a position, owing to the exercise of force in some mysterious way. If motion is impending and there is a tendency to fall, it is overcome by motion in a different direction. The act of walking, for instance, consists in successive over-balancing and recovery. Although the same amount of material exists, it would be impossible for a corpse to stand upright, or a skeleton. The forces to which perpendicularity was due no longer existing, we have only matter in a form which must be either held up by exterior props or allowed to lie in such a way that gravity is resisted.

By attempting a comparison between the human body and a building, or indeed with any work of man's hands, a definiteness is given to what is mysterious. The purpose of life is not manifest. We know that a vast number of human beings have not sufficient strength to pass through the few years of infancy. It is also familiar to us that at all ages of human beings there are sudden collapses. In all such cases the purpose of creation is no doubt fulfilled. *Mors janua vite.* But if a house broke down so early or so unexpectedly what would be said of the builder? Buildings

rarely fall, not on account of the superior skill of those who construct them, but because experience has made men acquainted with the various contingencies which may arise and they endeavour to provide against them. As yet physicians have not discovered the remedial measures which will enable them to overcome all the obstacles to length of life, and one of the reasons may be the excessive appreciation of false analogies like the comparison of a body with a building. How little is needed for the demolition of the house of life is universally known. A man can his quietus make with a bare bodkin or one in another hand is no less efficacious; so is "the soft and tender fork of a poor worm" and the sting of an insect. The simplest structure of wood has more power of resistance.

When Professor SYMINGTON said that in the human body they found the principle of the best use of the best materials for the best purpose, he is certainly treating a great many obscurities as if they were known as well as common facts. Humanity has passed through a variety of conditions, and many more will presumably follow. Now numerous observers believe that the rate of speed has exceeded the adaptation of the body to the altered conditions. There are painful weaknesses now suffered which apparently were unknown in a past age. It is sometimes asserted that men are best suited for living in a state nearer to primitive life, and many who have abundant vigour prefer to go to a wild district rather than endure the pains and penalties of modern life and civilisation. Considering what the ordinary highly-educated man has to go through in a profession, can it be said that the best materials are being daily used for the best purposes in a physiological sense?

As respects materials it can be replied, "Beggars have no choice." Man has to employ those alone which he can afford to obtain. Basalt is an enduring material, and it is found in the county of which Belfast is the city. It is not, we believe, used either for walling or for paving. Would anatomical knowledge, if possessed by the Ulster architects, compel them to employ basalt? But is the Professor certain that the best materials are always employed in building men? It was at one time estimated that the mortality after serious operations was more than twice as numerous in French hospitals as in English. The difference was believed to arise from our superior management and sanitary arrangements. M. VELPEAU, whose authority was unquestioned, attributed it to a difference in the flesh of the two races. Would not the English material in such a case be better than the best? The fact is, there are variations in bones, muscles and other materials, and it is erroneous to describe them as if they were alike in quality with men all over the world.

The "minimum of material" principle of course leads to the steel structure or, as we should say out of respect to the Professor, the "skeleton structure." If only utility were considered, the human body would present a different appearance; but material is added to impart beauty. Why should not man be allowed to imitate nature and to employ a little superfluity of material for the sake of conferring a pleasing appearance on his handiwork? Nor is it wise to restrict dimensions to a minimum. According to EDWIN CLARK, "the angler's bamboo-rod is the most perfect of tubular beams," but quantity and strength generally go together, for man cannot imitate the forces which compensate for mass in the human frame. However, where an anatomist cares for his science, we presume he must act on the nothing-like-leather principle and will endeavour to bring all things into subjection to it.

We have referred to the advantage of studying the figure as an aid in cultivating the sense of proportion. A department of anatomy, viz. that relating to races, can also have use for architects. The late CÉSAR DALY, the French architect, declared that architecture varied according to the distinctive character of each race. But a similar theory was upheld at an earlier time by JAMES FERGUSON. He affirmed that if considered apart from ethnography, "architecture is a mere record of bricks and stones," but with the help of that science "not only every tomb and every temple, but even the rude monoliths and mounds of savages acquire a dignity and interest to which they have otherwise no title." Some knowledge of anatomy may be useful in the study of races, but the architect can at least dispense with it in working out the theory and practice of construction.

LONDON ON THAMES.*

IF the poems which the Thames inspired could be brought together they would form a most interesting anthology. We can also say that if the views of the scenery by English artists were collected there could hardly be a more attractive exhibition. The river deserves all the testimonies which the arts can pay, not only to its beauty, but to its importance. If the "factious" Lord Mayor did not inform JAMES I. that His Majesty might remove himself and his Court as soon as he pleased so long as he did not take the river with him, the remark must at least have represented the opinions of many good citizens.

The selection of the site for the earliest settlement of the city now known as London, and which for many reasons may be considered the centre of the earth, showed remarkable wisdom. If a position were chosen nearer the coast there would be a constant danger from pirates. But the 60 miles of waterway not only conferred security against invasion, but added little to the cost of transport. London could not be better placed, and one of the proofs of that fact is to be seen in the aversion of the citizens to extend their boundaries along the sides of the river. Necessity alone must have dictated the use of the supplementary city at Southwark. It would be difficult to decide between the relative merits of the northern and southern settlements, but a number of circumstances into which we need not enter combined to give the greater power to the London which was the nucleus of the existing Metropolis.

The dislike of expansion was disadvantageous. Without exaggeration it can be said that even up to the present time the Thames has not been utilised as a natural feature and as an ornament for the city to the extent it merited. Artists like Mr. WHISTLER may find attractive subjects in the irregularities of the warehouses which line the river. But in any other part of Europe we should see a different class of buildings along the silent but noble highway. At one time a few of the great nobles obtained possession of riparian sites for their palaces and gardens between the City and Westminster. The selection was, however, little more than a fashion which was of brief duration. Trade and commerce usurped the banks, and the river was almost as much neglected by people who professed to have taste as would be a goods railway in our day.

It is well, however, to recall some of the scenes with which the river was connected, and this has been done in an agreeable manner by Mr. G. H. BIRCH. He has been able to use a great many reproductions of old views, but he also endeavours to present what are called "word-pictures." These efforts of the imagination are not unsuitable for such a subject, and only hypercriticism would cavil at any departure from prosaic accuracy. Thus, in speaking of Roman London, he says:—"The broad river then bore on its bosom the triremes and galleys and argosies which, without waiting for a favourable wind, could be borne by the tide to its wharves and quays. . . . London must have contained some fine public buildings: the richness of the tessellated pavements and frequent discoveries of hypocausts show that for a provincial city it was not much behind Imperial Rome itself." We should like to believe all this, but are afraid it is only an architect's vision. The relics, including carved stones, which we see in the Guildhall Museum, are not convincing about the state of art among the settlers. Arrangements for heating and tessellated pavements are to be found wherever the Romans congregated, and during its comparatively brief history Londinium could only be considered as an emporium for the colony. The fact that the head of a bronze statue of HADRIAN was discovered in the river may be evidence that a statue of the Emperor was in some public place. But as one swallow does not make a summer, one or two fragments of statuary are insufficient to convince us that Rome on the Thames resembled Rome on the Tiber.

The Roman engineers constructed a bridge across the river, and no doubt it served as a barrier to some invaders. CANUTE is reported to have found it easier to make a new channel for his fleet than to waste time in attacking it. The river to Northmen would be a more convenient place for fighting than the land, and, as Mr. BIRCH says:—"In

* *London on Thames in Bygone Times.* By G. H. Birch, F.S.A. (London: Seeley & Co., Ltd.)

the long struggles between Roman and Briton, Briton and Saxon, Saxon and Dane, many were the warriors who perished in its waters." WILLIAM THE CONQUEROR made short work of the opposition of London, but once in possession he realised the advantages of its position. He therefore transported an abundance of stone from Caen and erected the White Tower. FITZSTEPHEN, who was credulous, wrote that its walls were "cemento cum sanguine animalium temperato," which Mr. BIRCH dismisses by assuming that the monk probably mistook "the pulverised Roman red brick used in the mortar for blood, from its colour."

Foreigners would naturally regard the river as a highway which led to their own countries, and churches and houses would therefore appear to be erected close to the banks rather than in a northerly direction. DANTE refers to the Thames as if it were London. The Knights Templars, who had to make many journeys, preferred a site near the river to their quarters near Holborn, where Southampton Buildings now stand. There was a royal palace at Westminster, and an Archbishop of Canterbury erected one for himself and his successors at Lambeth. The river consequently forms a bond of connection between different periods. Although there can be no memorial in its waters which will suggest the scenes transacted on it, the old associations still continue, and it only requires the aid of imagination to summon up a series of scenes surpassing those enacted on the Nile or the Tiber.

In the reign of HENRY VIII. Bridewell and Blackfriars became historic in a secular sense. It was in the former place that the king deliberated with some of his representative subjects about the validity of his marriage with CATHARINE OF ARAGON, and it was in Blackfriars the investigations took place. The Bishops of Exeter owned a palace on which Essex Street has been raised. The Earl of ARUNDEL held a fine property with a garden, and several other nobles were able to obtain desirable plots along the river. HENRY VIII. coveted the ground known as York Place, which belonged to the Archbishops of YORK. On WOLSEY'S fall he obtained possession of it, and an Act of Parliament was passed ordering "that all the said ground, mansion and buildings, together with the said park and the entire space between Charing Cross and the Sanctuary at Westminster, from the Thames on the east side to the park wall westward, with all the houses, tenements, lands, &c., and the soil of the ancient palace, shall from henceforth be deemed the king's whole Palace at Westminster, and be called and named the King's Palace at Westminster for ever." Destiny has not respected the enactment, for the ground described now bears other names and is appropriated to other purposes.

It was a remarkable coincidence that when the Elizabethan drama arose some of the theatres were erected close to the river on the northern and southern sides. Whitefriars, Blackfriars and those on Bankside were, in one sense, far more important than the palaces of the nobles. If all the young citizens enjoyed the river like ROBERT HERRICK it must often have presented pleasing spectacles. Addressing his "silver-footed Thamesis" the poet laments his absence in his country vicarage, and says:—

No more shall I reiterate the Strand,
Whereon so many stately structures stand,
Nor in the summer's sweeter evenings go
To bathe in thee, as thousand others do;
No more shall I along thy crystal glide
In barge, with boughs and rushes beautified,
With soft smooth virgins, for our chaste disport,
To Richmond, Kingston and to Hampton Court:
Never again shall I with finny oar
Put from, or draw unto the faithful shore;
And landing here, or safely landing there,
Make way to my beloved Westminster,
Or to the golden Cheapside, where the earth
Of Julia Herrick gave to me my birth.

The lines are probably the most complete account we have of the reasons for the fascination exercised by the Thames in the early part of the seventeenth century.

After the Restoration there was a reaction from Puritanic depression, and according to PEYVS, there must have been 10,000 barges and boats on the river to witness the entry of Queen CATHERINE of Braganza. EVELYN says

the pageant exceeded any he had seen in Venice. At the time of the Great Fire the Thames was covered with floating goods. Then it was proposed to utilise the opportunity offered by the destruction of London, and to construct an embankment. The buildings were to be "no otherwise than fair structures for the ornament of the City, and that no brewers, dyers, or sugar-bakers shall be allowed to carry on their trades, which, by their continual smoke, contribute much to the unhealthfulness of adjacent places in or near this line." It is noteworthy how little seems to have been done at a prior time for the regulation of the Thames. But it cannot be recorded that much advantage arose from the attempt to prevent the river following its own sweet will. It was a favourable time for encroachment, and some interesting papers exist in the Soane Museum which reveal the difficulties attending all projects for improvement.

If the experience of Sir ROGER DE COVERLEY was common it is no wonder the Thames was deserted by people who respected their ears. The old knight, who was in company with the staid Mr. SPECTATOR, endured so much ribaldry that he assumed his magisterial expression and informed his companions "that if he were a Middlesex justice he would make such vagrants know that Her Majesty's subjects were no more to be abused by water than by land." There were official ceremonies, however, in which the Lord Mayor and City companies took part, but there was less romance about the river than at an earlier time. In 1730 GONZALES, or rather DEFOE, thought the pleasantest way of moving from one end of the town to the other was by the water. It was possible to travel two miles for 3d. with one waterman, or for 6d. if two were employed. But as traffic increased and other means of transit were arranged, the employment of small boats within metropolitan boundaries appears to have gradually declined. There was some compensation in the use made of up-river waters.

The construction of the Embankment from the plans of Sir J. W. BAZALGETTE was the grandest of all the attempts to impart that character to the river which is suitable for the chief artery of a great capital. Much should be forgotten about the misdoings of the Metropolitan Board of Works for having accomplished so noble an undertaking within a limited time. But from the arrangement there had to be costly sacrifices of trade interests. On that account the great roadway can only be partially executed, and a long time must elapse before such an improvement as was devised by WREN, EVELYN, JOHN MARTIN and others is accomplished. It must be admitted that the public do not appear to be very anxious as to what happens to the Thames. The failure of the steamboat companies is enough to convince anyone that the slow but pleasant travelling by boats of any kind is not adapted to the requirements of the moment. For a long time the Embankment was not in favour with cab-drivers or the owners of private carriages, and it cannot be asserted that it has been successful as a promenade. And yet every one who remembers the river in the pre-Embankment days will testify that it has been greatly improved, and there is not so much to shock the senses as was common some forty years ago.

Although there may be indifference to the river as it now runs, its old associations should always render it interesting as an historic highway. Many of these are described in Mr. BIRCH'S book, and a large number of illustrations are presented, which are the more remarkable for their size and quality when found in a book published at so cheap a rate and produced with the publishers' usual elegance. It forms a most attractive retrospect, and must excite regret that although so many improvements have been accomplished in or about the Thames, such a pageant as DAVID ROBERTS depicted, *The Lord Mayor's Show at Westminster Bridge*, is no longer among the sights of London.

The Church of St. James, Walthamstow, has been dedicated by the Bishop of Barking, and the Bishop of Colchester preached. This is the third new church built in Walthamstow since the rights of the little parish church were transferred to St. Saviour's. The cost has been 10,000l.

EARLY BRITISH POTTERY.

A PAPER on "Early British Pottery" was read before the Hawick Archaeological Society by Mr. G. Hobden. He said that it had been well remarked that there was no branch of industry, viewed in reference to its history, its theory and its practice, which offered more that was interesting, with regard alike to its economical application and to its scientific aspect, than the ceramic or plastic art, none affording products more simple and varied, more easy of manufacture, and, notwithstanding their fragility, more durable. In describing the various kinds of pottery in this country it was necessary to include in the first place to those primitive wares which, being of pre-Roman age, were generally known as ancient British pottery. Much of this early ware was found under conditions which showed that it was contemporaneous with the use of iron and bronze implements in these islands, but it was probable that similar coarse pottery continued to be made even subsequently to the period of the Roman Conquest. The paste of this pottery consisted of coarse unprepared clay usually mixed with pebbles, and in most cases it had been imperfectly baked. Dealing with Roman pottery in Britain, he remarked that there was a distinctive pottery made and used by the early Romans while they were masters of these islands. It was called Samian pottery, and was always of a red tint. The date of its manufacture probably extended from the first century of our era. It seemed to have been used for domestic purposes, as earthenware and porcelain now are in this country. It was generally considered doubtful whether this red ware was manufactured in the British Islands, though its remains were sufficiently common, especially at Roman stations in the south and east of England. It appeared to have been largely imported during the Roman occupation of these countries, and, judging from the repaired specimens often discovered, seemed to have been of great value at that time, much in the same way that Chinese porcelain was prized before porcelain was made in this country. The influence of the Anglo Saxon seemed to have been detrimental to any kind of art. Possibly the continuous state of war into which they were forced by restive aborigines and threatening invaders prevented any attention being given to the arts of peace. In any case, the work of the potter degenerated rapidly, until during the late years of Saxon power only the rudest kinds of ware were produced. Nor did the Norman Conquest improve matters much. Very little, indeed, was known of the pottery of this period, and it was very remarkable that, after the splendid heritage the Roman potters left, that only one Roman pottery could be traced in these islands, and that solitary pottery was discovered by Mr. Jewitt at Burley Hill. Until the close of the Tudor period, the potters of England maintained a dead level of mediocre work when the dawn of the Renaissance in Europe was reflected over the British Isles. It was generally believed that the porcelain works at Stratford-upon-Avon were established about the year 1730, but the earliest authentic information concerning the factory did not commence until several years later. Bow china and early Crown Derby were very similar in decoration, differing only in the composition of the body. Although the exact date of the establishment of the porcelain works at Chelsea had not been ascertained, it was probably as early as 1745. He also referred to the Staffordshire potteries and to the work of Josiah Wedgwood and his son, who raised the potter's art to the acme of perfection and placed Staffordshire ware as unrivalled in the ceramic productions of the world's potteries.

LEEDS ARCHITECTURAL SOCIETY.

A GENERAL meeting of the Leeds and Yorkshire Architectural Society was held on the 17th inst., when Mr. B. Mitchell Withers gave a lecture on "Sir Christopher Wren: his Time and his Works." After describing the architectural and social condition of London in the years of Wren's youth, Mr. Withers proceeded to speak of the unique opportunity which the Great Fire of London presented to an architect of genius. In Evelyn's "Diary" we learned that the author submitted a plan for the improvement of London within 40 days of the extinction of the fire, but Wren had been before him. The scheme met with the king's approval, but unfortunately, and to the kingdom's loss, it was never adopted. Wren had previously been appointed assistant royal architect to make good the deficiencies of the king's poetical official, and he then had occasion to report upon the old cathedral of St. Paul's, which had recently been repaired by Inigo Jones. The renewal of the fury of the flames, brought about by a big gale, resulted in the demolition of the old cathedral, and thus it was that Wren came to have the designing of the new edifice. Mr. Withers then proceeded to tell of how Sir Christopher Wren, in face of much hindrance and opposition on the part of the Commissioners of St. Paul's, succeeded in the erection of a cathedral, the pride of all

Englishmen, and one of the finest examples of a domed sanctuary in the world. Perhaps the only wise thing the Commissioners did in treating with Wren was when, at the commencement of the undertaking, they told him to submit a design for a cathedral which he thought suitable to the site and worthy of the position, and that they would then have to see about the money. After commenting upon the distinctive style of Wren as revealed in St. Paul's, and touching upon some of the criticisms passed upon the innovations he introduced into the architectural construction of the building, the lecturer went on to describe the way in which Wren suffered at the hands of the Commissioners. One of Wren's foremost ideas was to leave the view of the high altar unobstructed from the western end of the cathedral, but this was prevented from being realised by the building of the organ at the entrance of the choir. It was also his desire to see the interior of the dome decorated with mosaics, and to this end he made elaborate inquiries as to suitable marble and qualified artists and workmen. His labours were, however, set at naught by the Commissioners, who instructed Sir John Thornhill to paint the inside of the dome. A proposal which Wren made, that a low wrought-iron rail should enclose the cathedral, was also strongly opposed and radically altered by his masters, for the building was given the appearance almost of a birdcage by the erection around it of a high cast-iron rail. Perhaps the greatest annoyance which he suffered, however, was in connection with the balustrade. The Commissioners suggested that a balustrade would be necessary, but although Wren was sternly opposed to the idea, the balustrade was designed and erected. The numerous other churches and public buildings in London which Sir Christopher Wren designed were also described by the lecturer, who was aided by numerous old engravings, prints, maps and plans. In conclusion, allusion was made to the way in which Sir Christopher Wren passed away, at the age of ninety-one, after having been deposed from his position as surveyor to George I., and to the deplorable way in which he had been neglected by Court and country.

The lecturer was afterwards accorded a hearty vote of thanks, on the motion of Mr. R. P. Oglesby, seconded by Mr. H. S. Chorley, and supported by the president (Mr. Butler Wilson).

SOCIETY OF ANTIQUARIES OF SCOTLAND.

THE first of the monthly meetings of the Society for the current session was held on the 14th inst., Mr. Robert Munro, M.D., LL.D., vice-president, in the chair.

The first paper, on the cairns and tumuli of the island of Bute, was a record of the explorations carried out by Dr. T. H. Bryce during the autumn of this year, by consent of the Marquis of Bute. The prehistoric sepulchral structures which had been examined included three chambered cairns, Michael's grave at the north end of the island, a chamber behind Barmore Hill above Loch Quein, and a cairn at Glecknabae on the west coast. The two first were in all respects essentially similar to the cairns in Arran, having segmented chambers with a portal, but no passage of entrance, and yielding implements and pottery of similar character to those from the cairns of Arran. The Glecknabae cairn presented features of a novel character. It was superposed upon an extensive kitchen midden, which appears to be the earliest remains of man's occupation yet discovered in the islands of the Firth of Clyde. The cairn itself contained two small chambers formed of four large unequal slabs, one of which was much lower than the others and formed the sill of a portal bounded by two upright stones. In one of the chambers a typical Stone Age urn was found, while in the other were fragments of four tall, narrow and flat-bottomed vessels with their lips well recurved, which proved to be somewhat rude examples of the drinking cup or beaker type of urn. As this type has been proved to be of early Bronze Age, the finding of it in this chamber would seem to indicate that the cairn represents a terminal phase of the earlier culture in the islands of the Clyde, after it had come in contact with the new culture. As all the osseous deposits were of burnt bones, no further evidence was obtained of the character of the human remains. Five interments in short cists were also examined. One of these was placed within a tumulus at Scalpsie Bay, and yielded a fine food vessel urn, a bronze pin, a flint scraper and a jet bead associated with an instrument of burnt bones. No relics were recovered from the other four cists, but a skull was found in one, which was brachycephalic in form and proportions. Four mounds were also opened. In three of these nothing was found to indicate what their nature may have been, but the fourth, situated on the hill above Loch Ascog, at Kerrycrusach, contained a core of stones, beneath which was found a deposit of burnt bones, without cist or urn.

The Hon. John Abercromby, secretary, communicated the results of excavations made by him on the estate of Meikleour, Perthshire, in May last, by permission of the Marquis of

Lansdowne. In the east end of the parish of Caputh there is a small isolated hill of somewhat oval contour, with a rounded top called the Black Hill (tumulus) on the Ordnance map. It is about 150 yards in length, and rises to a height of from 30 to 40 feet, and is planted with firs. At the northern end of the rounded top stands a small earthwork, not noted on the map, surrounded by a ditch, and having the remains of a rampart of approximately circular form, at some distance within the ditch, the space enclosed by the rampart measuring about 41 feet by 38 feet. The ditch is only visible now at the south end, where it separates the earthwork from the rest of the hilltop. During the excavation of the interior space some flat slabs occurred, which were suggestive of a destroyed cist, and at different points the following articles were found—a small flint scraper, much chipped at the edges, which may have been used as a strike-light; a small piece of iron, a bit of bluish glass and a small piece of thin transparent glass. As 53 bits of burnt bone were found, it seemed probable that the builders of the earthwork had destroyed a cist containing a burnt interment in the course of their operations. In the ditch there was found a portion of a bronze pin, which may have been the pin of a fibula. The conclusion was that the earthwork belonged to the Iron Age, and may have been a small rath not intended to defend a particular point, but simply the fortified residence, perhaps of a temporary nature, of some petty local chief.

Mr. Abercromby also described the excavation by him of three long cists at Gladhouse Reservoir, by permission of the Chairman of the Water Trust in June last. A cist was discovered by Mr. George Forrest, Linden Cottage, Loanhead, and reported to Dr. Anderson, and on proceeding to investigate the small mound over the south side of the reservoir in which it occurred, Mr. Abercromby found that it contained three long cists with unburnt burials, unaccompanied by any article of use or ornament.

Mr. George Robertson, F.S.A. Scot., Keeper of the Abbey, Dunfermline, described two photographs of the recently discovered Norman door in the abbey church there, which were exhibited and presented to the Society by Mr. W. W. Robertson, F.S.A. Scot., H.M. Principal Architect and Surveyor of Works for Scotland. The doorway is situated at the south-east corner of the ancient abbey church, and had been built up for many years. It is 9 feet 7 inches in height, and being of pure Norman architecture, is considered to be coeval with the original church erected about A.D. 1070. Its arch is ornamented with deeply-cut chevron mouldings, and its attached columns have finely sculptured foliage scrolls on the capitals. A transverse slab inserted in the columns at either end had apparently been placed there as a receptacle for the skeletons of two young persons, which were found underneath it among a mass of rubble and lime. The Board of Works intends to open up and preserve this interesting doorway.

THE LATE MR. WHISTLER.

AT the annual meeting of the International Society of Sculptors, Painters and Gravers held on the 15th inst., Mr. Lavery, the vice-president, being in the chair, the Chairman read a letter from the president, M. Rodin, expressing regret for his unavoidable absence and his appreciation of the honour conferred on him by his election as president. In his tribute to the memory of the late president, Mr. Whistler, the Chairman said:—He was misunderstood and misrepresented, he who was the one artist who fought for the interests of his brother artists and for the dignity of art. In his great fight with Ruskin he demonstrated that painting and writing are separate and independent arts, each with their own means of expression, and time has proved how right Whistler was. In his "Ten o'clock" he has written the gospel of art. Little or no notice has been taken of this great work, which, when it was first read by him, was looked upon as a humorous treatment of the subject, and to this day is mistaken for a mere collection of facetious witticisms. It is difficult to realise the great value of this work, which is the only competent expression of art in existing literature. As a friend, I can speak feelingly, because I knew him intimately for a great many years. His old-world courtesy and kindly consideration were little understood but by those with whom he was in sympathy. In all my dealings with him, both as president and as friend, I always found him full of the kindest thoughtfulness. In losing our own master we have found another in M. Rodin, not less unique in the originality of his genius, whose election to the presidential chair of the Society confirms the international character of our undertaking, and I am sure will give a much-wanted impetus to the sister art of sculpture in this country. Mr. W. Webb, the honorary treasurer, showed in his balance-sheet that the Society was in a flourishing financial condition.

Messrs. Waring & Gillow opened last week additional salons in their premises at the corner of the Boulevard Haussmann and the Rue Gluck, Paris.

LONDON TOPOGRAPHICAL SOCIETY.

THE fifth annual meeting of this Society was held on the 16th inst. in the rooms of the Society of Antiquaries, Burlington House. Mr. Laurence Gomme occupied the chair. The annual report of the Council stated that the steady growth of the Society reported in previous years had received some acceleration during the past year, which the Council attributed chiefly to the stimulus of Lord Rosebery's presidential address in October 1902. Since then twenty-eight new members have joined the Society, and the total membership was now 156. The Council were of opinion that in the reproduction of maps, plans and views of London, and of pictures of streets and houses, there was work for the Society for many years to come. The report was adopted, and Lord Rosebery was re-elected president. The Chairman afterwards delivered an address on topographical changes in London. He insisted strongly upon the beauty of London, notwithstanding the unsatisfactory character of many modern buildings, and mentioned some views of which he had noted the charm. In Poplar really country scenes were to be found at the back of the rather disagreeable façades of the front streets. Referring to changes which were now going on, he pointed out that the squares of London, which were an almost unique feature of city life, were in danger, and regretted that the erection of the national memorial to Queen Victoria involved considerable alterations in St. James's Park. Speaking of the Holborn to Strand improvement, he defended the proposed line of frontage on the north of the Strand. The Law Courts, he observed, were a mere imitation of ancient architecture, and he contrasted with them the beautiful churches of Wren, which would, he contended, be turned to better account under the present arrangement than under that which was suggested as a substitute. Mr. Gomme afterwards gave some account of the Danish settlement at Aldwych, and in conclusion pointed out that London had two exceptional topographical features. It did not contain its place of government, which was at Westminster, nor its place of defence, the Tower of London being without the City. The latter feature was due to the fact that the Tower was more a Norman stronghold for overawing the City than a place of defence for the citizens.

DUNDEE INSTITUTE OF ARCHITECTURE.

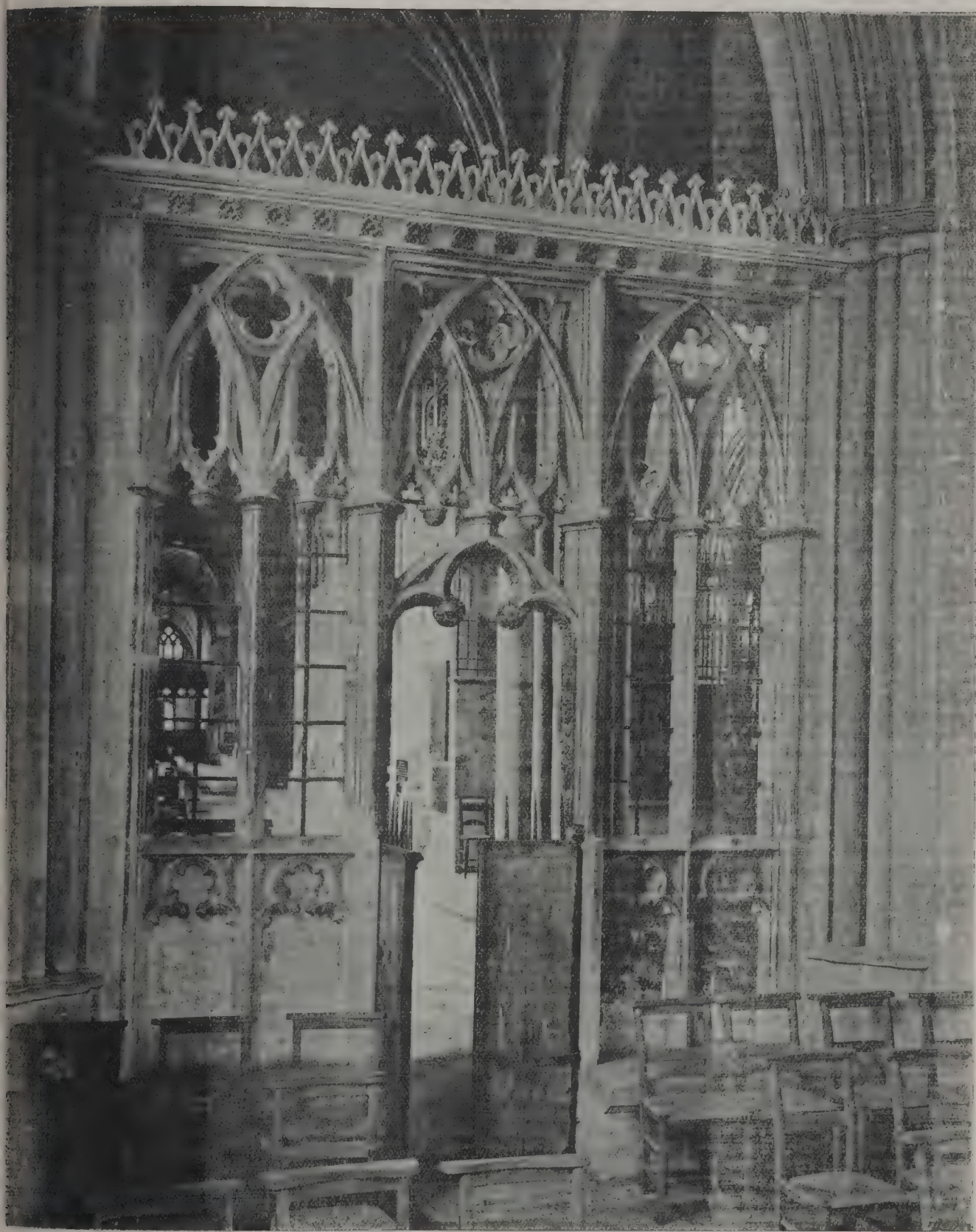
TWO interesting lectures were delivered on the 15th inst. at a meeting of the Dundee Institute of Architecture, Science and Art, Mr. A. Symon, of Arbroath, the president, in the chair.

Mr. Charles Ower was the first lecturer, and he had for his subject "The Ordnance Survey." Mr. Ower treated his theme with much detail, and in conclusion offered a few suggestions for making the Ordnance Survey maps better known. He said that at present all kinds of maps were to be found on the bookstalls except the Ordnance maps, and this was good for neither the Department nor the British taxpayer. The Royal Engineers had by the expenditure of large sums of money, combined with scientific knowledge, care, skill and enthusiasm, produced an article which for quality could not be excelled, and what was now wanted was the placing of the finished product on the market in such a way that it could get a fair chance. His experience was that this was not being done. A clever shopman at the head of the sale department was what we needed now.

Mr. Ower's lecture was followed by one from Mr. W. Fleming Wilkie on "Celtic Stones." Mr. Wilkie at the outset referred to the groups which exist in Forfarshire and district, and mentioned that at Meigle there was a very remarkable group. After an allusion to the extensive symbolism of Celtic stones, Mr. Wilkie said no expense was grudged by the authorities nowadays in obtaining sculptured representations of the ancient art of other countries to enrich our museums, while the wealth of unique material which existed in our land and in our immediate neighbourhood was still left scattered, and in many cases unprotected, to decay and perish. The first duty we owed to them was their preservation, as their destruction would mean the disappearance of a series of national records which time and the elements had spared, to be deliberately effaced in an age of the highest and most widely diffused culture. Mr. Wilkie's lecture, which was illustrated, was greatly appreciated.

The Institute has arranged an exhibition of the drawings of the late Mr. H. W. Brewer, of London. The exhibition includes a number of beautiful restorations on paper of Mediæval buildings compiled from existing fragments and old documents.

The new police station erected at Ton for the Upper Rhondda subdivision was opened on the 17th inst. It adjoins the new police court, the aggregate cost of the two buildings being 7,000/.



CATHEDRAL SERIES, NO. 477A.—EXETER: SCREEN IN CHAPEL OF S. GABRIEL.

NOTES AND COMMENTS.

THOSE who can recall the equestrian statue of JOAN OF ARC by M. FREMIET which was set up about twenty years ago in the Place des Pyramides, Paris, do not always agree with admirers of a later time who believe in the altered version now seen in that position. The latter is no doubt more correct in details of armour, and the heroic girl is more suggestive of peasant life and of the vigour which sustained the wear and tear of war in the fifteenth century. But there was greater charm about the first representative, and it suggested that femininity must have had much to do with her success. The second statue did not cost either the city of Paris or the admirers of the MAID OF ORLEANS any expense. The whole work was given to France in return for the opportunity which enabled M. FREMIET to gratify his fastidiousness. He has been also generous in respect of the figure of the warrior maiden which is to be seen in Nancy. A sculptor who thought primarily about his own reputation would have insisted on a site for the statue being found in the principal place of the city. In that position all its advantages would be manifest. But it was considered desirable that the figure should appear to be gazing earnestly towards the lost provinces, as if resolving to win them back. Accordingly, M. FREMIET accepted a site which is a little elevated, but which is in an out-of-the-way part of the city and is likely to be overlooked by the majority of strangers. The original statue, which would, we are sure, have been purchased by Englishmen in order to atone for the calumnies in the historic drama of "Henry VI.," has been sold for an insignificant sum, 950 francs, to the founder. It has been used for the reproduction of the altered figure, and is at Mirecourt in the Vosges.

FIDELITY in portraiture is often difficult to determine. According to Mr. RUSKIN, "recognition is no proof of real and intrinsic resemblance. We recognise our books by their bindings, though the true and essential characteristics lie inside. A man is known to his dog by the smell, to his tailor by the coat, to his friend by the smile." The question, however, is what kind of test is acceptable in a law court. A case which shows the difficulty has been heard in one of the Paris courts. Mr. GANS, an American in Paris, ordered a portrait of his wife from Mr. BENZIGER, a countryman. The portrait was, however, declined on the ground that it did not resemble Madame GANS. Thereupon an action was taken to recover 200*l.*, the value of the portrait. The Court asked M. GABRIEL FERRIER and M. JULES LEFEBVRE, two well known painters, to give a report on the portrait. They stated that the work was conscientiously executed and deserved to be accepted. The resemblance to the subject they considered was sufficient. But they declared that resemblance could be no more than "a personal interpretation of a physiognomy." At each sitting the countenance may change in expression from what it was at the preceding one, although the features would remain the same. If ten artists undertook to make the portrait of a person, there would be differences between the results, for each would give a countenance that would be peculiar. Acting on the report of the experts, the Court came to the conclusion that Mr. GANS should accept the portrait and pay the price demanded. His advocate, however, demurred to the decision, and asked that the judges should themselves compare the portrait with the lady. He quoted what was said a couple of months ago by M. HUMBERT, a member of the Académie des Beaux-Arts, to the effect that he shared in the common opinion that resemblance constituted the most essential quality of a portrait. In the case in question that desirable resemblance could not be recognised. The Court, however, declined the interview

ILLUSTRATIONS.

"VENI, SPONSA MEA."

THE illustration represents one of the mural decorations in the lady chapel of the Roman Catholic Church, Norton Road, Hove. Among the series of paintings are *The Presentation of Our Lord in the Temple*, including the *Nunc Dimittis* and *The Finding of Our Lord Amongst the Doctors*. On the right-hand side of the altar is *The Vision of St. John in Patmos*, and on the north wall *The Corona-*

tion, the subject of the illustration. The text from Canticles, chap. iv. 7 and 8, has inspired the artist's conception. Below this subject are various saints standing on the plains of the heavenly Lebanon. Many of these are patron saints of the family to the memory of one of whom the painting is dedicated. Every moulding and every space of the entire chapel is painted in gold and colour with a separate design, and the whole roof is covered with angels carrying the emblems of the Blessed Virgin. The paintings and the design of the work are by Mr. N. H. J. WESTLAKE, F.S.A. Along the north wall runs the inscription:—"Pray for the soul of KATHERINE ANNE MARY HAMMOND.—R.I.P. The painting of this chapel is an affectionate memorial by her husband, W. A. HAMMOND. 1903."

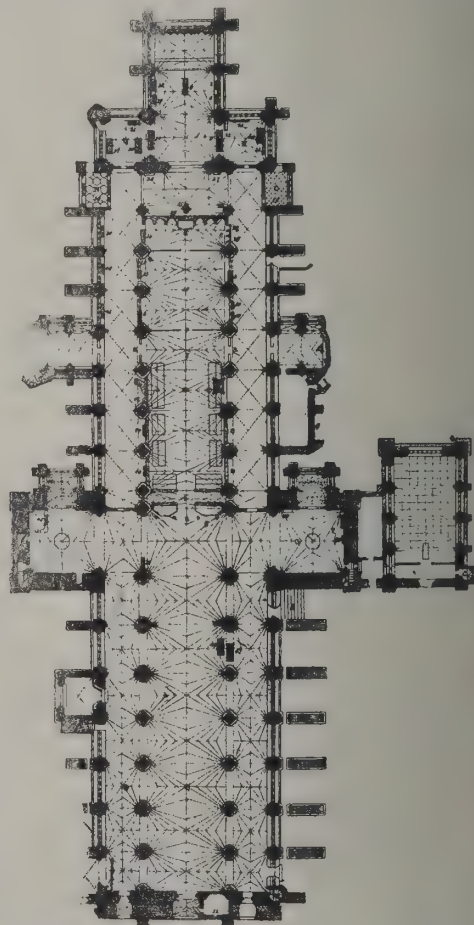
NEW SCHOOL, ARMADALE.

SHOP PREMISES, HIGH STREET, SWANSEA.

A PORTION of these buildings have been erected, and it is intended to complete them at an early date. The work is carried out with red brick and Bath stone. The architect is Mr. GLENDINNING MOXHAM, of Swansea.

CATHEDRAL SERIES.—EXETER: HIGH ALTAR AND SEDILIA.

THE illustrations in the present number complete those relating to Exeter Cathedral. The building might be said to be in the hands of the masons and other craftsmen for four centuries, and yet the plan can be considered as symmetrical. That there was the church of a Saxon monastery on the site, which was utilised for the cathedral of LEOFRIC, the first bishop of Exeter, seems to be certain, but no part of the early building has been identified with any certainty. The towers are Norman work, but nearly all the remainder, consisting of nave, choir and lady



chapel, belong to the Gothic periods. The cathedral authorities still possess the charter which was granted by EDWARD THE CONFESSOR and Queen EDITH, bestowing the possessions of the monastery of St. Peter on Bishop LEOFRIC and his successors. The reasons assigned for the gift are the fewness and wasted condition of goods and persons in the diocese of Cornwall, the pirates having been able to devastate the churches, and on that account it seemed good to provide a more secure safeguard in the city of Exeter. Among the signatures are those of Earl GODWIN and his son HAROLD, afterwards king, who was slain at the battle of Hastings.

THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. Arnold Mitchell, vice-president, in the chair. The following were elected as members:—Messrs. A. W. Ison, C. W. Berry, H. J. West, H. Bromley and A. Welford. Mr. G. P. BANKART read the following paper, entitled

Id Stucco-Duro and Plasterwork with Reference to Modern Use and Application.

Of all the arts associated with that of building, none can perhaps lay claim to more general use than what was once the of the plasterer.

The very commonness of the material, its cheapness and facility of manipulation are at one and the same time its virtue and its misfortune.

It combines extreme ease of manipulation with great durability. To no other material do the associations of our daily lives cling more closely than to the plaster with which the very walls and ceilings of our homesteads are covered. From the humblest cottage to the sumptuous palace it is used as a clothing to the rougher material composing the structure, and it may be this very serviceableness, this very familiarity, which has bred the contempt with which it has for so many years been treated. In my opinion, it is this very serviceableness, this very commonness which may make it worth the while of some of us to pause over, to consider what has been done with it—what is being done with it—what may be done with it—what are its possibilities and limitations as a material. It is an intensely sympathetic medium which has been used by some of the world's greatest artists of all times but the present, and yet of all the materials in the employment of man, few (if any) have been subjected to greater vulgarity of treatment than the plaster of the last century. It can be modelled, it can be cast or incised, coloured, stencilled and stamped with equal freedom, from the size of a cameo to the vastness of a dome. It may be set as a jewel or applied to the facade of a palace. The main purpose of my address is not so much the mapping of a history of the material—although this is necessarily involved—but the notification of some of the methods of working it when it was an art, in order that we may better realise its capabilities and limitations for the present and the future. If in the pursuit of this purpose, if in the examination of works executed in the past, my remarks may appear to your the craftsman more than the architect, or *vice versa*, I say that it may not be mistaken for disrespect toward either; for I myself, belonging to both, would be first to acknowledge the virtues and last to unduly expose the vices of either party.

Assuming the architect to be to the craftsman as the conductor or the composer to a fine orchestra, let us examine one of the parts, one of the instruments, one of the players. The composer or the conductor cannot play all the instruments himself, although he may know much about them, but he can arrange, combine and control them into one body, one harmony, one whole. In like manner, I take it that the instrumentalist may be as good a musician as the conductor or composer, either in combination or soloist, but his work and art it is to well the harmony in the finest manner his skill commands, his inspiration permits and his will imparts.

I see little or no difference between oral harmony and optical harmony or constructive harmony, where all are good. The one of sound, another of form and colour, the last of constructive form.

Research gives us various materials which were applied to all surfaces in ancient times. It will suffice us to know, briefly, that plaster was used in very ancient days, and that it developed into a great art is amply proved. The Egyptians covered their buildings with a slight coating of stucco to conceal the seams of the stones and receive the painted decoration. The pyramids of Memphis were lined with a coat of stucco, the remains of which are still to be seen. The question of the use of stucco among the Greeks opens up a rather extensive subject, and one, so far as I know, about which nothing consecutive or comprehensive has been written. The almost universal use of stucco in Greece is very generally overlooked.

In early times it was usual to use inferior materials for building with—mud bricks or rough kinds of stone—and to cover their surface wherever visible with a thin coating of stucco, which was frequently ornamented with fresco painted decorations or other motives.

This applies to all architectural members of early temples before the use of marble became prevalent, and even after, when marble could not be easily obtained. For houses and other similar buildings it probably remained the custom of all times, as the walls were mostly made of unbaked brick.

The quality of the early Greek stucco is wonderfully fine. In early times, as far as I know, the stucco was always a mere thin coat covering exactly the forms below, but in later Greek times examples of capitals of columns, bulls' heads, &c., are known to have been modelled or cast with it.

This rough stone they used was like the Roman travertine, very porous, and not capable of taking a fine surface, so they stuccoed it over, polished it, and sometimes decorated it with paintings. Traces of this are found in the Doric monuments of Sicily.

The Byzantine Greeks used plaster generally in cornices and enrichments, also in their window framings. Their mosaics were also bedded in a plaster composition. Viollet le Duc tells us "that the Romans used stucco very frequently both for public monuments and private dwellings." It is useless here to quote the numerous examples of the use of stucco in Italy in ancient times. Its use was passed down to the Gauls, and there is not a single Gallo-Roman building in which the remains of stucco coatings, polished and painted, are not found.

Building methods suffered the same fate as the arts. They were lost in the West towards the end of the Roman Empire, and the rare fragments of monuments of the early centuries show us nothing but coarse coatings made of inferior materials, badly dressed and covered with rude paintings.

The Gauls, however, had not lost the custom of covering quarry-stone facings and even rough courses with a coating of lime and sand, as thin as possible, to conceal the defects and joints of the stone and to take on the paint, but these plasters have no longer the beautiful polish that marks the stucco of Grecian antiquity and the best times of the Roman epoch, nor their solidity.

They have consequently been rarely preserved, and their absence is too apt to make us believe that Carolingian buildings, for instance, allowed the rudely-finished courses to be seen both inside and outside. Far from this, however, these buildings, though rude and barbarous, were covered with thin coatings and paintings both in the interior and outside, and these coatings, sometimes decorated with engravings ("sgraffito") and ornaments in slight relief, which are real stuccowork.

A genuine example of such, belonging to the Carolingian period (752-986), was recorded by M. Viollet le Duc as existing in the little church of Germigny des Prés (Loiret), the building of which goes back to the beginning of the ninth century.

A mosaic in the Greco-Byzantine style adorns the vault of the apse—the only mosaic of its kind in France.

Formerly, the walls of churches were adorned with stuccowork, engraved and painted. Art in a barbaric age by no means excludes profusion of ornament. In fact, it is more often quite the contrary. There can be no doubt that Carolingian architecture, though of rude design and habitually carried out by the aid of materials of no value, badly chosen and even more badly used, included ornamentation very rich, but obtained by cheap and rapid means.

Stucco was well adapted for this style of current decoration, and of all the traditions of art handed down from the Romans this was bound to survive by reason of the facilities offered by the use of such processes.

The method most readily followed by the simple architects of the first period of the Middle Ages was evidently to raise walls of quarry stone, and when the work was roughly finished to conceal the irregularities and first attempts by a coating on which chisellers and sculptors cut out ornamental designs taken from Eastern tapestries, furniture and utensils. The process did not require the calculations or foresight of the masters of the twelfth and thirteenth centuries.

Some Carolingian buildings show traces of stuccowork on the vaults, and even on the capitals. The large capitals of the old narther of St. Rémi of Rheims, those of the crypt of St. Laurent of Grenoble, and even of the capitals of the apse of the church of Issoire, are simply baskets of stone covered with figures or ornaments in stucco. At a later period in France stuccowork was nothing but a delicate application of ornaments, trellis and flowered chequerwork on even surfaces to soften the bareness.

The foregoing remarks are sufficient to show that the properties of stucco and plaster were well known in very ancient times, but whereas a full knowledge of the capabilities of stucco was arrived at very early, that of plaster did not reveal itself until comparatively modern times.

Stucco has for its base carbonate of lime—generally the burnt limestone or chalk of the rocks and hills. Vitruvius, writing on architecture about 2,000 years ago, gives very detailed instructions as to its preparation. The stucco of those days was far more carefully compounded than now; the lime was most carefully chosen, burnt with wood and subjected to a very gradual process of slaking for a long time before being used. It was constantly beaten with heavy sticks and chopped up with heavy hammers or axes. It was mixed with fine, sharp and very carefully washed sand, or a white marble dust, which enabled it to be capable of receiving a fine polish. In the old method of preparing it various ingredients were used to toughen and regulate its setting qualities, such as rye dough, juice of figs, hog's lard, curdled milk, blood and other things of which we are now more sparing than economical, viz. time and great care. It was generally applied in three coats, or as many as

the nature of the wall required. The first coat was of rough stuff, with broken marble, and the remainder of finer stuff, whilst the finishing coat was of very fine marble dust, which, when dry, was polished with marble dust and chalk.

The more recent work was stone-coloured from the use of powdered travertine, whitened with lead ground in water. (Mrs. Merrifield.)

With such a medium the modelling was done direct, as it set very slowly and was smooth and hard. It was absolutely impervious to wet or climatic variations. So good and smooth and hard was this preparation that jewellers used it in preference to wax, and modelling of such exquisite delicacy was done with it as to rival gem-engraving. Vitruvius tells that it was capable of receiving so fine a surface that it was sometimes polished and used for mirrors. Its durability was such as to "weather" better than marble. Such was the stucco used for the walls and plain surfaces for painting upon. It is only natural to suppose that the Greeks used this material to model with, knowing as they did its nature and pliability. Unfortunately nothing remains to us of the masterpieces of Greece beyond the skeletons of some of their private and public buildings.

There is a long history connected with this subject that, by your own instructions, must be condensed into a few minutes; so I must abbreviate.

As the Romans carried off the Greek treasures for the adornment of Rome, undoubtedly they carried with them the art of the decorative stucco-worker. A glance at the Roman work shows a strong Greek influence. This is to be seen in the wall and ceiling decoration of a Roman house of the time of Augustus, in the garden of the Villa Farnesina, Rome, presumably belonging to the first half of the first century, A.D. There is also the stucco modelling of a tomb in the Via Latina, the type of which is rougher and more incised, and intended to be seen by torchlight only.

The value of the lesson this early work teaches it is impossible to overrate, combining as it does purity of line and mastery of execution, no matter how simple. Such art as this could not well have been acquired in Rome or attained without prolonged experience.

With the barbarism following the decadence of Rome this work passed into obscurity, to be resurrected again in the sixteenth century through investigations and researches organised by Cardinal Giovanni de Médici in seeking for sculpture of Classic times.

To cut a long story short, Raphael and a number of his fellow-workers succeeded in reviving the art of stuccowork in Italy, doing much work at the Vatican, Raphael's own house, and other notable buildings. It then passed to Mantua, Venice and other Italian cities, and was carried from there to France (Fontainebleau and Versailles, &c.) at the time of François première, and thence to England by Henry VIII in jealousy of the French king. Henry introduced stucco extensively into the palace of Nonesuch, which stood on the hills between Epsom and Cheam, and within reach of Hampton Court.

It is a question for us all to consider how far the elimination of the Gothic element injured the plastic art. So far as the figure was concerned, the time was not ripe for any Italianisation of the human form. The native workmen, unlike the Italians, were not conversant with the delineation of the human figure, nor could they grasp the foreign idea, and this inability resulted, with rare exceptions, in failure to the point of burlesque. However, the introduction of Italian workmanship into England was followed by the raising of a school of English craftsmanship which rapidly spread the art throughout the country. But stucco-duro gradually gave way to the employment of coarser stuff or "pargé" work, which became rather later the medium of the native workmen.

About 1547 we have record of an English stuccoist named Chas. Williams, who had travelled in Italy, and probably was the first to work in England and at Nonesuch.

Time went on, and a cheaper and commoner material brought "degeneration" with it—of a kind. This coarser stuff was modelled and stamped, and was known as "pargetting," and consisted of the ordinary lime, hair, sand, and was applied to any part of the structure, internal and external. To witness Wyvenhoe, Clare and everywhere. Then followed the wave of plasterwork, particularly our own.

1. The arrangement of panelling and radiating ribs based on the fan tracery of stone. 2. A pendentive system superseded and outlived the above, as at Audley End, in the "Fish Room." 3. Modelled foliage sometimes replaced the radial ribs, giving effect of Gothic diaper. 4. Pendentive system superseded by geometric arrangement of ribs—not limited to straight lines, ceilings abounding in interlacing lozenges, quatrefoils, circles, ovals and other forms, spaces between ribs being filled with armorial bearings and personal devices and other emblematical forms; figures very seldom, unless of armorial character.

5. Size of subdivision gradually expanded until (6) Ceiling area became divided into four parts, large or small, quarter bearing the design.

This developed into the Jacobean system of interlacing strapwork and patterns. Earlier ceilings had plain moulded ribs—like groin ribs. As power of execution grew flat surfaces became introduced between two sets of mouldings, with improved decorations done off a revolving stamp. Queen Bess's time had moulded ribs, with sprays or sprigs of flowers or medallions of floral ornament. These ribs or medallions were cast or run *in situ*. Sprays and medallions in early days nearly always modelled by hand. Afterwards stamped; later still, cast in plaster of Paris. Sometimes sprigs were butter-pressed. In later years methods almost exclusively confined to casting in plaster of Paris. This system was productive of a beautiful softness and dulness suitable to the material and was quickly done compared with earlier methods and stuccowork, and less expensive. Against this one has to put the sacrifice of intellectual effort on part of the worker. With "the Restoration" design improved. What do we learn from the old work? The plaster is widely different from ours. Examine a piece of old plaster. It is coarse and rough, and contains little bits of gravel and other inequalities which modern architects would condemn without doubt. Where should we draw the line? The old ceilings were not die-level and polished; they were full of delightful but very slight undulations; the ribs and strapwork were not painfully exact, as ours are. The old work lacks that strain and mental limit naturally associated with office confinement, and the ever continual abuse of drawing as an art instead of a means to an end. Hand and eye judgment rather than exact measurement was evident everywhere. Moulds were carried from one job to another, and frequently made to fit in as they would, or were altered to suit circumstances. The workmen had their moulds, tools and traditions—perhaps some rough plan for guidance, instead of a fussy and pretty drawing of what it would not, and could not, look like—to tempt and deceive a client. All sorts of funny things occurred, quips and cranks and things attributed by some to the genius of the age, and which was very possibly due to accident. Ornament designed and worked for a ceiling will be found combined with another, and used as a frieze elsewhere, or turned into an interlacing pattern in some lunette. All sorts of things done for one, or several places, combined in an overmantel or wall space between dado and ceiling. Much modelling was done with metal tools, and sometimes with the fingers and hand. The lime must have been in a very different condition when used in those days to what it is now, or men's fingers could never have worked it. In many ways their methods of procedure were different from ours—more intellectual, less mechanical.

"In the Eastern counties," says Professor Lethaby, "plasterwork repairs in out-of-the-way cottages still clumsily match the deft patternwork which, after being perfected by the use of hundreds of years, is now done no longer. By careful inquiry you may find an old workman who remembers seeing it done when young, who can describe the tools and knows the names of the patterns—'tortoiseshell,' square-pricking and the rest. He will add that modern plaster is quite unfit for work of this sort. The old material was washed, beaten, stirred and tested so carefully, and for so long at a time, that when laid it was, my informant said, as tough as leather."

Think of the many quaint patterns done on the outsides of buildings (cottages and houses) by the common village plasterer or mason, with the pointed "fan" of sticks, still used by our own plasterers for "pricking-up," as they term it. Think of the quaint patterns done with end of the trowel in various ways. These patterns are confined to the particular district radius in which the man lived and worked. Some of this "pargetting" work is not only clever, but complicated; in the arrangement of symmetrical, flat strapwork patterns; in panels sometimes, at other times over the whole surface of a wall. Some of this work is suggestive of natural form, and it is here interesting to note how the influence of nature affected this art when first introduced into England. At that time the stucco-worker undoubtedly went to nature for inspiration, as is evidenced by the friezes at Hardwick Hall, St Michael's Mount and other places. This may have been because the art was new, and then held no traditions which could be followed.

The plasterers' craft did not share the fate of the other crafts, whose traditions were paralysed and crushed out at the time of the great upheaval in Henry VIII's reign. On the other hand, it was inspired with a new life, a new purpose, and was developed with a vigour and freedom strongly akin at times to the wonderful work at Venice and the early Gothic work.

Take, for instance, one example only—the Long Gallery ceiling at Knowle, Kent, in which are combined the vine, rose, pink, honeysuckle, columbine, marigold, lily, oak, &c. These flowers occupy spaces formed by waving bands of enrichment, and are modelled quite as admirably as such a dull material as plaster can or ought to be modelled. It is very simple, broad, big, straightforward work, free in every way, has little variety

relief; the line curvature is gentle and refined, although vigorous. There are no sharp curves, no under-cuttings or "sparkle" of effect that might be appropriate and desirable in harder material, such as stucco or wood or marble, but it has fulness and a softness quite natural and charming in such a medium. There is no attempt to "copy" nature, but only to express so much of her as would express the vital quality, freshness and vigour of growth, combined with fulness and convenience of arrangement and disposition. "Realism" was admitted beyond the limits of plaster, unnecessary and even undesirable. With such limited means at hand, the plasterer contented himself, and rightly so too, with a mere suggestion of nature, and compromised matters between his material and the suitability of his design to the material. Simplicity, breadth, sincerity were his watchwords, and sincerity of purpose his most faithful companion.

The contrast between the past and the present is sufficiently palpable. We are now chiefly concerned with what is open to us at the present time, and this brings with it various little difficulties. Being myself an architect as well as a craftsman, I am in a position to realise both sides of the question. We cannot, if we would, get away from the employment of plaster as a material. We therefore are confronted with the question what can or should, or what cannot or should not, be done with plasterwork.

What are its capabilities and limitations as a material? "Plastering," says Professor Lethaby, "once the art of the stucco-worker, is now barely represented in the 'three-coat work' of specifications. How should it be otherwise, when we think? Would it not be irony, on the face of it, to put in a bill of quantities 'supply and fix one work of art?' The crafts of the mason, the carpenter, the plasterer are even now being finally destroyed by a system in which design divorced from work, the present system in which the designer has no hands to execute and the worker no head to think. These last remnants of long-gathered traditions are being forgotten because they are no longer required by the paper architect. Indeed, he must crush them out of sight and mind, his ideal being so much mechanical work organised for the 'good of the profession,' a profession which lectures, examines, takes premiums, travels a little, and sometimes sketches—for those who do not think the profession should be artistic do actually sketch. This is the very mission of such an architect to teach the builder and workman his proper place and due ignorance. How else could he show the necessity of building in the material of the North Italy? How else should he get reputation when he forms the Press that his 'designs' are 'Spanish Renaissance,' 'French of the Loire freely treated?'" I have purposely spoken here of the simplest of the building arts—crafts that could be as near to nature as the digging and dressing of the land. If we examined the work of the old joiners, smiths, aziers, stone and wood-carvers, the story would be the more evident, but it is already widely known that these as arts of the workman are destroyed, and that utterly, for the time. Craft gradation has gone so far that what is called "painted decoration" is done by "firms" to the order of numbers of our profession. Were it not that painters have maintained their dependence, architects would certainly provide and fix portraits and landscapes "as specified." It is to be noted that these things have not changed because of a change in man's nature. Wherever handicraft has not been intercepted from material by the intervention of a learned profession, work is still as perfectly beautiful as ever it was, be it in the windmills of the millwright, the fishing smacks of the shipwright or the awnings of the waggon-builder—romantic with quaint chamferings, gay with bright paint.

What we want are housewrights, and let who will play at examination in the art of passing examinations. When the arts of building are all of them killed out finally, and the memory of their doing dead, who shall build them up again? Will being examined in architectural history, practising a mechanical system of drawing and acquiring the completest equipment of all the routine of the profession, give back to us the skill and delight of the craftsman?

Such a sympathetic and sensitive medium as plaster can be used rightly or wrongly, and from its fatal facility of handling the latter course is the more easy, and, from long habit, the more likely to be expected and the more usually demanded. We are all familiar with the modern "sugar" confectionery of the plasterer. At the present day we have the same materials open to us as before, viz. stucco-duro—ordinary lime and sand plaster and plaster-of-Paris—not to mention cements of various kinds. The controlling elements are, first of all, cost, which is naturally a wise and binding consideration. Then clients' idiosyncrasies, architects' ideals and craftsmen's individualities—sometimes all combined.

The employment of "stucco" goes hand-in-hand with freedom of thought and handling, which none can dispute. The idiosyncrasy of clients, where architects are not strong enough to influence them for the better, is hopeless and fatal. Architects' ideals are often possible, with the exercise of

freedom and of individuality on the part of the craftsman, when he is a genuine craftsman.

The craftsman's sympathetic handling is the last, and perhaps most hopeful, means of success, where such individuality is strong, unaffected and reliable. Everything depends on his knowledge of, and sympathy with, architecture; his knowledge of past methods and forms; his knowledge of his material, its capabilities and limitations; his power of imagination, his grasp of the teaching of nature, his gift of selection and of the power of expressing himself, and his constructive instinct. Granted a full share of these qualifications, there is little to fear so far as he is allowed a reasonable amount of freedom. And here lies the hinge of the matter—a subtle hinge, to be opened and closed at will by the architect and by the client.

I believe you wish me to express my opinion as to what should be done.

Putting "stucco-duro" aside as undoubtedly the finest and most permanent, though more expensive, method of expression, let us resort to less expensive ones. We next have a system of modelling in clay and casting in plaster-of-Paris, sulphate of lime, from plaster moulds, as the case may be—either solid or fibrous. Here the craftsman has a fair chance of various nice treatments in the placing of his enrichment and the relief of his enrichment, according to the funds at his disposal and the liberty allowed (either of restraint or otherwise). In such manner beams may be clothed, flat spaces treated as flat spaces, with flat or projecting bands of soft enrichment in endless ways.

Before referring to a still simpler and important treatment open to development, I would desire a few words about deeply undercut enrichment cast in plaster-of-Paris from gelatine moulds. I do not consider this type of work a practice to be encouraged. Beautiful as it is in stucco—which is a very hard material as well as a subtle one, allowing of crispness, thinness, deep-modelling and undercut relief, with beauty of texture and every other possibility—it is not a legitimate one for a soft material that is easily rubbed and broken, and will not take sharpness of treatment without injury. I admit the beauty of this type of work; but it is illegitimate, too easily injured and unsuitable to the material. This work, of course, has to be cast in fibrous plaster, about which there appears to be much difference of opinion.

Fibrous plaster, although a modern process in this country, is by no means a modern process in itself, and many architects and craftsmen are prejudiced against it as being (1) not strictly a solid plaster process, and (2), as some imagine, not a permanent process.

The first objection is a matter open to discussion for and against. The latter objection will hardly hold good, since the process appears to date back to the Egyptian pyramids, when the mummies were wrapped up in canvas dipped in burnt gypsum—so I am informed at least.

The process was introduced in England in 1859-60 from France (again, you see), by a Frenchman named De Sacy. His system was to dip small pieces of canvas, about 4 inches square, into the plaster-of-Paris, and dab them all over the mould and over each other. He employed girls in this work, but was not successful in making much of it then. In 1861 De Sacy sold the patent to Messrs. Geo. Jackson & Sons, with Mr. McDonald as foreman and instructor. But at that time little headway was made with it, and the patent was not renewed. Smaller firms experimented with it from time to time, until it became more constructive and improved.

The French used tow in the loose form, instead of the woven and open-sheet form as at the present time, with wood laths in the form of "strutting." A well-known artist told me that he disliked the system owing to having put up a ceiling thirty years ago which had rotted, and had to be taken down again. This was undoubtedly due to the use of boiled plaster instead of baked or burnt plaster. The difference in the two plasters is great, the former being soft and the latter hard.

Description of Gelly Moulding and Casting, and Piece Moulding and Waste Moulding.

My objection to this system of work, apart from its cost, is:—First, that it is an apology and cheap substitute for the work of another material—that of "stucco-duro," which would be woven into a gossamer of loveliness; second, that in the system of casting from gelatine moulds the work degenerates rapidly from the moment the model leaves the modeller's fingers.

The system is unsatisfactory to begin with. The clay has to be coated with shellac instead of being cast direct from the actual clay surface. In the process of making a plaster case to receive the gelatine a layer of paper has to be laid over the modelling and a thin layer of clay over that, in the process of which the sharp edges and arrises (legitimate in a hard material, which is not afterwards touched) become doubled with the pressure of the clay, and the damage is completed afterwards by putting the gelatine out of the soft plaster

casting, which must perforce suffer where fine edges exist. Apart from this, the gelatine deteriorates with every casting taken, and is greatly affected by the variation of temperature, becomes "woolly," distorted at times, and very difficult to manage, and when done is not, and cannot be, that which it is supposed to "ape," and, in my opinion, can never take the place of stucco and its endless possibilities.

Next comes the method of dealing with the ordinary lime, sand and hair plaster.

Why should we architects allow this beautiful material to be smoother and polished up, as we so commonly know it? Why not demand of the plasterer the surface most natural to it?—its own granular surface.

I know you are thinking of hygienic considerations. Granted this, but it is carried, perhaps, too far, excepting in special instances. However, I am not here to dictate, but to promote discussion. A few words about this ordinary material and what can be done with it in lieu of the cast-work. To begin with, it is capable of being stamped and modelled, and floated in bands, and "run," and stencilled through perforated wooden templates. The stamping process is delicious, so is the modelling when treated with breadth and simplicity. With regard to the "running" of plaster mouldings, we are again to blame in allowing the mechanical, die-level, sharp-arrissed process. It is wrong in principle, whilst we can get interesting work out of simple sections made up of soft, rounded and wave-like forms, flat, undulating, segmental or subtle lines, natural to the "dragging" of a granular material. Again, why the inevitable and hackneyed moulded cornice across the angle of wall and ceiling? One way of avoiding the rigidity of this method of "running" where mouldings are desirable is in the working of a short piece in clay which can be slightly worked on with the fingers and afterwards produced by casting. Of course, it is possible to work the plaster with the fingers if the lime is old enough and sufficiently deadened, but not under present circumstances of "running" lime as it is required. Otherwise, no man's fingers could stand it.

In the old work simplicity and bigness will be found to be the root of much of its success. So, also, it must be with good modern work. I have heard it protested that simplicity is synonymous with "poverty." It may be so in some cases, where reticence and breadth are misunderstood, and texture and quality of material are lost sight of or play a subordinate part. We have good materials at the present day, capable of good treatment; unfortunately, the art of working them has long since been divorced from craftwork—and the plasterers' craft is practically a thing of the past.

Designer and worker are two distinct creatures—the one not knowing the nature of the material, the other not knowing the nature of the man whose work he is supposed to put into material, and tries to do with a mechanical skill truly appalling in the finished result.

In a material such as plaster, designer and worker should properly be one and the same person, and he must be well alive to the possibilities of his material before he can know how to use them to advantage in a decorative sense. The strain, ever constant, of preventing the operator from obliterating the work of the thinker is horrible.

If we can get a certain amount of rhythm or harmony into our work, it will be something at least interesting—possibly mistaken—if even dull, awkward or clumsy. Dulness is, in fact, an acceptable quality for plaster. It shows the process of workmanship, and is the natural effect of adding and pressing a soft material on to a surface of similar nature. This feeling is particularly desirable in the treatment of large, plain surfaces. You will say it will be a long time before we can expect anything different from what we are now getting from the modern journeyman plasterer. Possibly so. Possibly as long as paper architects insist on having something less laboured. I believe the remedy is not beyond us if we will undeceive ourselves, and admit other facts which I will refer to in a few moments. I believe the kernel of the matter lies in the gulf separating designer and operator. The system is at fault, but time seems to produce reaction upon reaction, and gives some hope. This brings us to another point, and not altogether an unimportant one, and a rather delicate one, which reflects to a certain extent on our educational system and schools. Modern architects appear to be divided into two distinct schools of thought and action—the one engaged in the copying and rearrangement of the forms and lines of past styles, the other in the arrangement and development of forms based almost entirely on the simple and natural construction of materials to suit modern purposes, according to modern methods and requirements.

It is a great art to be able to draw well—but it is not "design"—and it is a great gift to possess the art of "design." But before we can design naturally and beautifully in any material, we must be familiar with the capabilities of the same, have served an apprenticeship with the works of the past, have held constant intercourse with them, and gather from them how and why many things were done.

We must also be in touch with living men who practise crafts and learn from them their aims and methods. We must also be in touch with nature, and pick up from her all that which is good and necessary for our refinement, our delight and inspiration. We can only fully grasp the capabilities and limitations of a craft by absolutely personal acquaintance and natural perception, and our knowledge can only come of the actual fingering and handling of our material, and by quiet perseverance in the art of working it. I believe the intensity of our art must be in accordance with the intensity of our interest in the creation around us generally—in construction and in our broad grasp of the whole art of building, past and present. I take it that design is the expression of this delight and interest, conveyed in an harmonious manner according to the limitations of the materials dealt with. But what of the delicate matter we are all of us so apt to overlook (so far as ourselves are concerned) and trip-up over—I mean the gift of selection and discretion dividing man from man or uniting them, which passes under the name of "individuality," if there be such a thing? This is subject enough for a "paper" in itself, and affects the whole educational system from the very elements.

It is not my province to-night to open up the question of design, but I believe much more might be done than is being done in the nice management of straight lines and slight curvature, rather than the orthodox late nineteenth-century "school of art curve" we see so much of, the very curse of the age, born of drawing-paper conceptions and lack of thought in material.

I believe all the crafts must draw blood from the ranks of architects to bring about a thoroughly healthy condition; and I believe also that there will be a time when architects' work will be less minutely detailed in offices than now, and the working-out of things done by sympathetic groups or amalgamations of workers, where architects and craftsmen co-operate and work in a concord and unity, when every man who transfers his attention to craftwork will be regarded as a distinct gain to the art of building and to (what we now call) the "architectural profession."

There is plenty of scope for such men, plenty of demand for such good work as the value of their previous office training can add to technical manipulation. Each individual is as much responsible to himself as to the public for his actions in the encouragement or the discouragement of personal craftsmanship as are the general mass of architects, and on individual effort depends the future of craftsmanship, and, furthermore, the art of building will more nearly approach its long-past state of vitality, will again be endued with a new hope, a new life, a new vigour and a real and living purpose when men of refinement, intellect and discretion draft themselves from the practice of paper architecture into craftsmanship—when architects become craftsmen and craftsmen architects.

At the present day the relationship between the architect and the craftsman is rather curious.

In the present transitional condition of affairs it is not to be surprised at, in the hurry and scurry of getting work done, one is rather apt to forget one's principles in practice. In the anxiety to please one's clients and to increase one's business, we are apt to let some things slide and to do things absolutely against the laws we frame for ourselves and are so determined to renounce. Here it is that little matters crop up which are as disappointing to the craftsman as to the architect.

It is sometimes a matter of extreme delicacy, I know, but perhaps not beyond remedy and further resolve. Personally, I have little cause for complaint, and yet I know the evil exists. The relationship between architect and craftsman, one might say, is a matter of influence and sympathy. Not altogether so. It is gradually becoming so, and I believe will ultimately be so; but there are serious drawbacks, where able men are denied opportunities of doing good individual work. I know many such instances. For example, we hear of men deserting "office architecture" for some craft or another, for the good of architects generally and of the building world. Men who are architects, and who have practised long enough to feel the disappointment of the results of designing on paper only, and the seeming impossibility of extracting refined work from the ordinary British workman, until such times may come that the designer and the operator converge and work together. Men who have strong convictions, which most of us acknowledge to be at least sincere, and which decides them on abandoning the one system for the purpose of carrying into practice these convictions, and yet they are often asked by sympathetic men to do the very thing which, as architects, they have purposely turned their backs upon and as craftsmen they have resolved to strive against. It is sad, but it is true. Time alone will possibly alter this. It is, I take it, due in a great measure to the unequal fermentation in the evolution of art matters. It is even necessary in many cases, one would say. I believe it to be so. There cannot be cause without effect, but sometimes it has a detrimental effect—an effect which stifles the best intentions of a good workman, extinguishing rather than invigorating. If he

healthy and strong enough to refuse and withstand this influence, all well and good; but there are men of weakly-strung fibre who are unable to withstand it, and sink in oblivion through this influence. Their hearts are crushed and they die.

Another controlling influence is the matter of price. I say against it, as I believe it has its good influence in itself, as also its evil influence in other ways. But it is worthy of consideration, if not of discussion. I believe, as an architect, the various causes from which prices arise and how in many cases it might be avoided. Sometimes it arises from the haphazard assessment of prime cost on the part of the architect; sometimes from the unsympathetic, cut-and-dried system of the quantity surveyor, from necessary economy; sometimes, I believe, from a desire to get the utmost possible for the client; at other times from an incomplete knowledge of actual working cost of materials; sometimes by the unreasonable idea that good work can be done at the price of inferior. A very great deal of discontentment to architect, client and craftsman might, I think, be averted by a little consultation and consideration of the matter before the issued bills of quantities.

I think it would also be a great help to both parties, and a needless waste of time and energy, if a maximum sum could be named where it is difficult to provide more than very best means for possible decorative purposes.

With a craft such as I have elected to follow there are numerous ways of doing simple work in a quite nice manner with ordinary materials and methods, properly handled, which would be impossible to indicate on a drawing. You understand me? Matters merely of texture and handling, only to be realised by a man knowing his material, as an artist knows his paper and colours, and what can be done with them.

The architect with much work has not the time, if he would, to acquire all the technical qualities of materials as they present themselves by accident and experience to a craftsman. He looks out, nor has he the same opportunities of rightly knowing the actual working cost of different methods as he who is conversant with them by finger-touch and constant observation.

In conclusion, allow me a few words concerning the actual cost of craftwork and architects' estimates, and prime-cost advances.

I am well aware of the monetary difficulties we, as a rule, have to face in the planning-out of building schemes, and I know, too well, how they often have to be reduced.

We sometimes have to cut the coat according to the cloth, and there is one habit some men have whilst desiring to encourage sympathetic work, which habit seems generally inconsistent—I refer to the matter of under-estimating prime-cost amounts provided for this, that and the other, including decorative work; of imagining that respectable craftwork can be had at the price of "shoddy"; that good work and bad pay are synonymous.

The under-estimating of prime-cost amounts must mean one of three things—that either one's client must be asked to pay more than he at first bargained for, or that the scheme must be reduced, or that the craftsman has to do the work at a personal sacrifice, or at so low a cost as to barely get home from the transaction. Again, one hears the argument that a certain kind of work will not bear more than a certain cost. This is, I believe, an argument based on inexperience or ignorance of process, and of circumstances controlling it.

It is curious that this argument is never applied to the cost of the fabric or shell of a building, but only to various kinds of craftwork where modest skill is concerned. It should, at least, be its own working cost and a living profit in addition, otherwise where is the inducement for the good workman or craftsman to excel in his calling? And yet this method of judgment is frequently brought to bear by men who swear by all that is good and true.

To compare the relative cost of the two kinds of work is most difficult.

Take, for instance, an ordinary enriched plaster cornice.

The moulding can be "run" in the usual way by the non-union plasterer; the enrichment can be bought from the Italian plasterworker and stuck up in the ordinary way. In this way no skilled labour is required in the fixing of the work. The modelling can be turned out by any stone-carver or modeller who knows little of his craft, accustomed to work at starvation wages, and is ignorant of even the right method of handling clay; the casting is done by Italian boys, who work for a mere pittance, and when finished the cornice, to the casual observer, looks what is called "handsome" by some persons and passes muster with the crowd, and then people say, why is our work more expensive?

But to put this work by the side of a cornice in which the enrichment is modelled by a man who regards his craft as something more than a means to supply himself and family with bread and cheese—the casting and fixing done by skilled workmen earning the wage they are worth—is an unfair pro-

ceeding, and, if persisted in, means crushing the heart out of good work and workmen, to the advantage of the inferior in both.

Architects who are accustomed to and only accustomed to the everyday cut-and-dried stuff can only estimate for the work they want done by the average cost of the material they have been in the habit of using, and many find a difficulty in estimating for anything different. They will certainly find themselves very much "at sea" if they persist in prime-costing superior work at the same rate they have been in the habit of allowing for inferior work so much in vogue. This fact seems to be somewhat incomprehensible to many architects who would quickly grasp the fact that good workmanship is worth more than inferior in anything apart from their own "profession."

This system is not likely to encourage "sympathetic" work, and must sooner or later stifle any attempt to elevate craft-workers, no matter what the medium, from unthinking mechanical drudges into intelligent, capable craftsmen, and in the end men who know better, and desire better, will be compelled to revert to old trade methods and systems which are so offensive to their æsthetic susceptibilities.

Boiled down, this all means that the architect must educate, educate, educate his clients, and furthermore must insist upon his own views being carried, even when opposed to those of his client, or otherwise it means grind, grind, grind on every hand as a matter of principle.

Mr. E. GUY DAWBER, who proposed a vote of thanks to the author of the paper, said they must all have felt sorry that Mr. Bankart had not shown slides of his own work, since it could rank with the other beautiful examples the paper had alluded to. The views dealing with the decoration of the outside of houses were most interesting. Nowadays there was a large revival in the finishing in plaster, and when the treatment was quite legitimate much might be done to stucco houses with beautiful effect at a comparatively small cost. It was only within the last 100 years the word plaster had become degraded. In Bavaria and Austria there were whole towns with the house fronts decorated in plaster, and the effect was charming. The methods on the Continent were different to our own. They always treated plaster as a plastic material, whereas we tried to impart to it the nature of stone, and the imitation was wrong. In a plaster front the whole work should be treated as plaster, and the durability of such decoration made it suitable for houses in London. They, as architects, were only too anxious to get hold of the work, but they must remember the uses of the material were all traditional, and the traditional working was dead. They had therefore to instil in the mind of the modern workman a sense of respect for the plaster he had to work.

Mr. J. D. CRACE seconded the vote of thanks.

NORTHAMPTON ARCHITECTURAL SOCIETY.

THE annual meeting of the Architectural and Archæological Society for the Archdeaconries of Northampton and Oakham was held at the Society's rooms, Sheep Street, Northampton, on Monday, the 14th inst. The Rev. A. W. Pulteney presided.

Mr C. A. Markham presented the fifty-eighth annual report of the Society. At the commencement regretful reference was made to the loss the Society sustained by the death of Canon Sidney Lidderdale Smith, one of the original members. He was elected in 1846. Another loss was felt by the departure from the county of the Rev. B. C. Bennett. Nine new members had been elected. The only plans of church buildings submitted to the Society were those of Christ Church, Northampton, by Mr. M. H. Holding. Judging from the plans and elevations it should make a fine building, in the Late Decorated period of architecture. The church will consist of nave, north and south aisles, north and south porches, chancel and south chapel, and spacious vestries and organ chamber, with a lofty western tower. The total accommodation provided would be for 800. Reference was made to some important additions to the library of the Society. The report was adopted.

The Rev. E. L. Tuson said the treasurer's account was not completed, but there was a balance in hand, and the number of members was larger than before.

On the proposition of Mr. Muscott, seconded by Mr. J. W. Fisher, the officers were re-elected *en bloc*.

The Rev. K. E. Barrow, of Brockhall, was elected a member of the Society.

Mr. J. W. Fisher first read an interesting and instructive paper on the tower of Irthlingborough Church. The late Sir Henry Dryden twenty-four years ago stated that the tower urgently needed repair. It was then unsafe and was gradually falling. Six years later careful measurements and drawings were taken, and at the annual meeting of the Society the following year the immediate necessity of the Irthlingborough authorities taking means to secure the safety of both

the church and the tower was emphasised. Eventually in 1887 it was decided to take down the tower, and the work was commenced. It was decided to build to a height of 20 feet. In 1893 the work of rebuilding the tower and octagon was completed, and the old bells, with the addition of two new ones, were hung. The total cost had been 2,500*l*. The tower, as completed, is as nearly as possible an exact copy of the old one, the only addition practically being the restoration of the turrets at the base of the octagon. The total height is 99 feet. In the bottom of the north side of the tower is the following inscription:—

"This Tower, forming part of the College of Irthlingborough, built about 1376 by John Pyel, Alderman and Lord Mayor of London, was taken down in 1887 and the rebuilding commenced. To the glory of God, A.D. 1888."

An inscription for the lantern on the east side is:—

"The Lantern of this Tower was re-erected in memory of the late James John Seymour Spencer Lucas, of Burfield Priory, Westbury-on-Trym, Gloucestershire, by the last act of his Sister, Maria Lucas, also of Burfield Priory. Anno Domini, 1893."

Mr. R. P. Brereton, M.A., read a paper on the building and present condition of Fotheringhay Church. Fotheringhay, said Mr. Brereton, besides its peculiar historical renown, the fame of its castle, its connection with generations of royalty, and its pathetic memoirs of Mary, Queen of Scots, has in its parish church a building of exceptional architectural interest; for by a chance as fortunate as it is rare, the contract for its erection is still in existence; and by an accident even more remarkable, the contract refers to just those portions of the building which remain to the present day, and not (with one trifling exception) to those parts which have perished or have been destroyed. The history of the church dates back to before the fifteenth century, when upon the present site there stood a small church, to which was afterwards built a magnificent choir by Edmund of Langley. After his death his son erected a new nave, with aisles and clerestory, porch, tower and lantern, to harmonise with the choir—in fact the building which exists to-day. The gradual decay and destruction of the choir dates from Edward VI, and parts still remained in the days of Elizabeth. Inside the present building, on the east wall, which was the west wall of Edmund of Langley's choir, above the chancel arch may be seen the weathering which marks the line of the former roof. The east wall, indeed, is the key to the old building. The tower shows great divergencies from the terms of the old agreement. The church is deservedly famous, but it often suffers from the general and indiscriminate praise usually lavished upon it, often arousing expectations which are not realised on a visit. It is, indeed, a very striking and stately building, affording specimens of fine Perpendicular in a district where such are none too common; but in such an extraordinary mixture of good and bad details that the general appearance is late and inartistic. The fabric of the church has remained practically unchanged since its erection. The massive tower, built, as so often, on insufficient foundations, has sunk considerably, and dragged down with it the west walls of the aisles. But the settlement apparently ceased centuries ago. Much greater damage has been caused by the weakness of the west wall, owing to the great size of the west doorway and the abnormal width of the huge eight-light window over it. On the floor of the church are the matrices of four most magnificent brasses, which must have been some of the finest in the kingdom. The fine contemporary font, conspicuously placed in the centre of the nave, is East Anglian rather than Midland fashion. In the space allotted to the sanctuary are, one on either side, the monuments erected by order of Queen Elizabeth to the memory of Edward, Duke of York, slain in 1415, and Richard, Duke of York, slain in 1460. These are also ponderous erections in the taste of the age. The present condition of the church is one of great and imminent peril. Though the foundations of the walls are fairly good, and the masonry stipulated in the contract has, on the whole, stood well, yet owing to long continual neglect disintegration and decay have been going on. Unskilful attempts have been made from time to time to arrest destruction, and in consequence of them the stonework has split and perished in many places. Indeed, it is wonderful that the clerestory has not suffered more than it has done on account of the width of the nave roof. The roof is greatly decayed, and is the chief cause of anxiety, and it has been pronounced to be even dangerous to the people underneath it. Already some of the pendant bosses have fallen, as well as parts of the cornice. The whole roof has, since some years ago, been supported by scaffolding to prevent its entire collapse. The village of Fotheringhay is small, and the sum required for the most necessary repairs is quite beyond the means of the parishioners. It has therefore been decided to issue a public appeal, and it is hoped that the community, in common with the King and the Royal Family, will be ready to contribute for the preservation of this remarkably interesting church. So far as is possible the old work will be redone

in its entirety, and reparation, not restoration, is what is aimed at. In conclusion Mr. Brereton trusted, with the committee, that the Society and its members individually would do their utmost to carry out the work.

The Chairman said it was proposed to carry out the work of the restoration of the tower in eleven sections, at a total cost of 7,000*l*. The raising of such a sum was obviously beyond the powers of a little parish like Fotheringhay. At the present time, however, they had something like 1,500*l*, and with that they proposed to commence with two of the sections. The first would be the restoration of the lantern and tower, built from the top downwards to the ringing floor. The estimated cost of that would be 1,438*l*. The second section was the restoration of the clerestory windows and parapets to the nave roof, and also the restoration of the flying buttresses and pinnacles over the aisle roof, at an estimated cost of 750*l*. The third portion attempted would be the nave roof.

The meeting was adjourned to a future date to consider what help could be accorded in the work of restoration.

ROYAL INSTITUTE OF ARCHITECTS OF IRELAND.

THE annual general meeting of the Royal Institute of Architects of Ireland was held on the 17th inst. Mr. George C. Ashlin presided.

The President referred to the question of the statutory registration of architects, and said that it had entered the realm of practical politics, and they should use whatever little influence they had to force on its speedy solution, especially as no country would derive such benefit from it as their own. The special circumstance which mainly induced them to declare in favour of it was that when they came to consider the adoption of an obligatory examination for their members in the future they felt that there was so little chance of it being generally submitted to unless it was accompanied by State recognition, as in other professions. He might add that at this point, as well as on the general question of the urgency of registration, their views were shared by the Ulster Society of Architects, and that therefore, as far as the profession was represented in Ireland, there was practically no difference of opinion. Having referred to the objections urged against it by the President of the British Institute at the opening meeting in London this year, he said he believed that they would never be able to get their pupils to make the most of their apprenticeship, the most important period of their lives, as long as the voluntary principle prevailed. If a course of professional training and periodical examinations as well as the passing of a final one was made obligatory the candidates would have a definite goal to strive for, and the only individuals to suffer would be those who had not the necessary natural gifts or sufficient energy to attain it, and he need not say that it would be to the benefit of architecture that they should seek some other calling when they had realised this.

The Hon. Secretary then read the annual report of the Council, which stated:—

"The attention of the Council had been directed to several unsatisfactory conditions of competition issued to the profession during the year by public bodies, and has found it necessary to urge their members to refrain from taking part in these. The prize presented by the Institute for competition among members of the Architectural Association of Ireland duly took place, and the assessor, Mr. Batchelor, awarded the prize to Mr. Alfred Livesay, of Kildare. The honorary officers, in accordance with the by-laws, retired in November. The posts had been filled by the election of Mr. R. Caulfeild Orpen as honorary secretary, and of Mr. Charles H. Ashworth as honorary treasurer. The Council would like to place on record their entire appreciation of the splendid services both the outgoing officers, Mr. Kaye Parry and Mr. Owen, had rendered to the interests of the Institute. The roll of membership now reached a total of 103, and their financial state was satisfactory."

Mr. Kaye Parry, in moving the adoption of the report referred to the work done by the Council, not only during the past year, but during the previous three years. During the period under review the Council had helped to form an allied society in the North, viz. the Ulster Society of Architects. In connection with the conditions of contract, he was glad to be able to assure them that the Council would soon be in a position to come to a definite decision on the matter.

Mr. J. Rawson Carroll seconded the motion, which was carried.

On the motion of Mr. A. E. Murray, seconded by Mr. W. Mitchell, the hon. treasurer's report was adopted.

The report stated there was a balance in hand of 67*l* 4*s* 9*d*. and the amount of new 2½ per cent. stock invested was the same as last year—450*l*. 9*s*. 5*d*. In the period 1900 to 1903 the

income of 538*l.* 14*s.* 8*d.* had exceeded the expenditure by 3*d.* The President then read the report of the scrutineers, and read the following nine members elected as members of the Council for the coming year:—
Mr. Thomas Drew, W. M. Mitchell, W. Kaye Parry, A. E. Parry, C. A. Owen, J. P. Sheridan, Frederick Batchelor, Hicks, J. Rawson Carroll.
The annual dinner took place in the evening.

BELGIAN AND GERMAN TRAM RAILS.

THE London County Council recently directed its highways committee to ascertain particulars with regard to hours of work and rates of wages observed by foreign firms in making tram rails not only for the Council's tramways, but for the Government and provincial municipal corporations, and the amount of royalties paid by foreign firms as compared with those in Great Britain. The highways committee reported to the Council on Tuesday to the effect that they had given careful consideration to the question of the manner in which an inquiry indicated in this resolution could be best effected, and they were of opinion that arrangements should be made for an expert to visit the districts in Belgium and Germany to see a large amount of the work in question was carried out, and to report as to the conditions obtaining there as to hours and wages. The required information as to mining royalties could, they thought, be obtained from other sources. They suggested that the clerk of the Council should take all necessary steps in connection with the conduct of the inquiry, and for that purpose it was proposed that he should arrange for the services of an expert surveyor, who would be accompanied by one of his assistants. It would also be necessary to obtain in Belgium and Germany the assistance in the way of interpretation and local knowledge, which could probably be accomplished by means of introductions. Having carefully considered the matter, they came to the conclusion that this was the only way in which a satisfactory and perfectly independent report could be obtained. They did not anticipate that there would be any difficulty in obtaining the names of representative firms whose works could be visited and introductions to residents in the particular localities affected. If their proposal was adopted, they thought it could be carried into effect at a cost of 15*l.*, which amount they recommended the Council to vote. They said that they think that the necessary inquiries should, in the first instance, at any rate, be limited to the districts in Belgium and Germany where the rails in question were made. The question of the purchase of rails again came up at Tuesday's meeting of the Council upon the report of the other tenders sent in for 12,500 tons of rails required in connection with the reconstruction for electrical traction of the Council's trams. For the track rails fourteen tenders were submitted, the lowest being that of a Brussels firm, whilst the lowest for the slot rails, for which sixteen tenders were sent in, was an American firm. The committee recommended the acceptance of the tender for track rails of Messrs. Bolckow, Vaughan & Co., of London, at 43.748*l.* This is the lowest tender for acid steel, the others being for basic steel, that of the lowest tenderer being 40.418*l.* In the same way with regard to the slot rails, they recommend the acceptance of the lowest tender for acid steel, that of the Frodingham Iron and Steel Co., Doncaster, for 34.461*l.* The committee point out that in these cases they require the acid steel in order to make comparison in point of life and durability with the rails already laid, which are made by the basic process.

THE SOCIETY OF ARCHITECTS.

A MEETING of the Society of Architects was held on the 17th inst. at the Society's premises adjoining Old Staple Inn, Holborn, to which they have removed from St. James's Hall, Piccadilly.
Mr. Walter W. Thomas, the president of the Society, was in the chair. In opening the proceedings the President said the Society was increasing in membership and improving in finances, and that it promised in a short time to become second to no similar association in this country. He afterwards presented the gold medal of the Society to Mr. W. G. Jenkins, and then called upon Mr. Ellis Marsland, the hon. secretary, to open a discussion on the Bill introduced in the last session of Parliament to amend the law relating to "Ancient Lights," the outcome of the labours of the joint committee of the Royal Institute of British Architects and the Surveyors' Institution.
Mr. Marsland objected to the Bill *in toto*, contending that a man had no right to acquire an easement of light across his neighbour's premises, that no new rights of the kind should be acquired, and that after a certain term of years existing rights ought to be extinguished. He objected to the peripatetic

character of that tribunal, thinking there ought to be tribunals of appeal in all the large centres of England.

Mr. G. G. Pye, vice-president, considered these proposals rather too drastic as regarded existing rights, but took exception to the Bill on the ground of the expenses it involved, and claimed that the Society of Architects should be represented on the proposed tribunal of appeal.

Mr. W. C. Williams, while condemning the system of easements of light as a thing which existed nowhere on the face of the world except in England, and holding that no future rights should be acquired, did not agree that existing rights should be summarily cancelled, as the introduction of any such provision would wreck the Bill altogether.

Mr. R. B. Tucker, Mr. F. R. Vallance, Mr. C. H. Mead and Mr. R. W. Roques also took part in the discussion.

The President referred to what had been done in Liverpool, as showing that, in the majority of cases, disputes between the dominant and the servient owner might be settled by friendly conference.

On the motion of Mr. Roques, it was resolved that the Society should oppose the Bill, and give notice of opposition to the Royal Institute of British Architects and the Surveyors' Institution—the Society to be represented by counsel.

ROYAL HIBERNIAN ACADEMY.

THE Lord Lieutenant of Ireland has been pleased to approve of the election of the following gentlemen to fill the various offices in the Academy for the year 1903-4:—
President, Sir Thomas Drew; Secretary, S. Catterson Smith; Treasurer and Keeper, P. Vincent Duffy; Visitors to the Life School, H. C. Tisdall, Charles Russell, J. M. Kavanagh, Henry Allan; Visitor, Painting School, S. Catterson Smith; Professor of Painting, Nathaniel Hone; Professor of Sculpture, Oliver Sheppard; Professor of Architecture, Sir Thomas Drew; Professor of Anatomy, Sir Thornley Stoker; Professor of Literature, Edward Dowden; Professor of Antiquities, George Coffey; Professor of Chemistry, Sir C. A. Cameron, C.B.; Trustees, Sir Thomas Drew, S. Catterson Smith, W. M. Mitchell; Auditors, Charles Russell, James Brenan. His Excellency has also been pleased to approve of the election of Mr. Nassau Blair Browne, associate, to be an Academician.

TESSERÆ.

Surveying in Egypt.

IT has been conjectured that Sesostris was the first who divided Egypt by measure amongst his subjects, and thus gave a beginning to the science of geometry. Sir Isaac Newton ascribes the origin of geometry to Moeris, the fifth from Sesostris, confounding Sesostris with Osiris. "Moeris," says he, "for preserving the division of Egypt into equal shares among the soldiery, wrote a book of surveying, which gave a beginning to geometry." But it is plain from Scripture that an exact division of private landed property existed in Egypt before the days of Joseph, whose administration commenced 900 years before the period assigned by Newton. "And Joseph bought all the land for Pharaoh; for the Egyptians sold every man his field, because the famine prevailed over them, so the land became Pharaoh's. And as for the people, he removed them from one end of the border of Egypt even to the other thereof. Only the land of the priests bought he not, for the priests had a portion assigned them of Pharaoh, and did eat their portion which Pharaoh gave them; wherefore they sold not their lands. Then Joseph said unto the people, Behold, I have bought you this day, and your lands, for Pharaoh; lo, here is seed for you, and ye shall sow the land. And it shall come to pass in the increase, that ye shall give the fifth part unto Pharaoh; and four parts shall be your own, for seed of the field, and for your food, and for them of your households, and for food for your little ones. And Joseph made it a law over the land of Egypt unto this day, that Pharaoh should have the fifth part, except the land of the priests only, which became not Pharaoh's." We have here the description of a country very exactly divided out into private property. If property had not at that time been settled with the most minute exactness, Joseph would have had no occasion for employing the troublesome expedient of transplanting the people reciprocally from one end of Egypt to the other. He had recourse to this expedient evidently to secure the monarch in his new property, and prevent the evil effects of that predilection which people naturally possess for an old paternal inheritance. There was, of course, a complete revolution in landed property. The whole of it became the king's, and was henceforth held of the crown by a tenure of a fifth of its produce. The priesthood, however, preserved theirs. The very circumstance of one-fifth to be paid on all landed property supposes that private property had been well and minutely settled. The opinion, therefore, that

the science of geometry originated from the cutting of cross canals by Sesostris, and the dividing the large champaign country of Lower Egypt into square fields, appears to be absurd. The reasons for making these canals were evidently to drain the marshes of this vast level, and render it capable of cultivation, and to connect the branches of the Nile together, so that the whole country might reap the advantages of water communication and of irrigation. But a work of this nature is never projected till private landed property has been well settled, and till an increase of population has increased the demand for the necessities of life. Ground once divided by such canals was in no danger of a change of landmarks, and consequently had no need of future surveys. The most probable cause therefore, of the invention of geometry was the necessity of frequent surveys which existed before these canals were cut, when the annual inundations of the Nile perpetually obliterated all landmarks.

Athens and Rome.

If we turn to republican Athens, in which the Hellenic spirit reached its fullest expansion, we see a people gifted with an intellect supple, mobile, fearless, beyond all precedent; a race unwearied in its pursuit of the ideal, rejoicing in the exercise of abstract reason, withal full of the joy of life; striving after the fullest and the freest development of the individual in body and mind; a radiant people, scattering its light abroad and subduing the world under the sway of its ideas—and yet with no thought of, no aptitude for, material empire over that world; eager, indeed, in the management of its own affairs, but with little genius for managing the affairs of others, having small instincts of national cohesion—a race which, before even it had emerged on the horizon of historic times, had sent forth into the grey twilight of ambiguous days the effulgence of an undying poem; a race from which artists must ever seek supreme examples when striving after the noblest embodiment of the noblest thoughts, and among which the plastic arts leapt to their full stature in fewer years than are wont to divide the cradle from the grave of men. In republican Rome, amongst their next of kin, we find this picture point for point reversed; not here a swift and joyous intellect, but an intellect of tardy growth, grave without spontaneity; a temper not tuned to the ideal, bent on the practical; not seeking the beautiful, grasping at the useful; intent on the joys of life, but on its duties; receiving illumination, not illuminating. We find the individual not expanding freely in unfettered spiritual growth, but sternly merged into the obliterating state; we find the imperial sense supreme, science and letters for centuries non-existent as a native product, the arts not springing from the soil but imported, like letters, first from the north and then from the south.

GENERAL.

Mr. Horace Mountford has been commissioned to proceed with the execution of the bronze statue of Milton, to be placed in front of St. Giles's, Cripplegate. The restoration of the fabric will, it is expected, be completed in the early summer, when the statue will be put in position.

The Society of Engineers have made the following awards for papers read during the past session:—The President's gold medal to Mr. Douglas Mackenzie for his paper on "Motor Transport for Goods;" the Bessemer premium of books to Mr. Robert J. Thomas for his paper on "Road Maintenance and Administration;" and a Society's premium of books to Mr. Albert Gay for his paper on "Mechanical Stokers for Electricity Generating Stations."

King's College, London, have found it necessary to form a separate faculty for engineering and applied sciences, as distinct from the faculty of natural science. A new system of training engineers has been adopted whereby students taking a four-years' course spend six months in each year in the college and six months in engineering works, the engineering course being now divided into a summer and winter session for this purpose.

The Stoke Newington Council have decided to provide public swimming-baths for the district. The site mentioned for the erection of the building is situated in Albion Road, and it is proposed to have first and second-class baths, the former measuring 100 feet by 40 feet and the latter 80 feet by 30 feet.

Lady Ffrench has presented to the Passionist Fathers, Highgate, 1,000*l.* towards the erection of the high altar in the church of St. Joseph, Highgate Hill, but stipulates with the gift that all the materials are to be supplied from Ireland.

The City Corporation have accepted as a gift for the Guildhall Art Gallery an oil-painting entitled *The Quarrymen of Purbeck*, from the brush of the late Mr. H. T. Wells, R.A. The picture is the gift of Mr. Wells's daughters, and has been hung in the centre gallery.

The Council of Birmingham University considered on Friday last the tenders for the erection of the superstructure of the three blocks and the great hall of the new University at Bournbrook. Eighteen tenders were sent in and that of Mr. Thomas Rowbotham, of Birmingham, was accepted. The amount was not stated, but it was understood to be about a quarter of a million.

The New Bridge opened last week in New York connects Manhattan Island with Williamsburg. It is said to be the largest single-span suspension bridge in the world, and has been in course of construction for more than seven years. It exceeds Brooklyn Bridge in length by 1,284 feet. The total cost of the bridge and its approaches to date has been over 10,000,000 dollars. The bridge will have four surface railway tracks, two tracks for elevated trains, two roadways for vehicles, two footways for pedestrians and two bicycle paths.

A Small Norman Church in the parish of Milton Abbey, known as Liscombe Chapel, is being used as a bakehouse and loghouse, and the monastic house adjoining is converted into a labourer's cottage. The matter has been referred to the Society for the Protection of Ancient Buildings.

Committees are to be organised for the purpose of collecting funds for the erection in Geneva of a votive chapel and a monument in memory of the late Empress Elizabeth of Austria. The direction of this enterprise has been entrusted to M. Sigmund Singer, a well-known Austrian. The vice-president and cashier of the central committee is the Rev. J. G. Blanchard, the English-speaking Roman Catholic chaplain in Geneva.

A Collection of Pictures relating to St. James's Park and dating from the reign of Elizabeth to the last century will shortly be exhibited in the Caxton Hall, Westminster.

The Competitive Designs for the new public offices and town hall, and for the County school to be erected in Acton, will be open for inspection at the Central Hall, Acton, from December 28 to January 1 next.

The Post Office Authorities are to purchase the whole of the site of Christ's Hospital. The purchase money, it is understood, will take the form of a yearly annuity. The decision will affect the arrangements for the enlargement of St. Bartholomew's Hospital.

The London County Council on Tuesday agreed to the widening of Hampstead Road, at a cost of 245,500*l.* One-eighth will be contributed by the St. Pancras Council.

A Special Gold Medal has been awarded at the Inventions Exhibition to Messrs. Diespeker, Ltd., for mosaics.

The Will of Mr. Christopher Eales, of Messrs. Christopher Eales & Son, architects and surveyors, 9 Welbeck Street, Cavendish Square, and Worthing, has been announced at 13,227*l.* 17*s.* 9*d.*

A New Pulpit according to the design of Mr. G. F. Bodley, R.A., has been placed in Bristol Cathedral. The body is octagonal and the recessed panels are occupied by carvings representing incidents in the life of Christ. The pulpit is supported by a central shaft surrounded by smaller columns, and is entered by a staircase of stone, the sides of which are decorated by quatrefoil carvings. The cost is estimated at about 1,000*l.*

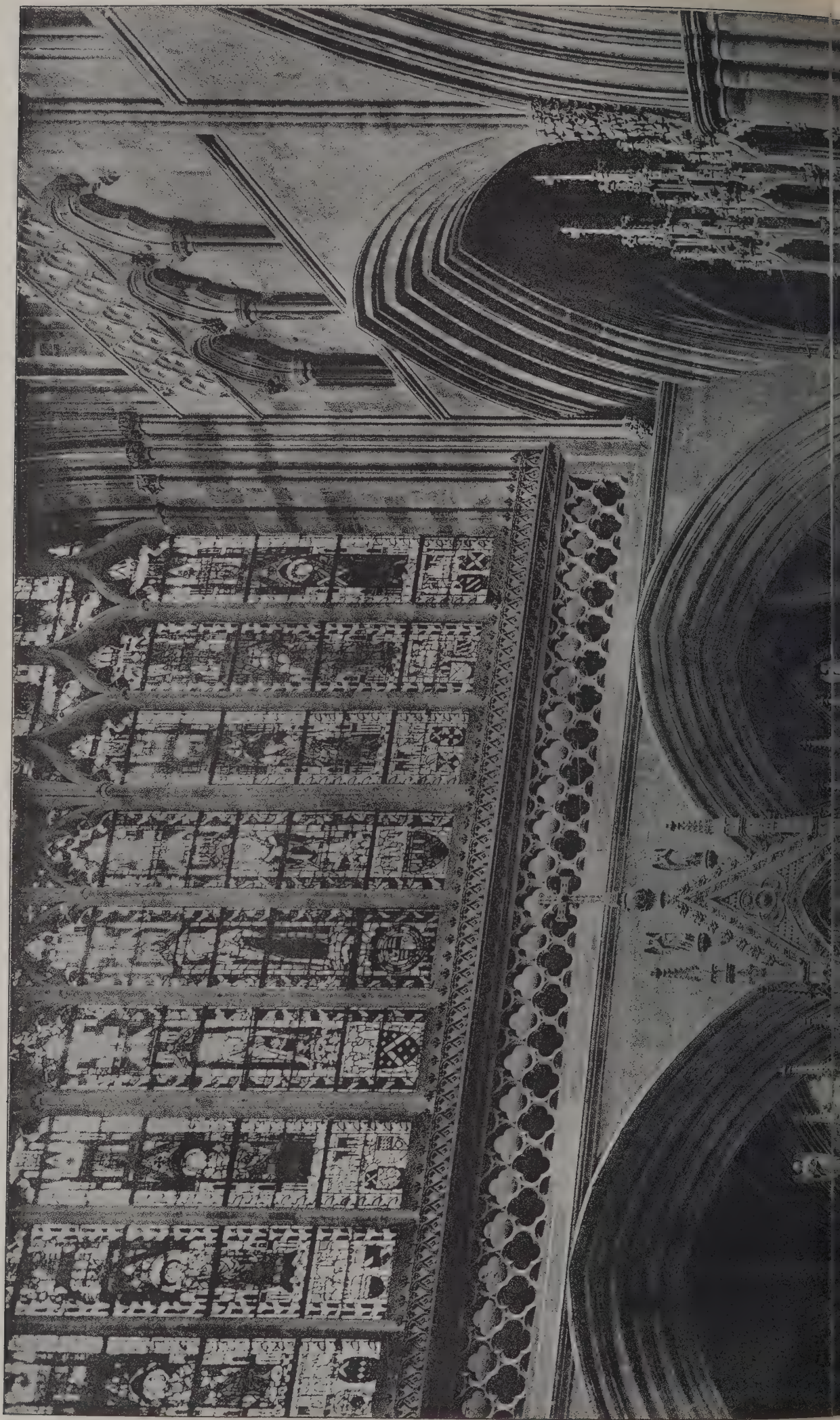
Three Candidates are regarded as being in the final for the office of town clerk of Leeds, and it is expected that the selection will shortly be made. The three gentlemen referred to are Mr. Beard, town clerk of Coventry; Mr. Robert Eyes Fox, town clerk and clerk of the peace, Blackburn; and Mr. J. H. Ellis, town clerk and clerk of the peace, Plymouth.

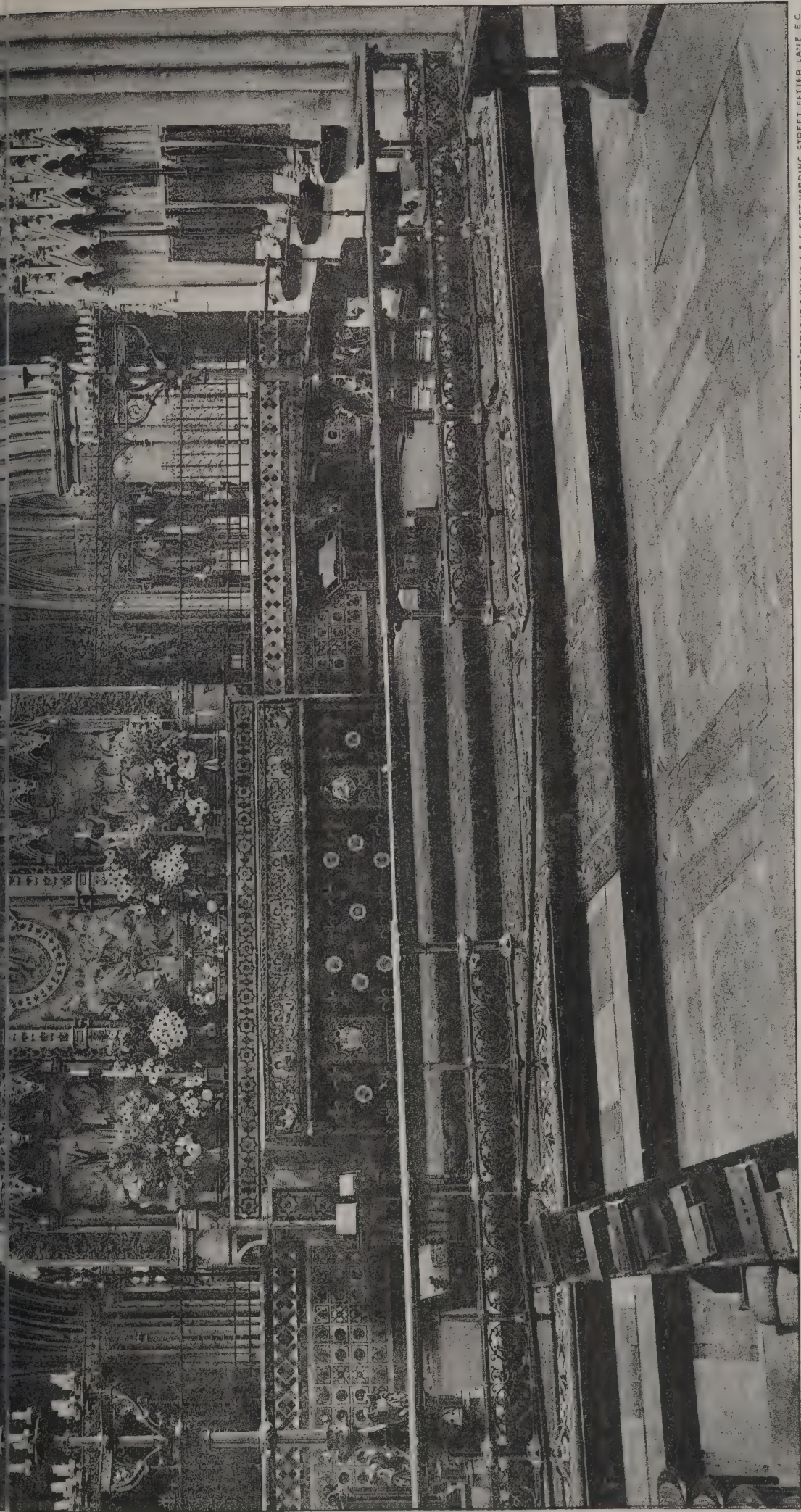
A Meeting of the Archaeological Society of Glasgow was held on the 17th inst. in the rooms of the Society, Bath Street, Glasgow, Professor Cooper in the chair. A paper, illustrated by lantern slides, was read by Mr. T. H. Bryce, F.R.S.E., on "Explorations in the Island of Bute."

At a Quarterly Meeting of the Galway Archaeological and Historical Society, the Archbishop of Tuam (the Most Rev. Dr. Healy) was elected president of the Society for the next three years; the Hon. Robert Dillon, Lord Killanin and Richard J. Kelly, vice-presidents. There was a large attendance of members. The hon. secretary is Miss Redington, of Kilcoman; the editor of the journal, W. T. Trench; and the treasurer, T. D. Lawson. The Society embraces over a hundred Galway county members, and publishes an interesting journal.

The First Award made by the Metropolitan Water Board was announced last week. The East London Water Company claimed seven and a quarter million pounds, and the Board, holding that the company's undertaking ought to be valued on the theory that it was liable to contribute to the City Chamberlain's Sinking Fund for the ultimate extinction of its own capital, awarded it 3,900,000*l.*; but if the Appeal Court reversed the decision on the point, the compensation payable would be 4,300,000*l.*

The Architect, Dec. 25th 1903





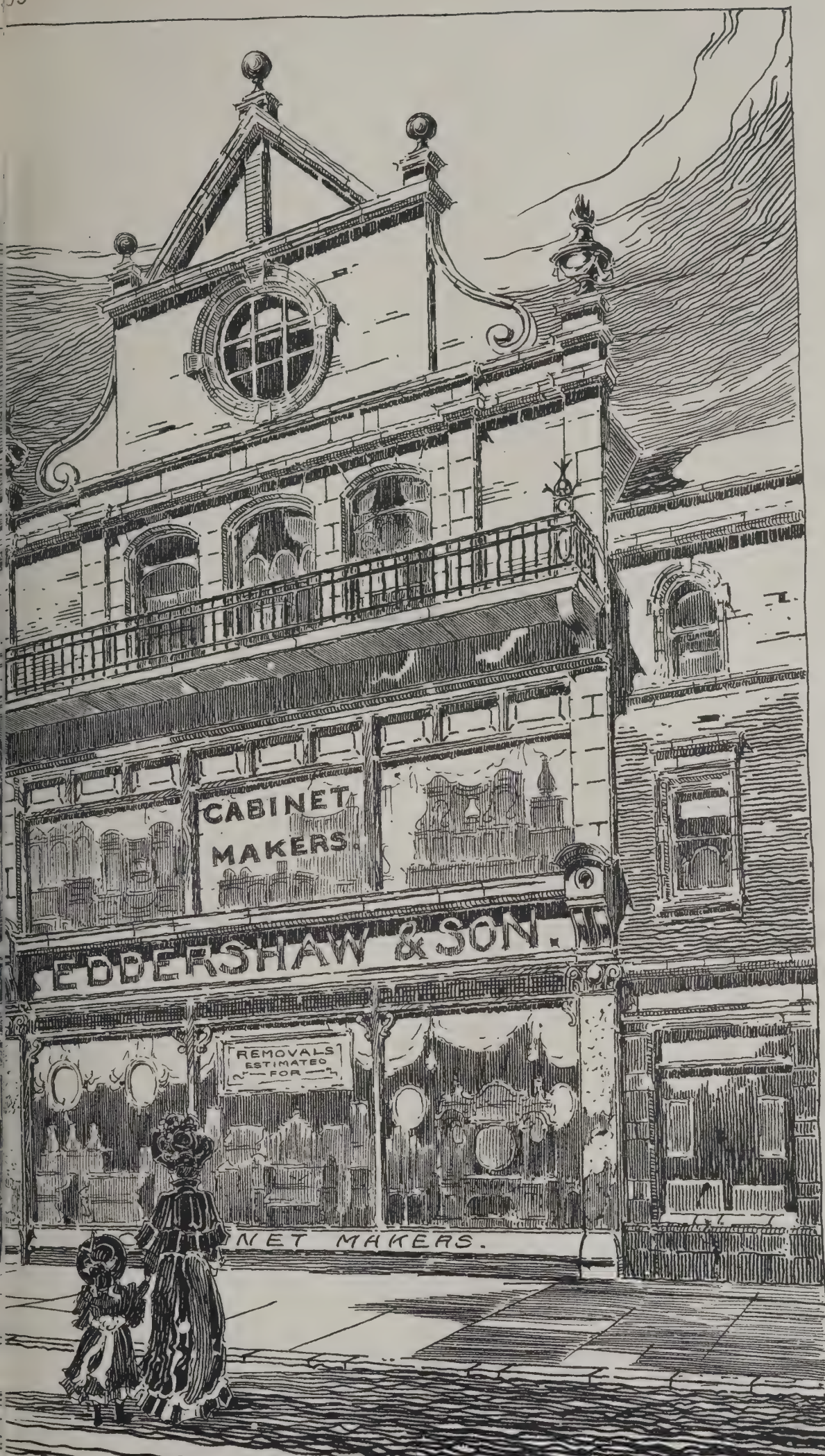
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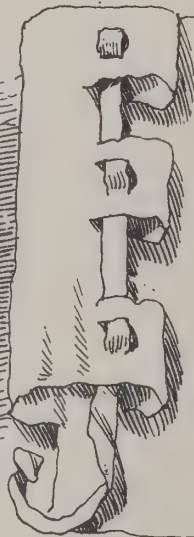
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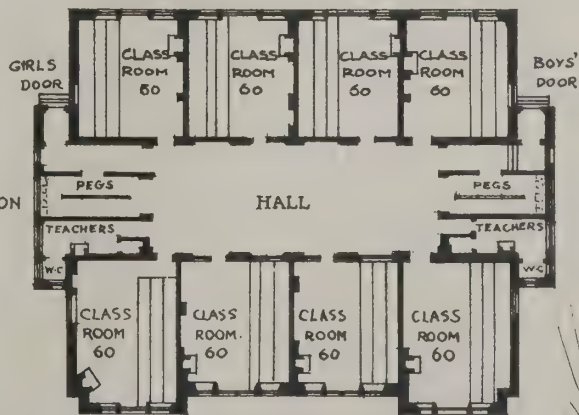
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THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

The authors of signed articles and papers read in public must necessarily be held responsible for their contents.

No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

*** As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

ELLESMERE.—Dec. 30.—Plans and estimates are invited for a scheme for the disposal of the sewage of the town of Ellesmere. Mr. R. E. Lloyd, clerk, Urban District Council, Ellesmere.

ERDINGTON.—Feb. 1.—The Urban District Council general purposes committee invite designs for new council house and free library buildings, to be erected at the junction of Mason and Orphanage Roads, Erdington. Premiums of 50*l.*, 30*l.* and 20*l.* will be awarded for the designs placed first, second and third respectively. Mr. Herbert H. Humphries, district engineer and surveyor, Public Hall, Erdington, Birmingham.

ILKLEY.—March 1.—Competitive designs are invited for free library, public offices and assembly hall, intended to be erected in Station Road, Ilkley. Premiums of 100*l.*, 50*l.* and 20*l.* respectively are offered for the three best designs sent in by February 1. Mr. Frank Hall, clerk, Council Offices, Ilkley.

ROCHESTER.—Jan. 31.—Plans are invited, with approximate estimate, for the addition of chancel, organ-chamber and choir vestry to the present church of St. Matthew, Borstal, Rochester. No premium offered. Architects can examine the present building and site at any reasonable hour. Plans must be addressed to Borstal Vicarage.

WINDSOR.—Jan. 15.—Designs are invited for elevations for police and fire-brigade stations. Premium 25 guineas. Full particulars may be obtained upon application to the borough surveyor, who will also provide copies of the plans on receipt of 1*l.* returnable deposit. The Corporation to have the absolute right of erecting the building according to the design chosen, without any further payment to the architect. Designs to be delivered, not later than January 15, to Mr. E. A. Stickland, borough surveyor.

CONTRACTS OPEN.

ASHBURTON.—Dec. 31.—For alterations and additions to Lent Hill, in the parish of Ashburton, Devon. Mr. Fred. Wm. Vanstone, architect, Palace Chambers, Paignton.

BARROW-IN-FURNESS.—Dec. 31.—For the erection of a temporary iron school at Vickerstown on site on Ocean Road. Chairman of the Sites and Buildings Sub-Committee, Town Hall, Barrow-in-Furness.

BEAUMARIS.—Dec. 30.—For the erection of an additional subway and of warehouse and other offices on the pier. Mr. W. O. Griffith, 1 New Street, Beaumaris.

BRADFORD.—Dec. 28.—For the erection of shop and work-rooms in Darley Street and Piccadilly. Mr. C. H. Hargreaves, architect, Exchange Buildings, Bradford.

BRADFORD.—Dec. 29.—For the erection of a bridge and retaining walls at Brownroyd Hill Road. Mr. J. H. Cox, city surveyor, Town Hall, Bradford.

BRADWELL-ON-SEA.—Dec. 28.—For the erection of six workmen's cottages (under the Housing of the Working Classes Act) at Bradwell-on-Sea, Essex. Mr. Horace G. Keywood, surveyor, Maldon.

BRENTWOOD.—Dec. 30.—For repairs to Dunton, Vange, Laindon and Great Burstead Council schools, Essex. Mr. F. W. Bittles, clerk, Town Hall, Brentwood, Essex.

BURY ST. EDMUNDS.—Jan. 11.—For certain alterations at the police station. Mr. A. Ainsworth Hunt, county architect, 51 Abbeygate Street, Bury St. Edmunds.

CAIRO.—Feb. 1.—For the construction of three steel bridges over the Nile at Cairo. Full particulars can be obtained at the Commercial Intelligence Branch of the Board of Trade, 50 Parliament Street, S.W.

CHELTENHAM.—Dec. 30.—For taking-down and rebuilding pigsties at the workhouse. Mr. James Villar, architect, 2 Essex Place, Cheltenham.

CHERITON.—Dec. 28.—For building an underground convenience at the junction of Cheriton Street and Risborough Lane, Cheriton, Kent. Mr. Arthur Atkinson, clerk, Urban District Council Public Offices, Cheriton, Kent.

CHESTER.—Dec. 30.—For the erection of fire-escape staircases at the Upton asylum, Chester. Mr. H. Beswick, county architect, Newgate Street, Chester.

DEVONPORT.—Dec. 31.—For the erection of two small buildings at the gasworks, Devonport. Mr. Sidney E. Stevenson, engineer Gasworks, Devonport.

EAST HAM.—Jan. 11.—For the erection of the Carnegie branch library in the Romford Road, Manor Park, E. Mr. Adam Horsburgh Campbell, Town Hall, East Ham.

FARNHAM.—Dec. 30.—For the erection of separation wards at the workhouse. Messrs. Friend & Lloyd, architects, Grosvenor Road, Aldershot.

FARTOWN.—Dec. 31.—For the erection of two houses and shop at Fartown, Yorks. Mr. James H. Hall, architect, Fartown, Yorks.

FITTLEWORTH.—Dec. 31.—For the erection of a cottage at Fittleworth, Sussex. Mr. William Buck, architect, North Street, Horsham.

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GILLINGHAM.—Jan. 5.—For the erection of a new school at Napier Road, Gillingham, Kent, to accommodate 900 children. Mr. E. T. Atchison, secretary, education committee, 8 Waterloo Road, New Brompton, Gillingham.

HAYLE.—Jan. 5.—For the erection of a stable at Hayle station, Cornwall, for the Great Western Railway Co. Mr. G. K. Mills, secretary, Paddington Station.

HEADINGLEY.—Dec. 28.—For the erection of a grand stand and alteration to existing stand at the athletic ground, Headingley. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

HORSHAM.—Dec. 30.—For the erection of stabling, sheds, mortuary, boundary wall, &c., on land adjoining Stanley Street, Horsham. Mr. S. Mitchell, 14 Market Square, Horsham, Sussex.

HOUNSLOW.—Jan. 4.—For the erection of public offices, public swimming-baths, &c., and public library. Messrs. Nowell Parr & A. E. Kates, architects, Brunswick House, Brentford, W.

IRELAND.—Dec. 31.—For the erection of two detached villas at Hillsborough, co. Down. Mr. Henry Hobart, architect, Dromore, co. Down.

IRELAND.—Jan. 1.—For erection of six dwelling-houses at Castlerock, Londonderry. Mr. John M. Robinson, architect, Londonderry.

IRELAND.—Jan. 4.—For the erection of a free library building at Lurgan. Mr. Henry Hobart, architect, Dromore, co. Down.

IRELAND.—Jan. 9.—For the repair and alteration of Columbkille parish church, co. Longford. Particulars may be obtained at the Vicarage, Gowna, co. Cavan.

LANCASTER.—Dec. 28.—For the erection of an assembly hall and classrooms for the Society of Friends in Fenton Street, Lancaster. Mr. Spencer E. Barrow, architect, Liverpool Bank Chambers, Lancaster.

LEYTONSTONE.—Jan. 6.—For forming lunatic wards under Blocks A and B at the infirmary, Whipps Cross Road, Leytonstone. Mr. F. E. Hilleary, clerk, Workhouse, Leytonstone.

LONDON.—Jan. 7.—For the erection of a labour-room at Newington workhouse, Westmoreland Road, Walworth, S.E., and providing a bath-room on the ground floor of the same

establishment. Mr. G. D. Stevenson, architect, 13 and 14 King Street, Cheapside, E.C.

LONDON.—For the erection of an office building to be called Parliament Chambers, Great Smith Street, Westminster, S.W. Messrs. Palgrave & Co., architects, 28 Victoria Street, S.W.

LONDON.—For erection of new printing works at Blechnenden Street, North Kensington. Mr. W. Daniell, architect, 61 Lydford Road, Paddington, W.

LYNTON.—Jan. 1.—For completion of the parish church, Lynton. Rev. W. E. Cox, Lynton Rectory, Devon.

MORTLAKE.—Jan. 12.—For the erection of stabling and workshops, &c., and making alterations and addition to the adjoining fire station, High Street, Mortlake. Mr. G. Bruce Tomes, surveyor, Council Offices, High Street, Mortlake.

NEWBURN.—Jan. 4.—For the lengthening of a culvert and building retaining and parapet wall necessary to widen the road over the Denton Burn, near the paper mills, at Scotswood-on-Tyne, Newburn, Northumberland. Mr. Thomas Gregory, surveyor, Council Offices, Newburn.

NEW MALDEN.—Dec. 28.—For the erection of cottage homes at New Malden, Surrey. Mr. William H. Hope, architect, Seymour Road, Hampton Wick.

NEWTON ABBOT.—Jan. 5.—For repairs at the Church House inn, Denbury. Messrs. Rendell & Symons, architects, Market Street, Newton Abbot.

NOTTINGHAM.—For erection of Primitive Methodist chapel and school, Old Basford. Mr. Hy. Harper, architect, 54 Long Row, Nottingham.

PADDINGTON.—Jan. 12.—For extension of the workhouse in Harrow Road, W. Mr. F. J. Smith, Parliament Mansions, Victoria Street, S.W.

QUEENSBURY.—Jan. 5.—For the erection of a cemetery chapel and entrance gateway at Queensbury cemetery, Yorks. Messrs. T. H. & F. Healey, architects, Bradford.

SALFORD.—Dec. 29.—For taking-down the westerly house of the pair of houses named Ebor Villas, in Upper Park Road, Higher Broughton, and in building a 4½-inch cavity wall and for the surplus material. Particulars may be obtained on application to the Borough Engineer, Town Hall, Salford.

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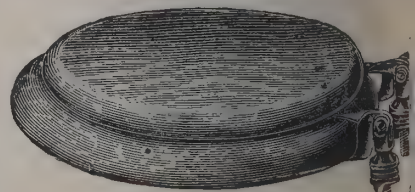


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SCOTLAND.—Dec. 28.—For alterations to Lochmaddy public school, and the erection of teacher's dwelling-house. Mr. R. F. Matheson, Claddach, Kirkibost, Lochmaddy.

SCOTLAND.—Dec. 28.—For the erection of a church at Longmorn, Elgin. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

SCOTLAND.—Dec. 29.—For alterations and additions to public washing-house at Bleaching Green, Constitution Road, Dundee. Mr. William Alexander, city architect, Dundee.

SCOTLAND.—Dec. 30.—For the erection of Bridgeton district library, Glasgow. Mr. James R. Rhind, architect, Inverness.

SCOTLAND.—Dec. 31.—For additions to parish council offices, Hopeman, Elgin. Mr. Charles C. Doig, architect, Elgin.

SCOTLAND.—Jan. 9.—For an extension of the car-shed in Oswald Road, Kirkcaldy. Mr. W. L. Macindoe, town clerk, Kirkcaldy.

SCOTLAND.—Jan. 11.—For the erection of refuse destructor and electric-lighting plant, the construction of foundation for chimney-stack, the formation of road access, &c. Mr. W. L. Douglas, C.E., district engineer, District Offices, Hamilton.

SHEFFIELD.—Jan. 5.—For the erection of an infectious diseases hospital at Hoyland Moor, Penistone. Mr. G. A. Wilde, architect, 9 Bank Street, Sheffield.

SOUTHAMPTON.—Jan. 4.—For the erection of the new Portsmouth schools. Particulars may be had at the office of the Borough Engineer, 123 High Street, Southampton.

STAFFORD.—Dec. 31.—For the erection of a nurses' home, married couples' quarters, mortuary, &c., at the workhouse. Mr. H. T. Sandy, architect, Stafford.

STANLEY.—Dec. 28.—For the erection of twenty-four houses at Stanley, Durham. Mr. William Foster, architect, Front Street, Stanley.

ST AUSTELL.—Jan. 5.—For the erection of a goods shed at St. Austell station, Cornwall, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

SUNDERLAND.—Feb. 1.—For additions and alterations to Victoria Hall. Mr. John Eltringham, architect, 62 John Street, Sunderland.

UXBRIDGE.—Dec. 28.—For repair and decoration at the St. Margaret's National schools, Uxbridge. Mr. William L. Eve, 54 High Street, Uxbridge.

WAKEFIELD.—Jan. 20.—Competitive designs are invited for free library buildings. Mr. Charles James Hudson, town clerk, Town Hall, Wakefield.

WALES.—Dec. 28.—For the erection of social club, Talywain. Mr. D. J. Lougher, architect, Bank Chambers, Pontypool.

WALES.—Dec. 28.—For the erection of a chapel at Oakland Street, Miskin, Mountain Ash. Mr. J. H. Richards, Miskin Terrace, Mountain Ash.

WALES.—Dec. 28.—For erecting ninety-nine houses at Miskin, Mountain Ash. Mr. T. W. Millar, architect, Mountain Ash.

WALES.—Dec. 29.—For the erection of superstructure of the new Government offices at Cardiff. All particulars may be obtained at H. M. Office of Works, &c., Storey's Gate, S.W.

WALES.—Jan. 1.—For the erection of a Welsh Congregational chapel at Rhos, Killybebyll, Pontardawe. Mr. G. P. Davies, architect, Station Road, Port Talbot.

WALES.—Jan. 4.—For new roofs and supports and sundry alterations to general market, Neath. Mr. D. M. Jenkins, surveyor, Gwyn Hall, Neath.

WALES.—Jan. 4.—For the extension of Trinity Hall, Tonypandy, and for the erection of new classrooms, &c. Mr. R. S. Griffiths, architect, Excelsior Buildings, Tonypandy.

WARDLE.—Jan. 6.—For taking-down and rebuilding stone wall and excavating and removing surplus ground at the churchyard, Ramsden Road, Wardle, Lancs. Mr. T. Burrows, surveyor, Council Offices, Wardle.

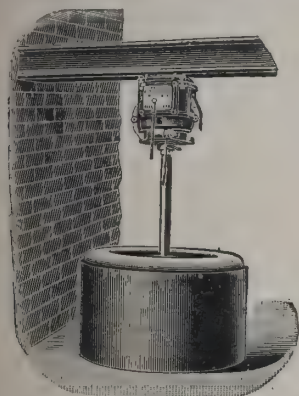
WHITEHAVEN.—Jan. 5.—For taking-down the Presbyterian church and manse, Market Place, Whitehaven, and the erection of a new church. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

WOKING.—Dec. 30.—For construction of an underground convenience near Woking station, Surrey. Mr. G. J. Woolridge, surveyor, Bank Chambers, Woking.

THE new infectious diseases hospital erected by Kelso District committee for the purposes of the Kelso district of Roxburghshire County Council was formally opened last week. The hospital stands within its own grounds on a commanding site on the outskirts of the town, and is thoroughly equipped in every respect. The buildings alone cost 6,000*l.*, and the laying-out of the grounds, furnishing, &c., brings the total outlay to close on 8,000*l.*

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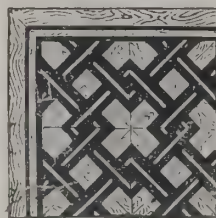
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D. W. BARKER, Whitgift Works, Church Road (accepted) £915 0 0

Church Road station.

D. W. BARKER (accepted) 829 0 0

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W. H. C. Thurman 44 2 9
WALLEY & WINDOWS, Dorchester (accepted) 42 4 6

FRIMLEY.

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T. Chapman 910 0 0
S. Kavanagh & Co. 892 0 0
G. Chesswass 850 0 0
R. W. Swaker 830 13 0
Lawrence & Thacker 814 0 0
J. Mowlem & Co. 812 0 0

HUDDERSFIELD.

For sewerage works in Thornhill Road, Longwood.

HILL & WHITE, 9 Woodland Mount (accepted).

HULL.

For sewerage works at North Ferriby. Messrs. WELLSTED & EASTON, engineers, Prince's Dock Chambers, Hull.

E. Hawley £1,162 15 6
J. Brunton 956 0 0
H. Medforth 944 0 0
B. Robinson 853 15 0
R. FISHER, 134 Hawthorne Avenue, Hull (accepted) 805 8 10

ILFORD.

For street works in Brisbane Road, from Wellesley to Coventry Road; Dunedin Road, from Ley Street to Balfour Road; Thorold Road, from Dunedin to Perth Road; and Seven Kings Road. Mr. H. SHAW, surveyor.

D. T. JACKSON, 104 Ripple Road, Barking (accepted) Brisbane Road, £188 1s. 8d.; Dunedin Road, £211 1s. 3d.; Thorold Road, £283 6s. 2d.; Seven Kings Road, £463 11s. 8d.

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T. Cleary & Sons 1,550 0 0
J. BOLES, 19 Mary Street, Clonmel (accepted) 1,498 0 0

KEIGHLEY.

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S. Sharp, Oakworth, near Keighley, mason.
J. Bailey, Laycock, near Keighley, joiner.
W. Thornton, Bromley Road, Bingley, slater.
W. Longbottom, Park Road, Bingley, steelwork.
J. Greenwood, Cross Hills, near Keighley, plasterer.
J. Harrison, Bridge Street, Keighley, plumber.
A. Hart, South Street, Keighley, painter.

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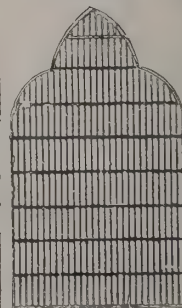
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Tamplin & Makovski, Ltd. 923 0 0
Thomas & Taylor, Ltd. 920 0 0
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Russell & Co. 670 0 0
Beaven & Sons 665 0 0
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W. G. Cannon & Sons 625 0 0
A. Stubbs, Ltd. 590 0 0
J. Richmond & Co., Ltd. 564 0 0
Brightside Foundry & Engineering Co., Ltd. 541 10 0
Werner, Pfeiderer & Perkins, Ltd. 499 17 0
C. & E. Bradley 497 0 0
W. Freer 487 10 0
Rosser & Russell, Ltd. 480 0 0
Watford Engineering Works 475 0 0
H. F. Joel & Co and T. Potter & Sons United, Ltd. 459 10 0
J. Defries & Sons, Ltd. 448 0 0
T. Cole 432 0 0
J. & F. May 410 0 0
C. G. Reed & Sons, Ltd. 403 18 6
G. FAWLEY & SON, LTD., Savile Park, Halifax (accepted). 386 8 6

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The interior cleaning at the following schools will be executed between December 19, 1903, and January 9, 1904:—

Latimer Road.

Macey & Sons, Ltd. £342 4 3
General Builders, Ltd. 273 6 0
Holloway Bros. (London), Ltd. 217 6 0
F. Chidley & Co. 169 10 0
W. Brown & Sons 137 10 0
W. R. & A. HIDE (accepted) 130 10 0

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C. F. Kearley £368 10 0
General Builders, Ltd. 358 0 0
S. Polden 358 0 0
W. Hornett 274 0 0
G. H. Sealy 241 10 0
W. R. & A. HIDE 218 0 0
W. BROWN & SONS (accepted) 210 19 0

Bath Street (B., G., I. and special).

Patman & Fotheringham, Ltd. £377 0 0
Belcher & Co., Ltd. 358 0 0
H. Runham Brown 286 0 0
GAVIN BROS. (accepted) 285 10 0
Marchant & Hirst 276 0 0
Stevens Bros. 275 0 0
Parrott & Isom 224 0 0

Compton Street.

Parrott & Isom £345 0 0
Patman & Fotheringham, Ltd. 315 0 0
Belcher & Co., Ltd. 265 0 0
John Greenwood, Ltd. 254 0 0
Marchant & Hirst 237 0 0
Gavin Bros. 234 17 0
STEVENS BROS (accepted). 198 0 0
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W. Shurmer & Son, Ltd. £375 0 0
W. Silk & Son 345 0 0
H. Bouneau 265 0 0
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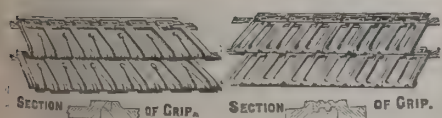
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H. J. Williams	118	10	0
Rice & Son	111	0	0
W. V. Goad	108	0	0
W. J. Howie	102	0	0
W. SAYER & SON (accepted)	100	0	0

York Road.

Patman & Fotheringham, Ltd.	£304	0	0
J. Stewart	280	9	0
Viney & Stone	273	0	0
W. Hornett	261	10	0
Thompson & Beveridge	237	0	0
Holloway Bros. (London), Ltd.	221	0	0
G. S. S. Williams & Sons	208	10	0
W. CHAPPELL (accepted)	185	0	0

Gipsy Road (B, G, I. and J.M.).

Maxwell Bros, Ltd.	£289	4	0
G. Kemp	255	0	0
C. G. Jones	249	0	0
A. J. Acworth	235	0	0
H. Leney & Son	230	0	0
J. & C. Bowyer	215	0	0
LATHEY BROS (accepted)	199	0	0
M. E. Allen	113	0	0

Oldridge Road.

Hudson Bros	£313	0	0
R. E. Williams & Sons	300	0	0
W. Johnson & Co., Ltd.	295	0	0
W. Read	294	14	0
H. Leney & Son	251	0	0
Rice & Son	238	0	0
J. GARRETT & SON (accepted)	214	0	0

Upper Kennington Lane.

W. Downs	£303	0	0
J. F. Ford	233	0	0
E. B. Tucker	229	6	0
W. Read	227	17	0
Maxwell Bros., Ltd.	216	0	0
Rice & Son	196	0	0
E. TRIGGS (accepted)	179	0	0

LONDON SCHOOL BOARD—continued.

Cobourg Road.

H. J. Williams	£363	0	0
Maxwell Bros., Ltd.	355	0	0
Rice & Son	343	15	0
H. Line	300	0	0
E. Triggs	270	0	0
W. SAYER & SON (accepted)	264	0	0

Cottenham Road.

Patman & Fotheringham, Ltd.	£345	0	0
Bate Bros.	320	0	0
J. Stewart	298	5	0
G. Kirby	265	0	0
C & W. Hunnings	233	15	0
Stevens Bros	228	0	0
MARCHANT & HIRST (accepted)	226	0	0

Hungerford Road.

Patman & Fotheringham, Ltd.	£314	0	0
Thompson & Beveridge	286	0	0
H. BOUNEAU (accepted)	271	0	0
Stevens Bros.	267	0	0
Marchant & Hirst	257	0	0
C. & W. Hunnings	227	10	0

Montem Street.

Patman & Fotheringham, Ltd.	£559	0	0
C. & W. Hunnings	398	18	0
G. Kirby	383	0	0
McCormick & Sons	383	0	0
STEVENS BROS. (accepted)	340	0	0
Marchant & Hirst	339	0	0

Camden Street (old portion).

Viney & Stone	£265	0	0
T. Cruwys	250	0	0
H. Wall & Co.	212	0	0
THOMPSON & BEVERIDGE (accepted)	208	0	0
Marchant & Hirst	194	0	0

Capland Street.

T. Cruwys	£295	0	0
Thompson & Beveridge	266	0	0
Holloway Bros. (London), Ltd.	242	0	0
W. DENSHAM & SONS (accepted)	209	0	0
W. Chappell	195	0	0

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W. Hayter & Son	£355	0	0
W. J. Howie	221	0	0
E. P. Bulled & Co.	181	0	0
Holliday & Greenwood, Ltd.	176	0	0
G. KEMP (accepted)	160	0	0

Slade (except portion affected by new sanitary work).

W. Hayter & Son	£299	10	0
Holliday & Greenwood, Ltd.	279	0	0
W. Hornett	265	0	0
J. Garrett & Son	237	0	0
H. Groves	216	0	0
P. S. HOWARD (accepted)	196	10	0

Waller Road (old and new portions).

G. Kemp	£185	0	0
W. Read	178	11	0
W. Banks	175	0	0
C. G. Jones	169	8	0
J. & C. Bowyer	159	0	0
H. Groves	139	0	0
M. E. ALLEN (accepted)	117	0	0

Bailey's Lane.

H. Runham Brown	£189	10	0
Barrett & Power	179	0	0
J. Stewart	158	5	0
F. Bull	153	10	0
J. Haydon & Sons	144	0	0
A. Porter	128	0	0
W. SILK & SON (accepted)	107	0	0

Bow Creek.

A. J. Sheffield	£105	0	0
A. W. Derby	100	0	0
R. Woollaston & Co.	83	10	0
Vigor & Co.	81	10	0
W. BANKS (accepted)	64	19	0

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Woollaston Bros.	£248	0	0
A. W. Derby	231	0	0
R. Woollaston & Co.	210	0	0
Vigor & Co.	184	15	6
J. HAYDON & SONS (accepted)	177	15	0

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Thornhill Road.

C. Dearing & Son	£388	0	0
McCormick & Sons	363	0	0
Patman & Fotheringham, Ltd.	355	8	0
G. S. S. Williams & Son	333	0	0
J. Grover & Son	294	0	0
C & W. Hunnings	292	6	0
Marchant & Hirst	291	0	0
Stevens Bros.	283	0	0
F. W. HARRIS (accepted)	239	0	0

St. Andrew's Street.

J. R. Sims	£279	0	0
J. & M. Patrick	278	0	0
W. Johnson & Co., Ltd.	277	10	0
Rice & Son	269	0	0
E. B. Tucker	260	11	0
R. S. Ronald	250	0	0
Lathey Bros.	215	0	0
J. GARRETT & SON (accepted)	206	0	0

Shillington Street.

J. & M. Patrick	£353	0	0
C. Gurling	309	0	0
R. E. Williams & Sons	265	0	0
C. Curd & Sons	250	0	0
E. Triggs	240	0	0
Martin, Wells & Co., Ltd.	235	0	0
J. GARRETT & SON (accepted)	219	0	0

Southwark Park (old and new portions).

H. lloway Bros. (London), Ltd.	£262	0	0
H. J. Williams	234	0	0
John Greenwood, Ltd.	232	15	0
E. Triggs	227	0	0
W. Banks	219	17	6
W. Sayer & Son	207	0	0
W. HOOPER (accepted)	183	10	0

Westminster Bridge Road.

Macey & Sons, Ltd.	£278	6	9
W. V. Goad	267	0	0
J. F. Ford	252	0	0
Holloway Bros (London), Ltd.	223	0	0
Rice & Son	219	0	0
J. R. Sims	207	0	0
H. J. WILLIAMS (accepted)	199	0	0

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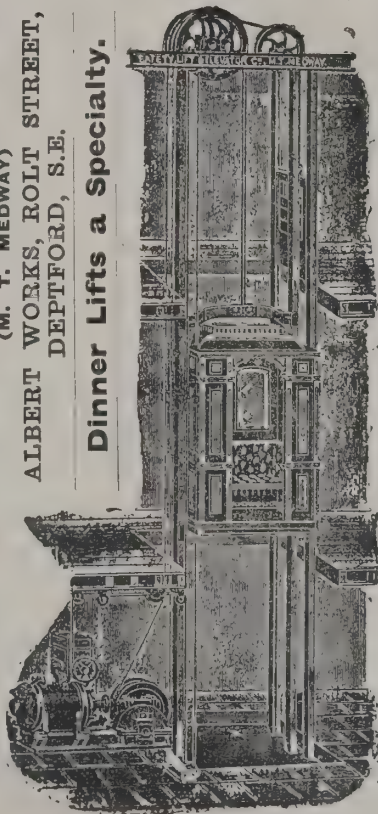
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LONDON SCHOOL BOARD—continued.

For new boiler for infants' department, Midway Place school, Rotherhithe.

W. Simmons	£196	5	0
C. Kite & Co.	175	0	0
J. Wontner-Smith, Gray & Co.	125	10	0
Palowkar & Sons	118	0	0
W. G. Cannon & Sons	115	0	0
J. Richmond & Co., Ltd.	114	0	0
J. & F. May	114	3	0
Stevens & Sons	110	0	0
R. Clarke	106	0	0

BRIGHTSIDE FOUNDRY & ENGINEERING CO., LTD. (accepted) 103 0 0

For adaptation of house for housewifery centre and accommodation of schoolkeeper, 80 Grove Lane, Denmark Hill.

W. Akers & Co.	£389	0	0
J. F. Ford	292	0	0
Rice & Son	272	0	0
J. Marsland & Sons	269	0	0
Maxwell Bros., Ltd.	269	0	0
J. & C. Bowyer	267	0	0
W. V. Goad	257	0	0
Harry Groves	238	0	0
H. Leney & Son	238	0	0
W. HOOPER (accepted)	237	10	0
T. Freeman	193	0	0

For executing repairs to desks, Earl Street school, Plumstead.

E. Spencer & Co.	£79	12	8
General Builders, Ltd.	79	0	0
W. Martin	73	18	0
W. Brake & Co.	67	5	0
T. Cruwys	59	15	6
H. Bouneau	55	10	0
H. J. Williams	54	6	0
London School Furniture Co.	50	7	10
G. M. HAMMER & CO., LTD. (accepted)	49	0	0

OSWESTRY.

For additions to and repaving the floor of stable, &c., at the Corporation yard, Horse Market. Mr. G. WILLIAM LACEY, surveyor.

J. E. M. Jones	£149	4	0
W. H. Thomas	88	2	9
J. HIGGINS, Oswestry (accepted)	79	0	0

MAIDSTONE.

For the construction and equipment of light railways, comprising permanent way (tramway construction), overhead line, underground mains, switchboard, rolling stock and depot building.

British Westinghouse Co., Ltd.	£23,052	5	10
Brush Electric Engineering Co., Ltd.	21,759	11	5
W. Griffiths & Co.	21,634	11	11
British Electric Equipment Co.	21,532	8	9
Blackwell & Co., Ltd.	20,079	3	3
White & Co., Ltd.	19,016	1	4
DICK, KERR & CO., LTD., Abchurch Yard, E.C. (accepted)	18,871	3	11

RADCLIFFE.

For the erection of butcher's premises and manager's house at Radcliffe, Northumberland. Mr. J. G. CRONE, architect, 26 Cloth Market, Newcastle-upon-Tyne.

J. McEwen	£2,635	19	0
Gordon Bros.	1,327	15	0
R. & G. Brown	1,248	0	0
J. W. Braithwaite & Co.	1,243	0	0
W. C. Tyrie	1,189	0	0
R. Brown	1,185	0	0
A. Douglas	1,170	0	0
Elliott Bros.	1,167	0	0
R. Carse & Son	1,142	0	0
W. S. Anderson	1,118	9	0
T. B. SHILLING, Sunderland (accepted)	1,064	0	0

ST. ANNES-ON-SEA.

For street works, St. Annes-on-Sea, Lancs.

Accepted tenders.

F. Harrop, St. Annes-on-Sea, for eight streets.
J. Miles, Burnley, for three streets.

SUTTON.

For alterations, &c., to the Hermitage, Sutton, Surrey. Mr. W. A. DAVIES, architect, Town Hall Chambers, High Street, Hounslow.

B. KEMBLE, Norwood Green (accepted).

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SCOTLAND.

For the erection of new gasworks, Peebles.

Accepted tenders.

Balfour & Co., Ltd, Leven, Fife, gasholder	£2,700	0	0
John McEwan, Greenock, corrugated roofs *	1,530	0	0
D. Y Stewart & Co., Glasgow, cast-iron pipes	1,449	3	5
John Dennis & Co, Ltd, Dalkeith, brickwork	1,325	0	0
Topping, concretework	1,250	18	3
Thomas Topping, Edinburgh, excavations	504	11	3
Dennis & Co, chimney-stack	215	0	0

SOUTHEND-ON-SEA.

For street works in Salisbury Avenue, Boscombe Road, Britannia Road (part of), Pembury Road and Cobham Road. Mr. E. J. ELFORD, borough surveyor.

Salisbury Avenue.

G. Bell	£2,194	0	0
E. T. Bloomfield	1,931	0	0
W. Iles	1,680	0	0
BUXTON & JENNER, North Road, Southend			
(accepted)	1,638	0	0

Boscombe Road.

G. Bell	3,553	0	0
E. T. Bloomfield	2,762	0	0
J. Summerfield	2,495	0	0
W. Iles	2,250	0	0
BUXTON & JENNER (accepted)	2,183	0	0

Britannia Road.

G. Bell	823	0	0
Buxton & Jenner	661	0	0
W. ILES (accepted)	655	0	0

Pembury Road.

G. Bell	1,199	0	0
J. Summerfield	1,015	0	0
Buxton & Jenner	998	0	0
W. ILES (accepted)	945	0	0

Cobham Road.

G. Bell	1,301	0	0
J. Summerfield	1,135	0	0
Buxton & Jenner	1,098	0	0
W. ILES (accepted)	1,055	0	0

WANDSWORTH.

For alterations to old school block at the workhouse.

J. Long	£450	17	0
Turtle & Appleton	320	0	0
C Smith	268	0	0
F. King	267	0	0
R. S. Ronald	260	0	0
E Parsons & Co.	252	10	0
H. Roffey	240	0	0
R. A Jewell	230	0	0
Hudson Bros.	227	0	0
Green & Twilley	225	17	6
W. Harris	210	0	0
C. HORTON, Goldsworth Works, Wandsworth			
(accepted)	192	0	0

WHITEHAVEN.

For the erection of a Sunday school, classrooms, &c., connected with Hogarth Mission. Mr. J. S. MOFFAT, architect, 53 Church Street, Whitehaven.

Accepted tenders.

J. Young, Catherine Street, builder.
T. Mandle & Son, Maryport, slater.
A. J. Wall, Roper Street, joiner.
R. Gamman, plasterer.

H. Burns & Co., Lowther Street, plumbing, glazing and electric light.

R. King, George Street, painting, &c.

WOLVERHAMPTON.

For sewerage works at Penn, Penn Fields and Bradmore, Seisdon. Mr. R. E. W. BERRINGTON, engineer, Bank Buildings, Wolverhampton.

G. Law	£15,316	0	0
Curral, Lewis & Martin	15,176	0	0
W. Thompson	14,900	0	0
J. Laing	14,850	0	0
T. Allsopp	13,192	0	0
Braithwaite & Co.	12,970	0	0
W. H. Reading	12,349	0	0
J. Owens	11,996	0	0
H. HOLLOWAY (accepted)	11,970	0	0

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NEW CATALOGUE.

A NEATLY got-up catalogue now being issued by the Willesden Paper and Canvas Works Company, Ltd., of Willesden Junction, gives numerous illustrations in detail of the numerous applications and uses to which the various well-known manufactures of the firm can be advantageously applied.

TRADE NOTES.

THE Closeburn red freestone from the Scottish Freestone Quarries, Thornhill, Dumfriesshire, for which Mr. F. H. Brook, of 11 Queen Victoria Street, E.C., is the sole agent, is a high-quality building stone which has a well-established reputation in the north, but is as yet new to the London trade. This stone stands well among chemical works and other trying atmospheric conditions in Lancashire, Glasgow and elsewhere. Its crushing strain is 500 tons per square foot.

MESSRS. MELLOWES & CO, LTD., of Sheffield and London, have in hand the orders for the glazing on their imperishable "Eclipse" system the roofs of the following buildings:—New Midland station, Sheffield; three sub-stations for the Underground Electric Railways, London; erecting shop, Marshall, Sons & Co., Ltd., Gainsboro; Heysham Harbour goods shed, Midland Railway; Covent Garden Foreign Flower Market; Central Station extensions, Glasgow; new fitting shop for Head, Wrightson & Co., Thornaby-on-Tees; new shops, Metropolitan Railway & Carriage Company, Ltd, Birmingham; new shops, Greening & Sons, Warrington; Queen's Road carsheds, Sheffield Corporation; Woodford station, Great Central Railway; extensions, British Westinghouse Company, Ltd, Manchester.

ELECTRIC NOTES.

A BILL has been deposited in the Private Bill Office of the House of Commons for the purpose of obtaining sanction to a scheme for the construction of an electric railway under the Thames between North and South Woolwich. The proposed railway will be just over three-quarters of a mile in length, and will commence in North Woolwich at a point near Francis Street, and will terminate in South Woolwich near Beresford Street.

At a meeting of the Swinton and Pendlebury District Council, held on the 14th inst., the tramways and electricity committee reported that instructions had been given to the clerk to communicate with the Salford Corporation and the Lancashire Tramways Company to ascertain the most favourable terms upon which a supply of electricity in bulk could be obtained by the Council. On the question of the electric supply of the district a deputation from the Swinton and Pendlebury Ratepayers' Association had a private interview with the Council at the close of the ordinary business.

THE waterworks committee of the Manchester Corporation recently went to the city waterworks at Longdendale, and inspected the Bottoms reservoir and the gauge basin through which flows the compensation water before it passes into the river Etherow. The committee have under consideration a scheme for utilising the force of the flow of water so that their workshops in proximity may be driven and lighted by electricity. It is also proposed to work by overhead traction the private railway belonging to the city which runs along by the reservoirs to a large stone quarry on the estate, and thus to develop the quarry.

MR. ARTHUR WRIGHT, electrical expert to the Marylebone Borough Council, has sent a letter to the Mayor expressing his willingness to be remunerated in connection with the local electric-lighting scheme solely by a percentage of the "actual" annual profits made after the Borough Council's own generating station is in full working order. The Bill which the Council are promoting to enable them to borrow in order to comply with the award of 1,212,000*l* in respect of the Metropolitan Electric Supply Company's Marylebone property and goodwill and other claims yet remains to be approved or disapproved by the ratepayers. Meanwhile Mr. Justice Buckley's order against the Council for the payment of 60,000*l*. to the company by the 31st of next month on account of capital expenditure is to be met by an overdraft at the Council's bankers. Negotiations are pending with the company with a view to ascertaining on what terms and conditions they will release the Council from their bargain.

MR. T. F. CHEATLE (chairman) presided at a recent meeting of the Tamworth Rural District Council. The notice was considered of the intention of the Tamworth Corporation to apply to the Board of Trade for a provisional order authorising the supply of electrical energy within certain parts of the rural district, and application for the Rural District

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Council's consent to the granting of such provisional order, and the waiver of the notice required by the Electric Lighting Act, 1882, to be given to the Council. A resolution of the Bolehall and Glascote Parish Council was read in opposition to the granting of the order. The vice-chairman (Rev. W. MacGregor) moved that the Council assent to the waiver of notice, and pointed out that they did not want to upset the Corporation. In the meantime a committee might consider whether they should oppose the scheme wholly or in part. The reason Bolehall and Glascote Parish Council decided to oppose those powers was because at present they had no proof that the Tamworth Town Council would supply them with electric power and light. As soon as they got an undertaking from the Corporation that they would supply them in a reasonable time they would withdraw their opposition.

THE third sessional meeting of the Insurance Society of Edinburgh was held in the Faculty of Actuaries' Hall, George Street, on the 15th inst., when Mr. Henry R. L. Burn, of the North British and Mercantile Insurance Company, read a paper on "Electric Light Supply and Precautions against Fire." The president of the Society, Mr. David Deuchar, occupied the chair, and there was a good attendance. In the course of an interesting paper Mr. Burn traced in a practical manner an installation from the mains, through the wiring, to the lamps, radiators and motors. Overhead wires, he said, were a source of danger, and with regard to the incandescent lamps, he said care must be exercised in placing them near combustible materials. In warehouses, &c., wire guards should be placed over them. He had seen them placed on the top of goods in shop windows, and it might be advantageous if in fire policies a restriction was made that they should not be put nearer the goods than 3 inches, especially if the goods were cotton. He emphasised the necessity of installations of electricity being carried out by

first-rate firms, for if they were to believe the assessors' reports, "scamping" must be accountable for many of the fires, as they found it reported that the cause of fire in many cases was through defective installation. In conclusion, Mr. Burn gave particulars of losses which had been incurred by fires, many of which had peculiar origins. In one case, he mentioned that owing to the wind swaying a ball lamp the coil became frayed, and damage to the extent of 8% was done. He cited a case in which 1,400% damage had been done to a church, and stated that buildings which were not frequently tenanted should be fitted with some automatic arrangement which would give warning when necessary. Mr. Burn was cordially thanked for his address, which was illustrated by limelight views.

VARIETIES.

ST. PAUL'S CHURCH, Dorking, has just been restored and renovated at a cost of 1,600%.

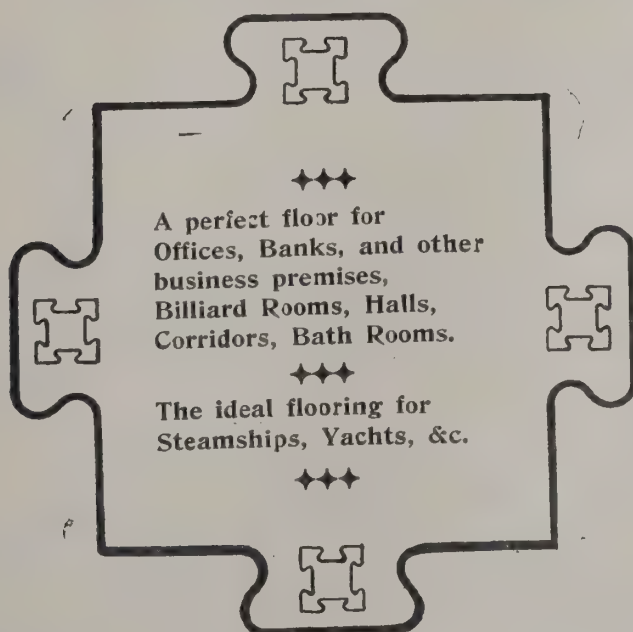
THE new chapel at Lings, North Wingfield, has been formally opened. It is a Gothic structure 56 feet 6 inches long, 36 feet 6 inches wide, with minister's vestry and choir vestry and a choir gallery. The seating is of pitch pine, the windows are of stained glass, and the accommodation is for 400 persons. The chapel was estimated to cost 1,350%.

A NEW illustrated booklet, issued by the Brighton Railway Company, entitled, "The Riviera and Italy for a 10% Note," describes a series of new tours, including the Mediterranean health resorts from Marseilles to Genoa, the chief Italian cities and Italian lakes, and shows how inexpensively and easily these tours can be made by the improved express services *via* Newhaven, Dieppe and Paris.

A WING which has recently been added to Govan municipal buildings was opened on the 11th inst. The new premises, which have been erected at a cost of between 6,000% and 7,000%, include buffet, smoking-rooms and retiring-rooms for the large and lesser town halls, a large committee-room for the use of the Council, and offices for the Public Health Department, with a bacteriological room.

At the Westminster Roman Catholic Cathedral on the 16th inst., the great crucifix which will hang over the chancel was placed in position. The crucifix, which was blessed by

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Provost Johnson on Sunday morning, measures 30 feet by 22 feet. It is gilded and has been built abroad of teak and mahogany. The figure of Christ, painted on canvas by Mr. C. Symons, is stretched on the front of the cross, while the figures of the four evangelists are placed at the corners. On the back is a representation of the Virgin Mary. Over three hours were occupied in raising the cross to the chains and hooks by which it is suspended from the chancel arch.

AN alarming subsidence took place recently at the railway station, Motherwell, Lanarkshire. While one of the railway porters was pushing a barrow along the platform a hole sufficient to bury both suddenly opened up on the platform, causing great alarm and uneasiness on the part of the officials. The alarm is all the greater on account of the subsidence being within two yards of the main Caledonian line between Glasgow and London, over which fast express trains pass at frequent intervals. The railway officials are arranging a series of excavations to ascertain the cause of the subsidence, although it is supposed to be due to a coal mine in the vicinity.

A MEETING of the Edinburgh Architectural Association was held on the 16th inst. at 117 George Street, Mr. A. H. Crawford, F.R.I.B.A., president, in the chair. Mr. W. E. Snell, of the Garden Association, read a paper on "The Objects of the Garden City Association." Mr. Snell, in the course of his remarks, pointed out that migration to new towns would relieve the congestion in the old, and that in the garden city, which would be planned scientifically from the first, there would be cheap sites and space for gardens and farms. The garden city would give opportunities for the revival of agriculture, and would also afford healthy recreation in connection with the problems of drink and gambling. The lecture was beautifully illustrated with lantern slides, and at the close Mr. Snell was awarded the hearty thanks of the meeting.

On the 19th inst. the Rev. Canon Davenport-Kelly preached at Davyholme Church (St. Mary's), when a special service was held for the dedication and unveiling of a new reredos which has just been erected in the church. The Canon's text was from I. Kings, vii. 27, ["But will God indeed dwell on the earth?"] The reredos, which was duly unveiled, has been erected at a cost of over 100*l*., the money being part of a legacy left to the Rev. T. D. Harland (vicar) for church use. The reredos, which stands above a bordering of new Alderley stone, is of solid English oak and weighs about 1½ tons. The carving, which is beautifully executed, is by Mr. Long, of

Manchester. The carved figure in the centre represents Christ, and on His left are the figures of St. Mark and St. John, while St. Matthew and St. Luke are on the right. These carvings are surmounted by the words, in bold letters, "Till He Come." In front of the reredos is a detached cross and small pedestal of black oak, which is beautifully carved.

BUILDING AND BUILDERS.

AN inquest was held on Monday last by Mr. Troutbeck on the body of William Hoad, fifty-nine, of Battersea. A large dome is being built over Harrod's Stores in the Brompton Road, and deceased was working there as a scaffolder. On Friday morning he was sitting astride a girder, 28 feet above the roof, lashing a number of planks together, when he slipped and fell to the roof, striking another girder in his descent. The jury returned a verdict of "Accidental death."

THE Central Railway station, Glasgow, was lately the scene of a terrible accident resulting in the death of three men and the serious injury of another. The accident took place at the extensions at present under construction on the south side of Argyll Street and immediately over Ann Street. Much of the girderwork of the new station has already been put into position and a large number of rivetters are employed in carrying out the operations. A platform erected at a height of 50 feet on the girderwork collapsed and four persons employed on it were precipitated to the level of the platform. One of the men expired shortly after the accident; the other three men were conveyed to the Royal Infirmary.

THE foundation-stone of the new Roman Catholic church which is being erected in Newbigging, Musselburgh, adjoining the present meeting-place of the congregation, was laid on the 11th inst. The plans of the new structure, which will be dedicated to Our Lady of Loretto, were prepared by Mr. Archibald Macpherson, architect, 7 Young Street, Edinburgh. The church will be cruciform, and will embrace, besides nave and chancel, a double porch and baptistery at the conventional west end, which is actually the east end, and nearest to the street. The transepts are shallow and divided from the nave by double arcades. One of the transepts forms the lady chapel. Two sacristies and sacristy hall are placed between the church and the presbytery or priest's house which adjoins it; over the sacristies are the organ loft and choir gallery.

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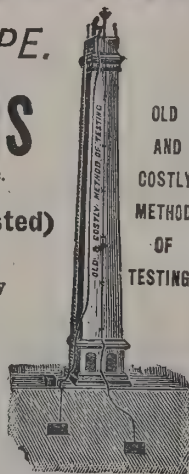
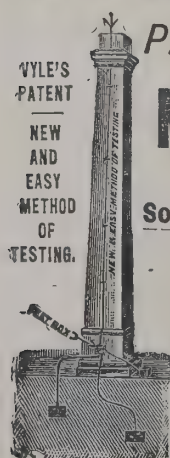
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For Index of Advertisers, see page x.

At St. Mary's Hall, Coventry, Mr. W. A. Ducat, Local Government Board inspector, held an inquiry on Friday last on the Coventry Corporation's application to borrow 2,137/6 for the purpose of private street works in an old road known as Brick Kiln Lane, and 2,130/6 for other public improvements. The town clerk said it could hardly be said how old Brick Kiln Lane was, but it appeared to have been made at a time when people built at their own sweet will. Until recently the lane might have been said to lead to nowhere, but a scheme is going through for laying out a number of streets, and Brick Kiln Lane would probably ere long form a through route of some importance. It was proposed to take advantage of the Private Street Works Act for the owners of the property in the road to contribute towards the cost of the work. There was no opposition to the application.

The tender of Mr. A. Cliff, of Evesham, has been accepted for additions and alterations to The Den, Cropthorne, the picturesque residence of Mr. H. H. Avery, from designs by Mr. Drinkwater Butt, F.R.P.S., of Gower Street and Kensington. This pleasant country house, situated on high ground and commanding fine views over the river Avon, was originally a group of half-timber cottages of great age which were made into one house by the late eminent surgeon, Sir Lawson Tait. Since passing into the hands of Mr. Avery further improvements have been made to the property, under the direction of Mr. Edwin Lutyens and Mr. Drinkwater Butt, the former adding a quaint sunk garden and sun-dial, and the latter restoring the leaded lights to the windows, and being now responsible for the new gables, &c. In the whole of the work the greatest care has been taken to preserve the old work and make the new in harmony with it.

The annual supper of the members of the Edinburgh and North Wales Building Trades Employers' Federation was held in the Royal British hotel, Princes Street, on the 18th inst. Mr. D. W. Kemp, J.P., presided over a gathering of about 150. The vice-presidents were Messrs. Donald Macpherson, Thomas M. Tait and John Thomson. The Chairman referred to the great loss which the craft had sustained by the death of Councillor Purves, and expressed the hope that the younger men who were coming up would prove of as sterling worth as the friend whose loss they all mourned. Convener Barton, replying to the toast of "The Plumbing Trade," which was proposed by Mr. Donald Macpherson, also referred to the death of Mr. Purves, and remarked that no more self-denying man sat in the Town

Council than the late Councillor Purves. He was a man who had no axe to grind, and did a deal of good work for the city of Edinburgh. With regard to the plumbing trade, he observed that it, like most of the trades connected with building, had not such a bright spring before it as they had hitherto been accustomed to. They had weathered through such occasions before and he thought they should weather that one also. Other toasts followed.

MASTER BUILDERS' DINNER.

The third annual dinner in connection with the Lancashire, Cheshire and North Wales Building Trades Employers' Federation took place in the civic banqueting-room at the town hall, Bolton, on the 16th inst., the company numbering about seventy, under the chairmanship of Mr. T. H. Ketter, of Preston (president of the Federation), who was supported by Messrs. H. Lever (Liverpool) and J. Hamilton (Altrincham), vice-presidents.

Mr. George Macfarlane (Manchester) submitted "The Town and Trade of Bolton." He remarked that he was an old resident of this town, to which he came in 1860, remaining here three years. In spite of many drawbacks the town of Bolton had made wonderful progress, proof of which was afforded by the magnificent building in which they were then assembled (the town hall) and other palatial structures; besides which, after waiting for so many years, they were going to have a really grand and commodious railway station. Bolton had increased in population from 89,739 in 1861 to 168,215 in 1901. It was ahead of Oldham in this respect, but the latter town was better organised as regarded their Builders' Association, and that was one thing why he wished Bolton would take a leaf out of Oldham's book. In proposing the toast of "The Town and Trade of Bolton," the speaker added, "and may there be plenty of cheap cotton."

Mr. John Dickinson, in responding, said he was very much pleased at hearing Mr. Macfarlane's reference to his old connection with Bolton; but his (Mr. Dickinson's) residence in it began earlier and had continued longer. He came in 1853, and could well remember the fine market hall being built. He thought that they were a successful town and people in Bolton. They spun, he believed, the finest yarns of any place in England; many of their cotton mills had worked full time all through the recent long depression on account of short supplies

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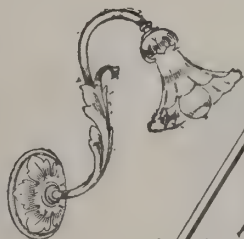
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of the raw material, and some of the employers had made handsome profits. In the engineering industry, too, the town held a very high position indeed; but he was sorry to say that the only trade which was not successful was the building trade.

"The Lancashire, Cheshire and North Wales Building Trades Employers' Federation" was proposed by Mr. W. Townson, who said he thought it would be found that the wages paid in Bolton in the building trade had been at "the top of the tree" for some years; and it was necessary that the employers should have a very strong organisation. He spoke in complimentary terms of the sacrifices both of time and money made by the officials of the Federation in their work of promoting unity.

The toast was acknowledged by Mr. Samuel Smethurst, of Oldham, who said that the Federation was making great progress. He was glad to hear that such good wages were paid in Bolton; he considered that it was to their mutual interest for good wages to be paid, but it was also important that there should be strong combination among the employers.

Mr. C. Tomkinson (Liverpool) proposed "The Bolton Master Builders' Association," incidentally mentioning that his father erected the Bolton market hall, and he had reason to be proud of the town in that respect.

After the chairman (Mr. Kellet) had remarked that Bolton was one of the pioneers of the federation of the building trades, and he hoped increased efforts would be put forth to extend the local organisation,

Mr. B. Talbot, in responding, said that they had heard some candid critics of the Bolton Master Builders' Association that evening, but they were doing their best to support the Federation in every possible way. They were soldiers, not statesmen, but he did not think they were treated with sufficient consideration by the local authorities. On one occasion a deputation from their Association were snubbed by a sub-committee of the Corporation, and he advocated additional representation of the building trade on public bodies. They employed between 4,000 and 5,000 workmen, and paid from 6,000*l.* to 7,000*l.* per week in wages, so he considered their Association was entitled to some consideration.

The last toast was "The President and Officers of the Federation," which was proposed by Mr. J. E. Tinline (Bury), and responded to by Mr. A. Matthews (Manchester), a member of the Executive.

Considerable enjoyment was infused in the reunion by a

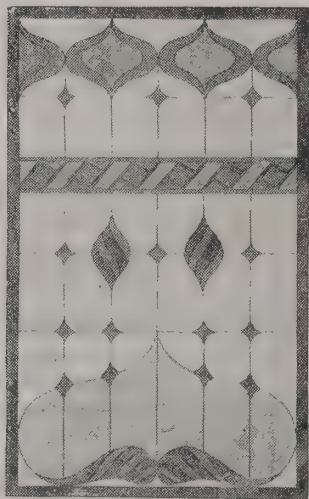
well-arranged and choice musical programme. Solos, duets and quartettes were ably rendered by Mr. Marsh's male voice quartette party; Mr. Stanley Jackson contributed sundry humorous sketches in his usual racy style; and Mr. W. Townson sang "The Longshoreman." Mr. Herbert M. Shorrocks presided at the pianoforte efficiently. "Auld lang syne" and the National Anthem were joined in at the close.

DRAINAGE WORKS AT OPORTO.

A CORRESPONDENT of the *Times* writes from Oporto:—A contract for works which should exercise great influence for good on the future of this town has just been concluded between the municipality and Messrs. Hughes & Lancaster, of Westminster. These works comprise the complete drainage of Oporto on the separate system. The town is beautifully situated on the steep northern bank of the Douro, which allows of its being drained mostly by gravitation. The decree of the Portuguese Minister for the Home Office lays proper stress upon the necessity of having all properties in the town properly connected with the new drainage system as soon as it is carried out. This constitutes an important feature, and affords good evidence that, although the municipality and the Government authorities took a long time (about seven years), their determination to have it carried out is coupled with an intention to make it practically effective. It will take the contractors some years to complete the entire works, but they have undertaken to complete the main works in the town within four years from the date of the signature of the contract.

THE Kirkintilloch Town Council have resolved upon the site to be acquired for the proposed town hall and municipal buildings, for which they have in hand a sum of 4,000*l.*, collected by public subscription. The site to be purchased is in the centre of the business part of the town, with a frontage to Cowgate and Union Street. It is proposed to erect municipal buildings facing Cowgate, having departmental offices on the ground floor and a council chamber above. Behind this building will be the halls, having access both from Cowgate and Union Street.

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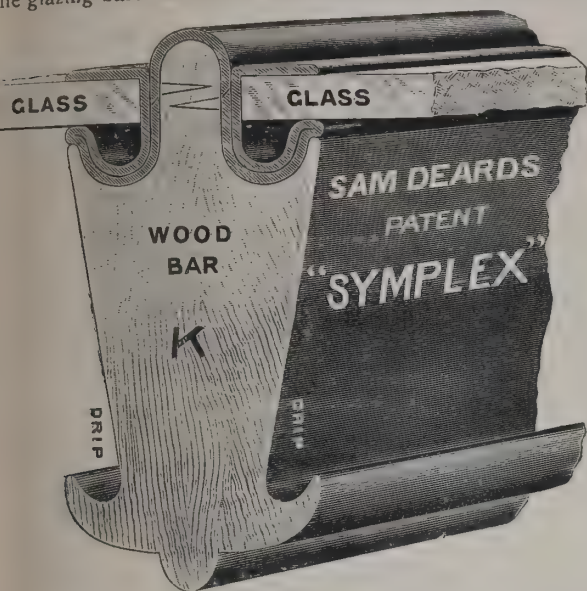
SANITARY PIPES.

GLAZED BRICKS.

For Index of Advertisers, see page x.

SAM DEARDS'S PATENT NEW GLAZING BAR."

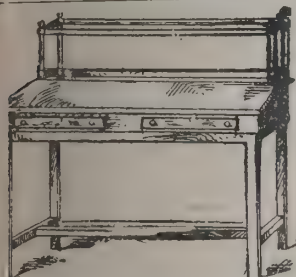
S Deards's lead-covered steel glazing bars are now being extensively used, the following facts should claim the attention of architects, surveyors and engineers, as the steel bar is very light and strong, being constructed to carry a length of glass up to 11 feet without support, and in covering this bar with lead the process used is such as to ensure a uniform thickness. Some glazing bars that are now in the market are very irregular,



to the Cape of Good Hope, Mexico and Brazil, and these have been fixed by local men or natives. The simplicity of fixing also calls for commendation. There are no nuts, bolts, screws or packing of any kind, and after the steel bar is fixed in its place the squares of glass are dropped in, the lead cap is then fixed on to the bar and with a pair of special nippers the lead is closed into the counter-sunk holes, and all is fast and secure. By the use of the self-locking bar all drilling of holes in purlins, plates and ridge is avoided, as a slot is made in the top and bottom of the web of the bar, which is on the underside (see illustration), and this allows of all glass and bars being slid in and firmly held, allowing for expansion; the slot being some 1 inch or 1 1/4 inch deep allows plenty of room for any irregularity. The patentee has, we are informed, made and supplied many thousands of feet of this bar to the Admiralty, War Office, and the Governments. The bars can be enamelled any colour, galvanised or lead covered.

THE new police buildings, which have been erected at Kirkcaldy, N.B., at a cost of between 20,000l. and 25,000l., are now completed and taken over by the police authorities. They face St. Brycedale Avenue, and form one side of the new street between St. Brycedale Avenue and Hunter Street. The main entrance is from St. Brycedale Avenue, and passing through a vestibule lined and floored with marble a wide corridor is reached, with Barrhead stone pillars supporting the roof. From this corridor entrance is gained to the rooms occupied by the various officials. A wide stairway, with solid walnut banisters, leads to the court-room, which is a large hall, panelled to a height of 8 feet, the roof being of fibrous plaster of very fine design. On the same flat is a fully-equipped gymnasium for the policemen, also a fine reading-room and library. The prison quarters are behind the main building. In one wing there are 18 cells for male prisoners, the cells being on two flats, the upper part being reached by an iron stairway and overhead iron passage. In the female section there are 9 cells. Each of the cells is fitted with an electric bell, which rings in the charge-room, a semaphore falling to show the officer which of the prisoners requires his attention. At the rear of the buildings are exercise-yards for both male and female prisoners. The buildings are lighted throughout with electricity. Mr. William Williamson, Kirkcaldy, was architect for the works.

and, if examined, it is easy to see that parts of the steel bars are barely covered with the lead, but in the bar in question it is claimed that there is complete uniformity, and in addition to this an improvement is made, i.e. all lead-covered bars which have the wings cast on them are liable to damage by their being torn off, and in cases of repair broken away from the bar, it being difficult to make them good again; while in Sam Deards's bar the lead cap forms a separate part, and can be easily renewed by any handy-man. This improvement is valuable, especially when the bars are exported. Some thousands of feet have been sent



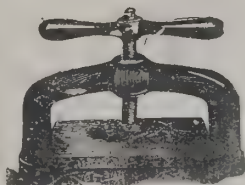
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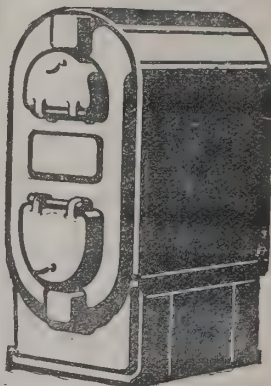
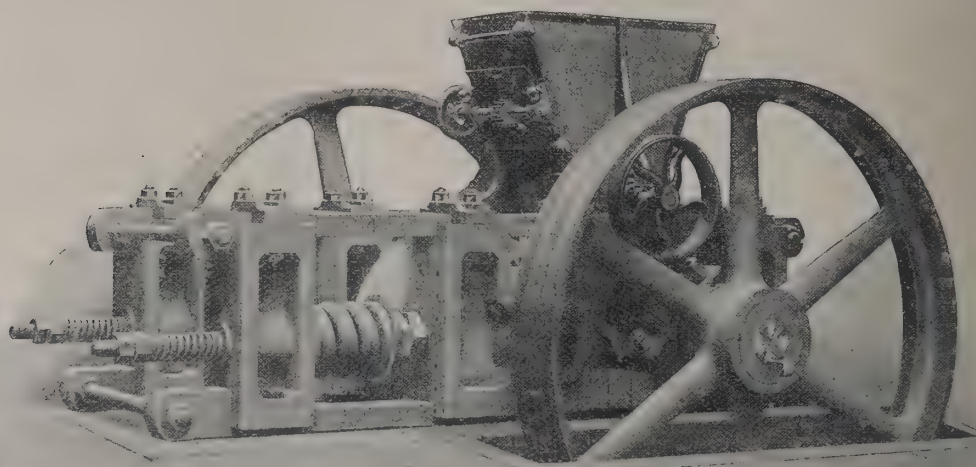
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WE illustrate in this issue a new type of fine crusher, which is being made and put on the market by Goodwin, Barsby & Co., of St. Margaret's Ironworks, Leicester. The machine is styled by the firm as their "patent high-speed fine crushing rolls," and is illustrated, described, and priced on their new list F, which now forms part of their complete catalogue. This machine is now being inquired for, and sold freely to corporations and other public bodies and contractors for the fine crushing of slag or limestone chippings used in the manufacture of tar macadam; also for crushing granite chippings and destructor clinker for concrete slab-making; and, further, for crushing sandstone to sand for building and filtering purposes, and for crushing flints and gravel to pass finer meshes for sanding streets or for racking in paving

and setts. These fine crushing rolls having only one pair of rolls, are, of course, intended mainly for working in conjunction with the patent "Acme" or any other stone breaker, when these latter machines have previously broken the material down to pass about $1\frac{1}{2}$ -inch riddle. The rolls are then used to make a further reduction to $\frac{1}{2}$ -inch and less. Screens and elevators can be used to automatically deal with the material after leaving the rolls. The design and construction of the machine are of the greatest simplicity. The frame is sectional, and is composed of steel tie-bars, and is so built that it is perfectly rigid, and capable of working continually under the greatest strain.

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itted behind the movable roller to relieve the frame bars of undue strain in case of accident; in fact, pieces of iron may be put through the machine in course of testing in order to illustrate the working of the relief springs. The adjustment to take up the wear on the rollers is also made through these springs. Each bearing is accurately machined and fitted with gun-metal or phosphor-bronze brasses, the protection of which is made a very special point of, being cased at each end with dust-proof caps. The roller shells are deeply chilled and are made of a special mixture of high-grade iron. The shells are secured to the shafts by an improved and approved method, which prevents them slipping or getting loose. Patent automatic feed is provided to give a steady and continuous stream of the material to be crushed across the whole face of the rolls. Another important machine is the improved geared stone-breaker or cubing-mill. This machine is intended to deal with granite for macadam, where the material is of such a nature that it will not break cubically in a breaker on the jaw principle.

THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting on Tuesday, December 15, Sir William H. White, K.C.B., president, in the chair, two papers were read, namely, "Deposits in Pipes and other Channels conveying Potable Water," by Professor J. Campbell Brown, D.Sc.; and "The Purification of Water highly charged with Vegetable Matter, with special reference to the effect of Aeration," by Osbert Chadwick, C.M.G., M.Inst.C.E., and Bertram Blount, Assoc.Inst.C.E.

The first paper dealt with three classes of deposits:—(1) Incrustations on iron pipes; their source, causes and remedy. (2) Growths, more or less slimy, on inner surfaces of pipes and culverts and tunnels; their varieties, nature, composition and causes; also the composition of waters which produce different kinds of growths. (3) Loose deposits.

Analyses were given of incrustations on iron pipes and analyses of different kinds of waters were quoted, showing that these incrustations were due to oxidation of the iron of the pipes, whether widespread or in nodules, and that they were not limited to acid waters, but were common to acid, alkaline

and neutral waters. The remedy was briefly discussed, in the light of recent experiments as well as earlier observations.

Growths or deposits on the inner surface of pipes were of two kinds:—(a) Deposits of carbonates of alkaline earths from calcareous waters; (b) black slimy deposits from the top, bottom and sides of pipes and other channels conveying certain waters, chiefly from Welsh sources. Investigations were recorded and detailed evidence was adduced showing that these slimy deposits were produced by gelatinous and filamentous iron organisms which grew and extracted iron from the water and died at one end while they grew at the other. Solid rock particles were entangled in this slime, and binoxide of manganese was deposited by chemical action, and this also was entangled in the mass of the gelatinous iron-organisms. Analyses were given of waters which did, and a variety of waters which did not, support the growth of this slime, and deductions were drawn as to the constituents of the waters on which these growths depended. Experiments were described, undertaken with the view of ascertaining the conditions favourable to the growth and the conditions which would prevent the multiplication of these organisms and the growth of the slime. Microphotographs were given of these growths at different stages, and the results of the experiments were described and discussed in order to arrive at a correct theory and so at a practical result.

The second paper treated of the nature of tropical waters collected in regions free from ordinary sources of contamination, but containing large quantities of dissolved vegetable matter. These waters, wherever their place of origin, presented a great similarity of composition, samples from Mauritius, the West Coast of Africa, Uganda and the West Indies having the same characteristics. In all cases contamination was caused by the water remaining stagnant or flowing slowly through regions rich in vegetation, which by its decay produced a large quantity of vegetable debris absorbable by the water. Pure tropical waters might be obtained even from a district densely covered with vegetation, provided that the flow was sufficiently rapid.

The purification of waters of this class was very difficult. The authors had found by experiment that treatment with iron was generally efficacious, but the treatment must be more thorough than was necessary with ordinary water supplies. The peculiar character of these waters charged with vegetable matters rendered the removal of the iron difficult; casual aeration by fountains or cascades was insufficient. Systematic

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aeration, so as to insure an abundant supply of oxygen, was requisite.

Various methods had been tried, and finally an apparatus had been devised in which the water was caused to flow through perforated plates, emerging in streams of small diameter and exposing so large a surface per unit volume of liquid that rapid absorption of oxygen from the air was made certain. It was found that, if the water was delivered at or above a certain critical head, the streams of liquid remain distinct, and if they were caused to coalesce by some temporary disturbing influence, such as a gust of wind, they resumed their position and individuality as soon as the disturbing influence had subsided. The use of this critical head was essential for the proper working of the apparatus and for the satisfactory aeration of the water.

Plant designed on this principle had been erected to purify the water-supply at Mauritius and in Uganda; the method had sufficed to change water so loaded with vegetable matter as to be almost unpotable into a drinking-water of excellent quality. An account was given of the waterworks at Mare aux Vacoas in Mauritius, and of the various improvements in the mode of purification which had been effected from time to time. The principle of aeration had also been usefully applied at Singapore by means of intermittent filtration, but the authors held that the systematic process described above was preferable on account of its certainty and compactness. They considered that by this means it was practicable to purify difficult tropical waters so as to obtain a satisfactory supply without excessive cost or difficulty of working.

SOCIETY OF ENGINEERS.

THE forty-ninth annual general meeting of the Society of Engineers was held on Monday, December 14, at the offices of the Society, 17 Victoria Street, Westminster.

The chair was occupied by Mr. J. Patten Barber, president. The following gentlemen were duly elected by ballot as the Council and officers for 1904, viz.:—As president, Mr. David Butler Butler; as vice-presidents, Messrs. Nicholas James West, Maurice Wilson and Richard St. George Moore; as ordinary members of Council, Messrs. Joseph Bernays, George Austin Pryce Cuxson, George Abraham Goodwin, William Henry Holtum, Henry Sherley-Price, Edward John Silcock,

Joseph William Wilson and George Green; as honorary secretary and treasurer, Mr. George Burt; as honorary auditor, Mr. Samuel Wood, F.C.A.

The President announced that the following premiums had been awarded by the Council for papers read during the past session, viz.:—The President's gold medal to Mr. Douglas Mackenzie for his paper on "Motor Transport for Goods;" the Bessemer premium of books to Mr. Robert J. Thomas for his paper on "Road Maintenance and Administration;" and a Society's premium of books to Mr. Albert Gay for his paper on "Mechanical Stokers for Electricity Generating Stations."

A vote of thanks was accorded to the scrutineers, and the proceedings terminated by a vote of thanks to the President, Council and officers for 1903, which was duly acknowledged.

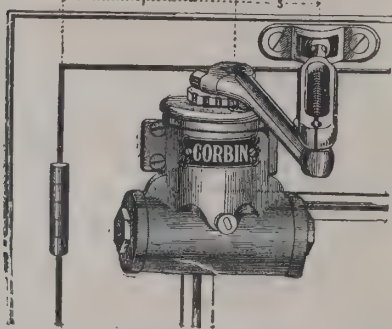
The forty-ninth annual dinner of the Society was held at the Hôtel Cecil on the 16th inst., Mr. J. Patten Barber, president, occupying the chair. Among those present were:—Mr. D. B. Butler (president elect), Mr. W. H. M. Christie (Astronomer Royal), Colonel Yorke, R.E., Captain Walter Wood, Mr. A. T. Walmisley (Mayor of Dover), Mr. G. Burt (hon. secretary and treasurer), Mr. C. Crole-Rees, Mr. J. H. Wicksteed (President of the Institution of Mechanical Engineers), Mr. R. K. Gray (President of the Institution of Electrical Engineers), Mr. A. Siemens, Mr. W. F. Dewey, Mr. A. Towers, Dr. A. E. Harris, Mr. J. R. Leggatt, Mr. W. Galton, Mr. D. McMonnies, Mr. Ambrose Jones, Mr. A. S. E. Ackerman and Mr. Perry Nursey (secretary), &c. The loyal toasts having been cordially honoured,

The President proposed "The Imperial Forces of the Crown," Captain W. Wood responding.

Mr. W. H. M. Christie, in giving "The Society of Engineers," said he thought every astronomer should be an engineer. Speaking as an astronomer, he could say they felt very grateful to the engineers for all they had done for the advancement of astronomy. Many astronomers, and most of the able ones, had been engineers. As regarded astronomy, they were struck by the great advance made in America, where the whole science seemed to be monopolised. That was very largely due to the way in which the Americans utilised the engineers; their modern astronomical instruments were really engineering manufactures. The Americans had rather gone ahead, he was sorry to say, of English astronomers, the reason being that they had been able to get large funds. Unfor-

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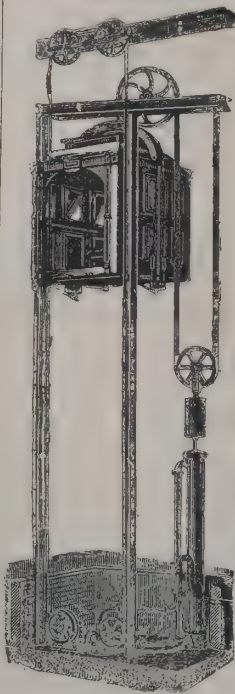
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inately in this country it was difficult to get money for science efficient to deal with those costly engineering works necessary for the advancement of the present day. Everybody in the country was indebted to the Society of Engineers, which was looked upon as the nursery of engineers essentially.

The President, in replying, said that the highest compliment that could be paid to them was that they had been useful to other scientific men, and particularly to a body of such magnitude and importance as astronomers. One great advantage of the Society was that those who were young in the profession might meet with those who were older and had had greater experience. The Society's meetings offered an opportunity for such men to become acquainted, and to get advice and information with respect to the various subjects with which they had, as engineers, to deal. It was part of their duty as engineers to see that our cities and places where there were large populations were supplied with an ample amount of the purest water. They also had before them the problem of obtaining cheap and rapid means of transit from the centres of population to the less thickly populated districts outside. Another matter they had to deal with was the efficient purification of sewage; also the question of the more economical consumption of fuel, and getting from the fuel a greater amount of heat, and utilising it more than they could at the present time. There was also to be considered by them the problem of getting greater efficiency from engines. With regard to all these problems they hoped, if not to solve them entirely, at any rate to get nearer the truth by constant study and observation, and contributing the facts and truths which they had learnt by study and observation to the general fund of knowledge, so that others might carry on the investigations further than they had done. In conclusion, he said their society was in a condition of very great prosperity.

Mr. D. B. Butler submitted the toast of "Kindred Institutions," Mr. J. H. Wicksteed and Mr. R. K. Gray replying.

The final toast, "Our Guests," given by the vice-president Mr. Maurice Wilson), was acknowledged by Mr. W. F. Dewey.

THE PLUMBERS' REGISTRATION BILL.

THE Plumbers' Registration Bill that passed the House of Lords in 1902 but failed, in the hands of a private member, to pass the House of Commons, has the full approval of the Local Government Board. It provides for the constitution of

a Council composed of fourteen members nominated by the following bodies:—Three by the Local Government Board, two by the Association of County Councils, two by the Association of Municipal Corporations, two by the National Association of Master Plumbers, two by the National Association of Operative Plumbers, one by the Royal Institute of British Architects, one by the City and Guilds of London Institute, one by the Worshipful Company of Plumbers, to frame a scheme for the registration of plumbers, such scheme to be approved by the Local Government Board and confirmed by Parliament. The chief object of the Bill is to afford additional safeguards to the public health by encouraging the better training of plumbers, and by enabling persons employing plumbers to select, if they wish to do so, workmen who have given evidence of their qualification to carry out satisfactorily work in connection with sanitation and the public water-supply. The Bill does not contemplate any monopoly, and does not in any way interfere with the rights of non-registered plumbers. It does, however, prohibit such plumbers from representing themselves to be registered. It is to be particularly noticed that any scheme framed by the Council is subject to the approval of the Local Government Board and confirmation by Parliament. Therefore, any scheme to receive such approval and confirmation must necessarily insure that all trade interests, as well as all public interests, must be fully and fairly safeguarded.

LEEDS NEW PUBLIC LIBRARY.

THE new branch library at Holbeck was recently opened by the Lord Mayor of Leeds. The building, which occupies a site at the corner of Nineveh Road and Marshall Street, has been erected under the superintendence of the architect, Mr. William Bakewell, of Leeds, whose design was selected by the assessor, Mr. Leonard Stokes, from those submitted in competition. The perspective view was exhibited at the Royal Academy Exhibition of 1902.

The exterior is faced with Accrington bricks and dressings of terra-cotta; the roofs are slated with green Westmoreland slates, and the building generally is of fireproof construction. The whole of the floors are laid in wood-blocks and marble mosaic, and the walls of the public rooms are lined with a dado of glazed tiles.

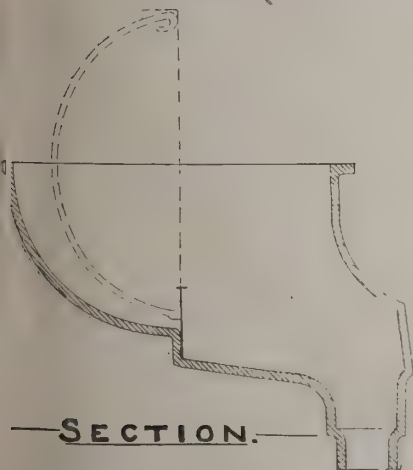
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of large reading-room, lending library, ladies' room and librarian's room. The juveniles' room is situate on the lower ground floor, together with the usual offices, &c. The irregular lines of the site on the north and east sides presented some difficulty in obtaining regular shaped rooms; this has been overcome in the large reading-room by an arrangement of piers, which also enables the adoption of cross-lighting and ventilation by means of clerestory windows. At the east end a street improvement has been effected by the semicircular ladies' room, and thereby widening the somewhat congested approach to Marshall Street. The principal reading-room is a lofty apartment, being 26 feet 6 inches from the floor to the crown of the waggon roof, with a view to securing an ample volume of air, and preventing the vitiated condition of the atmosphere that generally exists in a public reading-room. The turret is utilised for a ventilating fan, connected by means of trunks and tubes with the various rooms. The fittings generally have been arranged on lines laid down by the chief librarian for the purpose of effective supervision, and are executed in teak and oak. The building has been erected by Messrs. Armitage & Hodgson, contractors, Leeds, whose tender for the whole of the trades was accepted by the City Council.

AMERICAN TRADE DISPUTES.

A LAW has been passed in Alabama against boycotting, which exceeds in stringency that of any other State, and its favourable working may lead to similar enactments in other industrial States.

The measure has been signed by Governor Jelks. It was drawn and championed by the Citizens' Alliance of Birmingham, Alabama's chief manufacturing centre, and the seat of most of its strikes and labour disturbances. The aim avowed by its authors was "to promote the stability of business and the steady employment of labour, whether organised or unorganised." The new law forbids two or more persons to conspire together for the purpose of preventing any person, persons, firm or corporation from carrying on any lawful business within the State of Alabama. It prohibits "picketing" the place of business of any person, firm or corporation, or loitering about any such place of business "for the purpose of influencing or inducing others not to trade with, buy from, sell to or have business dealings with such person, firm

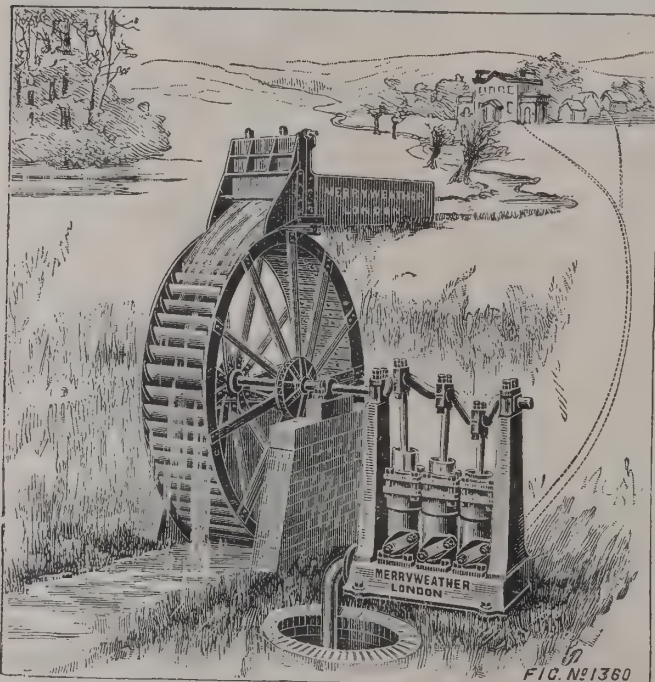
or corporation." The new law makes illegal the printing or circulating of boycott notices, cards, stickers or dodgers, or of black lists putting a ban on any persons engaged in lawful business or on any judicial officer or other public official because of his lawful official acts. It proscribes the publication or maintenance by any employer of a labour black list, or the use of such a black list to prevent any person or persons from obtaining employment. Offences against the anti-boycott law are to be punishable by fines of from 50 to 500 dollars, or by imprisonment at hard labour for sixty days.

Such legislation as this would do much to clip the wings of labour agitators and prevent the disturbances everywhere attendant on labour struggles.

LONDON COUNTY COUNCIL WORKS DEPARTMENT.

THE half-yearly report of works completed during the six months ended September 30 last has been prepared by the works committee of the London County Council. It is stated that the first table contains the accounts for twenty works completed in the half-year in respect of which complete specifications and bills of quantities had been prepared. The total cost of the works included in the statement does not represent the turnover of the department, because much of the expenditure on these works occurred before the half-year in question, while, on the other hand, much of the expenditure during the six months was upon works still unfinished. The approximate expenditure on works executed by the department during the half-year was 187,000/. They are glad to be in a position to state that the net result of the execution of the works included in the statement is a balance of cost below final certificate of 25,853/, or about 11.114 per cent. on the total of the final certificates, and that 19 out of the 20 works have been carried out at a cost below final estimate. They are, moreover, of opinion that in the case of two of the works the balance of cost below final certificate would have been greater but for circumstances quite beyond their control. They desire to direct attention to the fact that while the total of the accepted estimates for seventeen of the works was 219,873/, the total of the final certificates for these works was 185,823/. The only excess of cost over final certificate was in respect of the construction of a band-stand at

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Horniman Gardens, the amount of such excess being 31%. The number of works in respect of which full specifications, bills of quantity, &c., have been prepared, and which have been referred to the committee for execution and not yet included in the half-yearly statements of completed works submitted to the Council is thirty-six, representing an estimated expenditure of approximately 941,000/. In the case of the construction of the relief sewer from the southern high-level sewer extension at Balham High Road the sum of 5,940/. voted for the work may be exceeded, but that was the only work on which at present they anticipate an excess. Included in one of the statements is the account for the erection of the first portion of the Clapham car-sheds, which was referred to them for execution without any estimates being prepared by the architect for purposes of comparison, the tramways account being debited with the actual cost of the work. It is to be remembered, they state, that this work was referred to the department for execution under peculiar and special circumstances, the highways committee reporting that it was essential that the car-sheds should be put in hand without the delay which the preparation beforehand of specifications and bills of quantities would entail. They would draw the attention of the Council to the expression of opinion contained in the report of the highways committee that one of the advantages of the works department was that the Council could make use of it on occasions of great emergency such as that in question. The car-sheds were completed to the entire satisfaction of the highways committee and the cars were able to be housed as soon as they were delivered. The execution of jobbing works during the year 1902-03 and part of 1903-04 has resulted in balances of cost below schedule value of 1,883/. and 393/. respectively. The Fire Brigade committee, in a brief report upon the statement of the works committee, point out that the return includes four accounts in respect of the erection of fire-stations, and they observe with considerable satisfaction that in every case the actual cost of the work has been substantially below the architect's final certificate. The highways committee express pleasure at noting that in regard to the erection of three tramway substations in each case the cost was below the amount of the final certificate, the total balance of cost below that certificate being 2,153/., equal to nearly 10 per cent. The main drainage committee state that in regard to the three estimated works carried out for them by the works committee, they were pleased to observe that the cost of the works was below the total amount of the final estimates by no less than 15,687/. That difference

represented a total saving of over 11½ per cent. on the final estimate. It may be pointed out, they state, that two of the works consisted of the construction of new sewers which formed part of the enlargement of the main drainage system, and when it is remembered that other large works of a similar character are being undertaken by the Council, it is satisfactory to note that by the direct employment of labour on these particular works the saving on the final estimate has been about 16 per cent.

ABERDEEN GRANITE TRADE.

A GENERAL view of the quarrying, building and monumental branches of the granite industry, which has its headquarters in the city of Aberdeen, shows that during the year 1903 a substantial measure of prosperity has been enjoyed. If anything, says the *Scotsman*, the comparison all over reveals an improvement rather than a decline on the previous year. The score or so of quarries scattered throughout the country, employing upwards of 2,000 hands, have had constant work. Mr. Fyfe's great Kemnay establishment, which has now on hand contracts for the extension of the University, the new post office and Regent Bridge, has kept its 800 men busily employed. But it is perhaps orders for paving setts for various places throughout the kingdom that, generally speaking, have created the briskness in most of the quarries this year. The building branch, however, has, as the statistics of the municipality disclose, had a steady run. The value of the erections sanctioned during the year ending October is 413,650/., as compared with 330,000/. in the corresponding period of 1902, or an increase of 80,000/. Of this total, 107,000/. is put down as the estimated value of public buildings—such as the University, the addition to the Art Gallery, the extension of the United Free Church Training College, &c.; while last year the public buildings in course of construction were estimated at only 63,000/.. There has been less demand recently for tenement houses—the general opinion being that the city is for the time sufficiently well supplied with that class of erections, and now the tendency is towards two-storey buildings of the cottage description. As to the monumental branch, all the yards have had a busy time, though orders have now become less numerous and a good many of the hands are idle. To supplement the supplies of local stones, merchants have had to purchase foreign material, and this year the quantity of the



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granite imported for ornamental use, chiefly from Norway and Sweden, amounts to 18,820 tons, as against 16,280 tons last year—an increase of 2,540 tons. It is disappointing to learn that in none of the three departments under review are the prospects of a very cheering character, and the quarry-masters whose stones are used for decorative purposes contemplate with some concern the proposed introduction of the foreign manufactured article.

GLASGOW HOUSING PROBLEM.

A MEETING of the Civic Society of Glasgow has been held. Sir Samuel Chisholm gave an address on the housing problem in Glasgow. He said that when many months ago he consented to speak on the subject he was sanguine enough to believe that the report of the Municipal Housing Commission would long before his address have been completed and issued. The report, however, and its recommendations were still in preparation; therefore, it would be in bad form if he ventured to allude to them. Sir Samuel spoke of the great amount of poverty which existed in the city, and the question whether there was anything in the housing problem apart from the housing of the poor. He referred to the visit which members of the Commission had made to the congested areas of the city. He mentioned how the model lodging-houses of the Corporation had supplanted others of a bad type, and also how the family home in St. Andrew's Square had been a means of improving the condition of persons with families who had not other means of finding suitable accommodation. A discussion followed.

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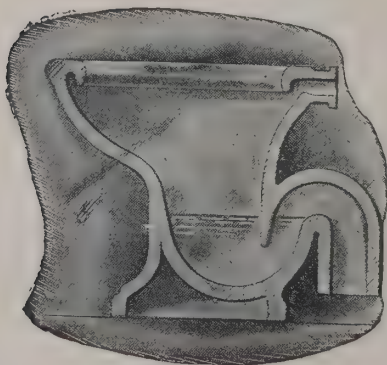
THE competitive designs submitted by Messrs. G. & R. P. Baices, 5 Clement's Inn, Strand, W.C., have been adopted for the United Methodist Free church and schools, Seven Kings, E., and the first portion of the building, which embraces the nave of the church, including tower and temporary apse, &c., is to be proceeded with at once; the schoolroom and two classrooms also form a portion of the scheme. The estimated cost of this first portion is 3,641 l. The materials are to be facings in red brick, dressings in Bath stone. The tower, which is a square one surmounted by open traceried parapet and spire, forms a prominent feature of the design.

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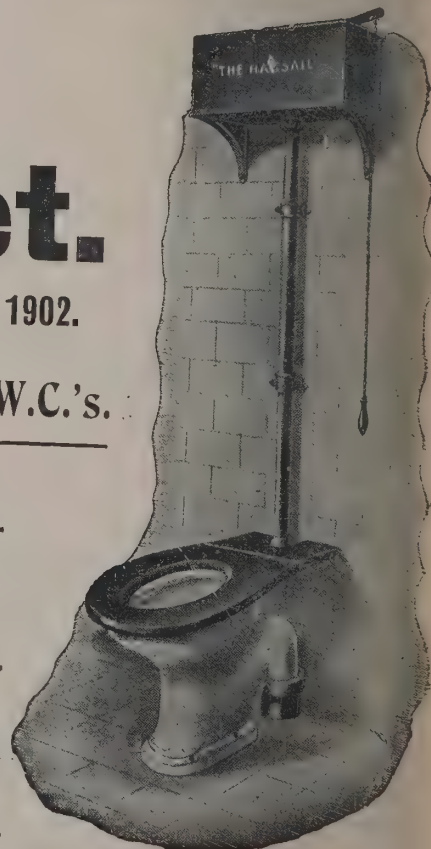
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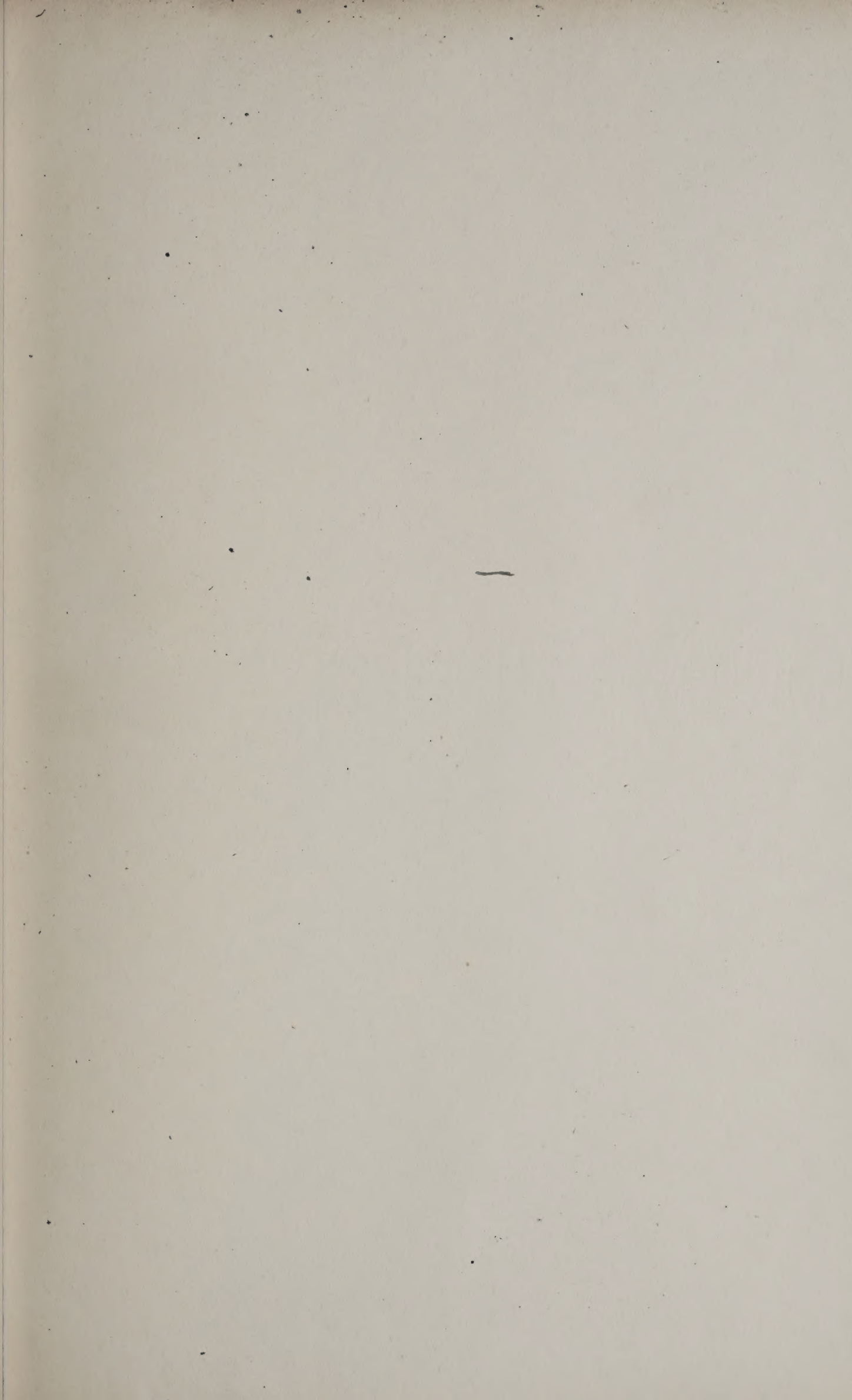
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